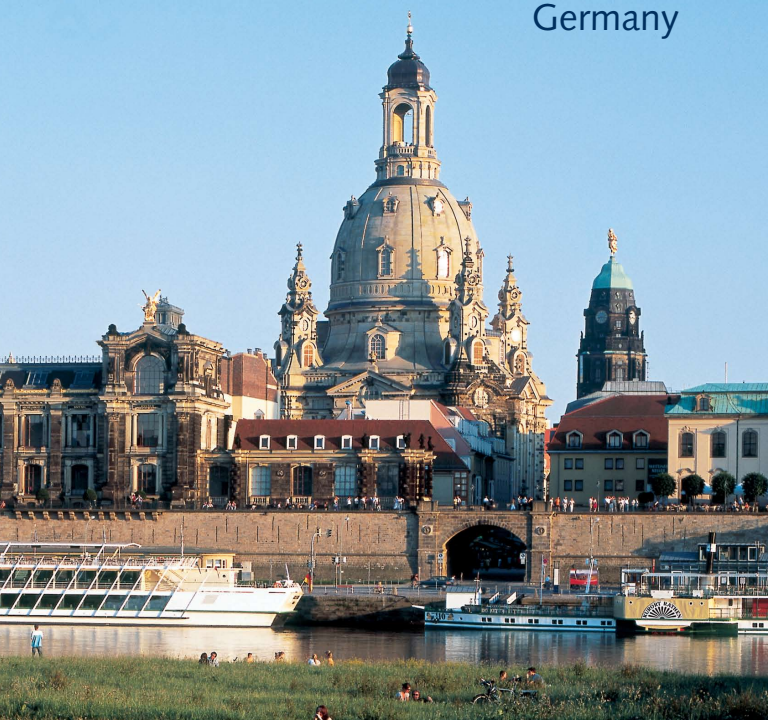


IEEE Dresden 2008

Germany



19-25 October 2008

Conference Program

Nuclear Science Symposium

Medical Imaging Conference

16th International Workshop on
Room-Temperature Semiconductor
X-Ray and Gamma-Ray Detectors

Special Focus Workshops

Maritim Hotel & International Congress Center

www.nss-mic.org/2008



Forschungszentrum
Dresden Rossendorf



The 2008 IEEE Nuclear Science Symposium and Medical Imaging Conference



Is sponsored by:

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Germany

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WELCOME FROM THE GENERAL CHAIRS

Dear Colleagues and Friends,

It will be our pleasure to welcome you to Germany and to the 2008 Nuclear Science Symposium (NSS) and Medical Imaging Conference (MIC). This year, the Conference will be held in the beautiful and historic city of Dresden, 19-25 October at the Maritim Hotel and International Congress Center Dresden (ICCD), located on the famous Elbe River.

An exciting and comprehensive program highlighting many state-of-the-art scientific and technological advances is planned. The subjects include radiation detection, detector materials, electronics, and image reconstruction algorithms as well as complex radiation detector and imaging systems for research and applications in the fields of medicine, biology, material science and physics. Interdisciplinary research will be given a special emphasis. Sharing your research experiences and openly discussing problems will be strongly encouraged in all scientific sessions. There will be ample time to relax and to meet and enjoy the company of your colleagues from around the world. Dresden offers many fine restaurants and its historic Old Town Center is within easy walking distance.

This year, the program will include the 16th International Workshop on Room Temperature Semiconductor X-Ray and Gamma-Ray Detectors (RTSD). Topics covered by this workshop correlate directly with numerous areas of interest to participants in both the NSS and MIC.

Satellite workshops will be offered, one before and one after the conference week, by two of the largest and most renowned laboratories in our fields: DESY Hamburg and



Uwe Bratzler
General Chair



Roger Gearhart
Deputy General Chair

Forschungszentrum Jülich (located near Cologne). The workshops will cover state-of-the-art topics of the laboratories' current research. In addition to the scientific value of these workshops and laboratory visits, there will be a great opportunity to experience other areas of Germany. All conference registrants are welcome to participate. The 2008 IEEE NSS/MIC/RTSD program promises exceptional advances in radiation detector R&D, nuclear science, high energy physics, and medical imaging, as well as multiple opportunities for networking, education, and discussion in a scientifically and socially stimulating, attractive environment.

We especially want to thank the local organizer, Forschungszentrum Dresden (FZD), our Honorary Chair, Professor Dr. Roland Sauerbrey, Scientific Director of FZD, and Honorary Professor Dr. Dr. h. c. Peter Joehnk, Administrative Director of FZD, for their strong support of this important annual meeting of our world-wide science community.

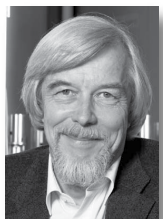
We are certain you will find the City of Dresden and the surrounding area to be most pleasant. It will be our distinct pleasure to welcome each of you to the 2008 NSS/MIC.

Uwe Bratzler
General Chair

Roger Gearhart
Deputy General Chair

Welcome

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Pre-registration is advisable to save time and money, and to ensure your registration package will be available for collection when you arrive. The preferred registration method is through the conference web site, as it places your details directly into our database, and you can pay by Visa, MasterCard or American Express through our secure web server.

Electronic registration (Preferred):

Click on the Conference Registration link at <http://www.nss-mic.org/2008> and follow the instructions.

By Mail or Fax:

Send form and payment (made out to IEEE 2008 NSS/MIC/RTSD) to:

IEEE 2008 NSS/MIC/RTSD
c/o INTERCOM Dresden GmbH
Ms Antje Blömeke
Zellescher Weg 3
01069 Dresden / Germany

Phone: +49 (351) 4633 3060

Fax: +49 (351) 4633 7049

E-mail: abloemeke@intercom.de (attn: IEEE 2008 NSS/MIC/RTSD)Web: www.intercom.de

An acknowledgement of your registration will be sent upon its receipt and payment. Please address any questions via e-mail (Attn: IEEE 2008 NSS/MIC/RTSD) or by phone.

Registration Hours at the Conference

Registration and general information will be available during the following times at the IEEE Registration Desk located downstairs in the Hall Level.

Friday, October 17	17:00 - 20:00
Saturday, October 18	07:00 - 09:30
	15:30 - 18:30
Sunday, October 19	07:00 - 09:30
	15:30 - 18:30
Monday, October 20	07:30 - 17:00
Tuesday, October 21	07:30 - 19:00
Wednesday, October 22	07:30 - 18:00
Thursday, October 23	07:30 - 17:00
Friday, October 24	07:30 - 12:00
	15:00 - 17:00
Saturday, October 25	07:30 - 09:00

Symposium Registration Fees

Registration Attendees	By Oct. 5	Late (by Oct. 14)	On Site
IEEE Member ¹	475€	525€	565€
Non-IEEE Member	585€	685€	715€
IEEE Student ^{1,2}	170€	190€	210€
Non-IEEE Student ²	260€	290€	310€
Retired/Unemployed IEEE Member ¹	100€	150€	200€
One Day Only ³	200€	200€	200€
MRBC Workshop ⁴	150€	170€	170€
X-Ray Workshop ⁵	170€	190€	190€
IEEE Life Member ¹	No Charge		

Luncheon/Dinner Fees

	By Oct. 5	Later or On-Site
NSS ⁶ Luncheon (Mon., Oct. 20)	29€	34€
RTSD ⁷ Lunch Thur. Oct. 23	29€	34€
MIC ⁷ Dinner Fri. Oct. 24	45€	50€

- 1. IEEE member number required at registration.
- 2. Proof of student status required at checkin. (see Membership below)
- 3. Valid for one occurrence only – if more than one day, full registration will be charged.
- 4. MRBC registration fee includes a dinner on Oct. 2, and lunch each day
- 5. X-Ray Micro Imaging registration fee includes a dinner on Oct. 23 and lunch each day
- 6. Sponsored in part by:
 - The European Physical Journal (EPJ / www.epj.org).
 - EPJ is a merger and continuation of Acta Physica Hungarica, Annales de Physique, Czechoslovak Journal of Physics, Il Nuovo Cimento, Journal de Physique, Portugaliae Physica and Zeitschrift für Physik..
- 7. Supported by Exhibitors

Cancellation and Refund Policy

All cancellations (partial or full) must be received in writing by October 12, 2008 for consideration. Approved refunds (less a 50€ administrative fee) will be issued after November 30, 2008. No refunds will be issued thereafter.

Hotel Information

Dresden is a very popular and attractive city for visitors from around the world and therefore the committee suggests that you make your hotel reservation as early as possible. No advance fee is required for the reservation. The rooms will be held until the end of September: after that time rooms will be only on a “space available” basis at the conference rate. The special convention rate in hotels is extended two days prior to, and two days following, the conference on a space available basis.

GENERAL INFORMATION

IEEE Membership

An IEEE membership desk will be located close to the Registration Desk. Staff will be available to answer questions concerning the benefits of membership. By joining during the conference a non-member will receive a \$50 deduction from new IEEE membership, plus one year’s free membership in the Nuclear and Plasma Sciences Society. Students joining at the conference will receive a year’s free membership if they provide a statement from their mentor that they are full-time students. It is more advantageous for students to join prior to coming to the conference in order to qualify for reduced student registration rate.

NSS – Nobel Prize Connections

The Nuclear Science Symposium has had many well-known speakers over its long history, among them several who have been honored with the Nobel Prize in Physics. The following is a list together with the year of the Nobel award:

- Luis Alvarez 1968
- Georges Charpak 1992
- Robert Hofstadter 1961
- Leon Lederman 1988
- Martin Perl 1995

One can wonder who among our recent speakers will be so honored in the future.

Message Board

A message board near the Information desk will announce all alterations in the scientific program and other important information for participants.

Computer Access

Access to the Internet will be available in the computer room. Additionally, all laptops equipped with a WLAN card are authorized to use the Wireless LAN, in most of the International Conference Centre. For WLAN registration, please ask in the computer room.

Web Site

Information for the up-to-date conference program: NSS, MIC, RTSD and Special Focus Workshops, short courses, and tours can be found at: <http://www.nss-mic.org/2008>

Money & Credit Cards

You may get a better exchange rate with ATMs compared to cash. Check with your bank before you travel.

The best time to change money will be when you arrive at the Main Railway Station in Dresden. There you will find an exchange office where it is easy to change currency.

There is an ATM inside the Conference Center and near the Conference Center in the Commerz Bank. If you want to get money from a machine be certain to bring your PIN code. Without a PIN code it is not possible to get Cash money with a Credit Card (Master, VISA, Maestro).

Credit cards are accepted at the hotel and large restaurants but are not accepted at most smaller restaurants and pubs. You should expect to use cash at most places outside the hotels.

Dresden Airport to Hotel

The Dresden Airport is located west and north of the city of Dresden. There are two ways to get to your hotel---taxi (about 15€ to 20€), and the S-Bahn train (1.80€). The train runs every 30 minutes from a station below the airport. Purchase your ticket at the airport information desk or from the machine on the platform. There are no money changing facilities at the airport but there is an ATM near the information desk. If you want to use the train, buy euros before you travel.

Please note that the S-Bahn to Dresden leaves only from the right-hand track. There are 3 possible stations for you to leave the train---for the Westin, use the Neustadt Station, for the Maritim, Hilton and Art'otel use the station Bahnhof Mitte; for all others, use the Dresden Hauptbahnhof/Main Station. It takes roughly 15 to 20 minutes to commute from Dresden Airport to the stations Dresden Neustadt, Bahnhof Mitte, and Dresden Hauptbahnhof/Main Station. A taxi from any station to your hotel will be 3€ to 5€.

Parking

The MARITIM Hotel & International Congress Center Dresden has a garage with 390 parking spaces. The garage entrance is located on the left hand side (Marianbrücke) of the Convention Center.

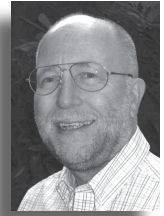
There are two possibilities to pay for parking, either 1.50€ per hour or 12.00€ per day. In the case you lose the parking ticket, you must contact the hotel reception desk.

Smoking Policy

The conference site has adopted a strict no-smoking policy in all of the conference and exhibit areas.

INDUSTRIAL PROGRAM

The IEEE NSS/MIC/RTSD Industrial Program provides our conference attendees with ample opportunities to meet the different exhibitors on Tuesday, Wednesday, and Thursday, 21 to 23 October. The opening hours will follow the hours of the conference and will close from 13:00 to 14:00 for lunch. More than 47 companies from all around the world will be present to meet conference attendees and to demonstrate their latest products. These represent state-of-the-art in detectors, pulse processing instrumentation, imaging, software, and other associated areas. The exhibition area is located in the Great Hall, on the same level as the posters. The three-day exhibition is complemented by a series of seminars and technical presentations on Tuesday, Wednesday and Thursday in room "Conference 7/8", which will allow an in-depth exchange of information between attendees and exhibitors on existing products, future developments and needs. Conference 7/8 is located on the conference level 4. The detailed schedule will be posted at the entrance to the exhibit area. The morning and afternoon coffee breaks will be held in the exhibit area. On Tuesday evening from 19:00 to 21:00, the exhibiting companies will be hosting the Exhibitor Reception.



**Industrial Program
Chair
Friedrich Wulf**

Check our website: <http://www.nss-mic.org/2008> for up-to-date information. An Industrial Program brochure will be available at the meeting with full details of the exhibitors and the seminar program. Companies interested in participating should contact Friedrich Wulf, Industrial Program Chair, at wte-office@hmi.de.

The exhibition opening hours are as follows:

Tuesday, October 21,	Noon to 19:00, with the Exhibitor Reception starting at 19:00
Wednesday, October 22	09:00 to 19:00*
Thursday, October 23	09:00 to 16:00*

*Closed from 13:00 to 14:00 for lunch on Wednesday and Thursday.

Exhibitor Technical Sessions

Room: Conference 7&8	
Tuesday, October 21, 2008	13:00 – 17.00
Wednesday, October 22, 2008	10:00 – 17.00
Thursday, October 23, 2008	10:00 – 12.00

Acrorad Co., Ltd
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 Hamamatsu Photonics Deutschland GmbH
 Hilger Crystals
 Hitachi Chemical Co. Ltd.
 ICX Radiation GmbH
 IOP Publishing
 ISEG Spezial Elektronik GmbH
 KETEK GmbH
 Mediso Medical Imaging Systems Ltd.
 Micron Semiconductor Ltd.
 Moxtek, Inc.
 National Instruments Germany GmbH
 ORTEC
 Performance Technologies
 PHOTONIS
 Plein & Baus GmbH
 powerBridge Computer Vertriebs GmbH
 RADOS Technology GmbH
 SAFC Hitech
 Saint Gobain Crystals
 Schroff GmbH
 Scionix Holland BV
 Semikon Detector GmbH
 Shanghai SICCAS High Technology Corp.
 Siemens Medical Solutions
 SII NanoTechnology USA Inc.
 SINTEF ICT
 SIS Struck Innovative Systeme GmbH
 Soltan Institute for Nuclear Studies
 Systerra Computer GmbH
 Taylor & Francis - CRC Press
 VacuTec Meßtechnik GmbH
 XIA LLC

Conference Record

The Conference Record is the official repository for manuscripts presented at the 2008 Nuclear Science Symposium, Medical Imaging Conference and Room Temperature Semiconductor Detector Workshop. The Conference Record will be published on CD-ROM, complimentary to all registered conference attendees. All Conference Record manuscripts will be made available online at <http://www.nss-mic.org/2008/ConferenceRecord> before the CD-ROMs are mailed out.



Guest Editor
Paul Selin

The approved word processor templates, available in PDF, MS Word and LaTeX format can be downloaded from <http://www.nss-mic.org/2008/publications/templates.htm>

All manuscripts submitted to the IEEE must be in IEEE Xplore-compatible PDF format. To assist authors in meeting this requirement, IEEE has established a web based service called "PDF eXpress." We strongly suggest that you use this service to create your PDF files. Manuscripts that are not IEEE Xplore-compatible will not be accepted in the Conference Record.

In order to ensure a timely release of the CD-ROM, please follow this procedure for the Conference Record manuscript submission:

1. Produce IEEE Xplore-compatible PDF file using PDF eXpress

The IEEE PDF eXpress service will be available for the NSS-MIC authors between Oct. 1st and Nov. 14th 2008. You need to enter **nssmic08x** as the conference ID, and set up an account on their system. You can upload your word processor file to the web site and have it converted to PDF. Shortly after your upload, an electronic proof in PDF format will be generated and emailed to you. You need to retrieve this IEEE Xplore-compatible file either from the PDF eXpress web site or from your email. You can also use this service to verify your own PDF file for Xplore-compatibility. Login access to the PDF eXpress service, plus detailed instructions, is available at:

<http://www.nss-mic.org/2008/publications/PDFeXpress.html>

PDF eXpress is NOT the final destination for your manuscript. After generating your PDF file you must then submit your manuscript to the Guest Editor by following the next step.

2. Submit the Xplore-compatible PDF file and the IEEE Copyright Form

Log on to the conference website and follow the menu "My Submissions" to the abstract submission page. You will see both links for uploading your manuscript and submitting the copyright form electronically. Follow the instructions on the web site to complete both tasks. Your PDF file will be checked for Xplore-compatibility. Non-Xplore-compatible files will not be included in the CD-ROM.

The deadline for the Conference Record manuscript submission is November 14th.

All manuscripts submitted through the conference web site will be made available immediately at the "Conference Record" web link. However only those that meet the following requirements will be included in the CD-ROM:

- The paper (oral or poster) has been presented at the conference;
- The manuscript conforms to the page layout requirements specified in the online templates;
- The PDF file is IEEE Xplore-compatible;
- The PDF file and the electronic copyright form are received no later than the November 14th deadline.

Guest Editor for the Conference Record

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The Guest Editor will be available at the conference during Wednesday and Thursday to discuss any enquiries related to the Conference Record.

Transactions on Nuclear Science (TNS)

Instructions for authors of papers in NSS/MIC

Additionally, papers presented at the conference that contain important information of lasting value may be submitted for review and publication in the Transactions on Nuclear Science (TNS). The TNS is a premier peer-reviewed journal with a significant distribution within the nuclear science and medical imaging communities. TNS is not the conference record and only those papers that pass the review process and are in the fields of interest to TNS will be published. Prospective authors should consult the TNS page at www.ieee.org for a description of the publication. TNS discourages the submission of progress reports and manuscripts that are more suitable for distribution as an institution's internal document. We expect each manuscript to be cast in the context of the state of the art of its field (including appropriate motivation for the work), present a complete description of the work performed, and to present a set of conclusions supported by the measured and/or calculated data. The paper should be sufficiently complete that others with comparable equipment could repeat the work.

Authors submitting to TNS should expect to be solicited to serve as reviewers of other papers. Please accept as many solicitations as you are able to handle and remember to return your reviews in a timely fashion. TNS tries to find at least two reviewers for each paper and the speed of the review process ultimately depends on your cooperation. TNS relies on this most important professional service you, the authors, provide to the community.

TNS is published throughout the year, and you can submit your manuscript to TNS at any time. For instructions on TNS manuscript submissions, please visit the IEEE's on-line peer review system Manuscript Central™ (<http://mc.manuscriptcentral.com/tns-ieee>). TNS suggests that authors limit their papers to 8 pages, but that limit is quite flexible and exceptions can be made.

Instructions for attendees of the RTSD Workshop

By agreement with Dr. Ralph James, TNS will accumulate papers from RTSD for publication in the August 2009 issue of TNS. To meet IEEE deadlines, papers for that issue must complete the review process by 1 June 2009. This means papers must be submitted to TNS no later than 15 November 2008 to guarantee inclusion in the workshop issue. Please be sure to mark your as manuscript as type "8 Room Temp. Semiconductor Detector (RTSD) WS" in Manuscript Central™, <http://mc.manuscriptcentral.com/tns-ieee>.

For further information regarding the Transactions on Nuclear Science, contact:

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Transactions on Medical Imaging (TMI)

Authors of medical imaging papers may alternatively choose to submit their manuscripts to the IEEE Transactions on Medical Imaging through Manuscript Central™ (<http://mc.manuscriptcentral.com/tmi-ieee>).

For further information regarding the IEEE Transactions on Medical Imaging, contact:

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P. O. Box 85500 3508 GA Utrecht, The Netherlands

max@isi.uu.nl

Comparison of Requirements

The value of the Conference Record is increased by the immediate and timely release of the information, which excludes the possibility of peer-review for manuscript content. It is possible that a similar (or even the same) article can be submitted to both the Conference Record and the TNS. However, the authors must keep in mind that the content of the articles designated for TNS publication must meet the level of scrutiny by scientific review and publication is not guaranteed for the TNS submission. The CR and TNS are two separate publications. Submission to one does not imply submission to the other.

	Conference Record (CR)	Transactions on Nuclear Science (TNS)
Page layout	Same as TNS, but without running headers and footers	Standard IEEE Transactions and Journal format
Copyright form	Required, electronic submission	Required, electronic submission
Deadline	Nov. 14, 2008	No
Peer reviewed	No	Yes
Use of color	Free and encouraged	At author's expense
Page Limit	8 (suggested)	8 (suggested)
Availability	Online immediately, CD out before end of 2008 to all attendees	Published throughout the year
Submission Site	www.nss-mic.org/2008/submissions	mc.manuscriptcentral.com/tns-ieee

COMPANION PROGRAM

Willkommen in Dresden!

Dresden and its surroundings offer a broad variety of cultural, historical, and natural attractions. The companion program provides a daily selection of trips to places of interest and many popular tours are repeated to allow flexibility in your schedule.

All tours will depart from and return to the Companion Program Meeting Area on the first floor (near the Registration Desk) of the International Congress Center Dresden (with the exception of the Cooking Class). This meeting area will be available for attendees and their companions to gather during the conference. Information will also be available for individuals and families to plan trips and excursions other than those offered in the Companion Program.

This is an exciting program and we look forward to seeing you in Dresden. Please contact any of us for more information.



Merry Keyser



Christine Bohnet

Companion Program Co-Chairs:

Merry Keyser
E-mail: Rmkeyser@aol.com

Christine Bohnet
E-mail: c.bohnet@fzd.de



Carolyn Hoffman

Carolyn Hoffman
E-mail: Carolyn.Hoffman@verizon.net

Please note:

- Individual tours are subject to cancellation and refund of tour fees if an insufficient preregistration is achieved prior to September 1, 2008. The fees in the table above are for advance registration by October 5. **There may be limited on-site registration for an additional fee of 5€.**
- With the exception of the Cooking Class, lunches will be on your own. They are not included in the tour fees.
- Tour programs and hours may be modified due to last minute logistics issues, e.g., the Church of Our Lady is a vibrant operating church and occasionally tours have to be modified to accommodate church services.
- Each tour will have an experienced English-speaking tour guide and also a hostess from the Companion Program committee. A Japanese-speaking tour guide is also offered for some tours but will be cancelled if there is insufficient preregistration by September 1, 2008.

Tour Name	Date	By Oct. 5
1. City Tour by Motor Coach	Sun., Oct. 19	38€
2. Walking Tour – City Center	Mon., Oct. 20	25€
3. City Tour by Motor Coach	Mon., Oct 20	38€
4. Excursion to Pillnitz	Mon., Oct. 20	40€
5. Excursion to Meissen and Moritzburg	Tues., Oct 21	65€
6. Walking Tour – Church of Our Lady/Semper Opera House	Tues., Oct. 21	32€
7. Walking Tour – City Center	Tues., Oct. 21	25€
8. Museum Tour – Green Vault	Wed., Oct 22	30€
9. Museum Tour – Old Masters Gallery	Wed., Oct. 22	28€
10. City Tour by Motor Coach	Wed., Oct 22	38€
11. Excursion to Meissen and Moritzburg	Thur., Oct 23	65€
12. Walking Tour – Church of Our Lady/Semper Opera	Thur., Oct. 23	32€
13. Cooking Class – Hilton Hotel	Thur., Oct 23	65€
14. Walking Tour –City Center	Thur., Oct 23	25€
15. Museum Tour – Green Vault	Fri., Oct. 24	30€
16. Museum Tour – Old Masters Gallery	Fri., Oct. 24	28€
17. Visit to the Winery at Schloss Wackerbarth	Fri., Oct. 24	37€
18. Walking Tour – City Center	Sat., Oct. 25	25€
19. Museum Tour – Green Vault	Sat., Oct 25	30€
20. Excursion to Saxon Switzerland	Sat., Oct 25	40€

Tour #1 City Tour by Motor Coach

Sunday, October 19, 13:00 – 16:00

A sightseeing tour outside of the city center. The first stop will be at the three famous “Elbe Palaces”. The Palaces are embedded in vineyards above the River Elbe and provide a breath-taking panorama view across the city of Dresden. Enjoy a guided tour through the park of Albrechtsberg palace/ Eckberg Palace or Lingner Palace. If you do not wish to walk, you may stay on the motor coach.

Continue on to a stop at Pfund’s Dairy, another unique place in Dresden. Pfund’s Dairy is described as the most beautiful dairy in the world. See the magnificent interior decoration with fantastic tile paintings and taste the unique choice of selected cheeses (not included).

This tour is offered on other days – see Tour #3 and Tour #10.

Tour #2 Walking Tour through the Historical City Center

Monday, October 20, 8:30 – 11:30

A guided walking tour through the pedestrian area of the historical city centre of Dresden is a “must” for visitors. In a three hour tour you will get an overview of the most famous sights of Dresden, such as the Residence Castle, the Semper Opera House, the Zwinger and the Church of Our Lady. Good walking shoes and an ability to walk on uneven pavement are recommended. This tour will be offered on several days and, with sufficient pre-registration, a Japanese-speaking tour guide may be arranged.

This tour is offered on other days – see Tour #7, Tour#14 and Tour #18.

Tour #3 City Tour by Motor Coach

Monday, October 20, 8:30 –11:30

A sightseeing tour outside of the city center. The first stop will be at the three famous “Elbe Palaces”. The Palaces are embedded in vineyards above the River Elbe and provide a breath-taking panorama view across the city of Dresden. Enjoy a guided tour through the park of Albrechtsberg palace/ Eckberg Palace or Lingner Palace. If you do not wish to walk, you may stay on the motor coach.

Continue on to a stop at Pfund’s Dairy, another unique place in Dresden. Pfund’s Dairy is described as the most beautiful dairy in the world. See the magnificent interior decoration with fantastic tile paintings and taste the unique choice of selected cheeses (not included).

This tour is offered on other days – see Tour #1 and Tour #10.

Tour #4 Excursion to Pillnitz

Monday, October 20, 13:15 –17:00

A ride on a paddle steamer from the largest and oldest steamboat fleet in the world is a special experience. You will pass by the three Elbe palaces and the famous “Blue Wonder” bridge and enjoy the beautiful view on your tour to Pillnitz.

Visit the Park of Pillnitz Palace, a former summer residence of the famous Saxon King, August the Strong. You will be impressed by the beautiful location, the gardens and the architecture of the palace built in a Chinese style. Regrettably, the Palace itself is already closed for the winter season. Lunch will be on your own. It is possible to purchase refreshments on the steamer or at the Park. The return journey to Dresden will be by motor coach.

Tour #5 Excursion to Meissen and Moritzburg

Tuesday, October 21, 8:30 – 16:00

A trip by motor coach to the 1000 year old charming town of Meissen, includes a narrated visit of the well-known Meissen Porcelain factory built in the 18th century. In the factory not only the production process of the “White Gold” will be shown, but you will also see the impressive collection of exceptional porcelain masterpieces. There will be an opportunity to make purchases at the factory shop.

The late gothic Albrechtsburg Castle on the hill in Meissen is a museum with particularly impressive architecture and a range of murals from the 19th century that illustrate events from the history of Saxony.

The Cathedral on the citadel hill of Meissen is typical of sacred buildings of the Mid-Gothic age, although its steeples are from the beginning of this century. Lunch will be on your own (choose from one of the many restaurants in Meissen). On the return journey to Dresden there will be a short stop at the hunting lodge in Moritzburg.

Much of this tour is in the pedestrian area of the old city and requires the ability to climb steep slopes and steps. Good walking shoes and an ability to walk on uneven pavement are recommended. This popular tour will be offered on two occasions and, with sufficient pre-registration, a Japanese-speaking tour guide may be arranged.

This tour is also offered on Thursday. See Tour #11.

Tour #6 Walking Tour of the Church of Our Lady and the Semper Opera House

Tuesday, October 21, 8:45 – 11:30

One of the most spectacular buildings in Dresden is the Frauenkirche (Church of Our Lady) in the heart of the old city centre. During World War II the church was completely destroyed. Outside, in front of the church you will gain an understanding of the exciting reconstruction process through the explanation by an experienced guide. Only an audio-guided tour is possible inside the church.

Dresden's former Royal Court Theatre has a turbulent history. The first Opera House at this location was built 1838-41 by the architect Gottfried Semper and became famous as one of the most beautiful theatres in Europe. The second opera house was destroyed in World War II. A guided tour through the Semper Opera House will be another highlight for visitors. This is a guided walking tour. Good walking shoes and an ability to walk on uneven pavement are recommended.

This tour is also offered on Thursday. See Tour #12.

Tour #7 Walking Tour through the Historical City Center

Tuesday, October 21, 13:30 – 16:30

A guided walking tour through the pedestrian area of the historical city centre of Dresden is a "must" for visitors. In a three hour tour you will get an overview of the most famous sights of Dresden, such as the Residence Castle, the Semper Opera House, the Zwinger and the Church of Our Lady. Good walking shoes and an ability to walk on uneven pavement are recommended. This tour will be offered on several days and, with sufficient pre-registration, a Japanese-speaking tour guide may be arranged.

This tour is offered on other days – see Tour #2, Tour #14, and Tour #18.

Tour #8 Museum Tour of the Historical Green Vault

Wednesday, October 22, 9:00 – 11:30

A short walk from the International Congress Center through the pedestrian area will lead you to one of the choicest jewel collections in the world. The Green Vault contains collected treasures of the Kings and Dukes of Saxony which survived both World War II and the transfer to Russia. This is a personal audio-guided tour. The audio version is available in German, English, French, Italian, Japanese, Polish, Russian, Czech and Spanish. It is necessary to check all coats and bags before entry and photography is not permitted inside the Green Vault.

This tour is also offered on other days. See Tour #15 and Tour #19.

Tour #9 Museum Tour of the Old Masters Gallery

Wednesday, October 22, 9:30 – 12:00

The "Old Masters" Gallery is located in the splendid Baroque Zwinger and houses the world-famous "Sistine Madonna" by Raphael. This is one of the best known art galleries in Europe. The art collection offers such a variety that everyone will enjoy the visit. The guide will explain several of the world-famous paintings as well as some interesting points of the splendid Zwinger architecture. This is a short walk from the International Congress Center. Included in the ticket is a visit to the armoury and the sculpture collection.

This tour is also offered on Friday. See Tour #16.

Tour #10 City Tour by Motor Coach

Wednesday, October 22, 13:00 – 16:00

A sightseeing tour outside of the city center. The first stop will be at the three famous "Elbe Palaces". The Palaces are embedded in vineyards above the River Elbe and provide a breath-taking panorama view across the city of Dresden. Enjoy a guided tour through the park of Albrechtsberg palace/ Eckberg Palace or Lingner Palace. If you do not wish to walk, you may stay on the motor coach.

Continue on to a stop at Pfund's Dairy, another unique place in Dresden. Pfund's Dairy is described as the most beautiful dairy in the world. See the magnificent interior decoration with fantastic tile paintings and taste the unique choice of selected cheeses (not included).

This tour is offered on other days – see Tour #1 and Tour #3.

Tour #11 Excursion to Meissen and Moritzburg

Thursday, October 23, 8:30 – 16:00

A trip by motor coach to the 1000 year old charming town of Meissen, includes a narrated visit of the well-known Meissen Porcelain factory built in the 18th century. In the factory not only the production process of the "White Gold" will be shown, but you will also see the impressive collection of exceptional porcelain masterpieces. There will be an opportunity to make purchases at the factory shop.

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The Cathedral on the citadel hill of Meissen is typical of sacred buildings of the Mid-Gothic age, although its steeples are from the beginning of this century. Lunch will be on your own (choose from one of the many restaurants in Meissen). On the return journey to Dresden there will be a short stop at the hunting lodge in Moritzburg.

Much of this tour is in the pedestrian area of the old city and requires the ability to climb steep slopes and steps. Good walking shoes and an ability to walk on uneven pavement are recommended. This popular tour will be offered on two occasions and, with sufficient pre-registration, a Japanese-speaking tour guide may be arranged.

This tour is also offered on Tuesday. See Tour #5.

Tour #12 Walking Tour of the Church of Our Lady and the Semper Opera House

Thursday, October 23, 8:45 – 11:30

One of the most spectacular buildings in Dresden is the Frauenkirche (Church of Our Lady) in the heart of the old city centre. During World War II the church was completely destroyed. Outside, in front of the church you will gain an understanding of the exciting reconstruction process through the explanation by an experienced guide. Only an audio-guided tour is possible inside the church.

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This tour is also offered on Tuesday. See Tour #6.

Tour #13 Cooking Class at the Hilton Hotel

Thursday, October 23, 9:15 – 12:30

The end of October in Saxony is the perfect time for baking the traditional Christmas bread called "Dresdener Stollen". This class provides an opportunity to make your own Stollen under the direction of the experienced chef at the Hilton Hotel. You will be able to take home a properly packaged Stollen. Our cooking class will also include a light luncheon buffet with soft and warm drinks available. During lunch there will be a roundtable presentation of tips and tricks for baking. Enjoy this unique chance to experience the regional taste of Saxony's cooking and bring your baking and cooking questions to be answered by the Hilton's knowledgeable chef.

A group will meet at ICCD at 9:00 am for the short walk to the Hilton Hotel.

Tour #14 Walking Tour through the Historical City Center

Thursday, October 23, 13:30 – 16:30

A guided walking tour through the pedestrian area of the historical city centre of Dresden is a "must" for visitors. In a three hour tour you will get an overview of the most famous sights of Dresden, such

as the Residence Castle, the Semper Opera House, the Zwinger and the Church of Our Lady. Good walking shoes and an ability to walk on uneven pavement are recommended. This tour will be offered on several days and, with sufficient pre-registration, a Japanese-speaking tour guide may be arranged.

This tour is offered on other days – see Tour #2 Tour #7, and Tour #18.

Tour #15 Museum Tour of the Historical Green Vault

Friday, October 24, 9:00 – 11:30

A short walk from the International Congress Center through the pedestrian area will lead you to one of the choicest jewel collections in the world. The Green Vault contains collected treasures of the Kings and Dukes of Saxony which survived both World War II and the transfer to Russia. This is a personal audio-guided tour. The audio version is available in German, English, French, Italian, Japanese, Polish, Russian, Czech and Spanish. It is necessary to check all coats and bags before entry and photography is not permitted inside the Green Vault.

This tour is also offered on other days. See Tour #8 and Tour #19.

Tour #16 Museum Tour of the Old Masters Gallery

Friday, October 24, 9:30 – 12:00

The "Old Masters" Gallery is located in the splendid Baroque Zwinger and houses the world-famous "Sistine Madonna" by Raphael. This is one of the best known art galleries in Europe. The art collection offers such a variety that everyone will enjoy the visit. The guide will explain several of the world-famous paintings as well as some interesting points of the splendid Zwinger architecture. This is a short walk from the International Congress Center. Included in the ticket is a visit to the armoury and the sculpture collection.

This tour is also offered on Wednesday. See Tour #9.

Tour #17 Visit to the Winery at Schloss Wackerbarth

Friday, October 24, 12:30 - 16:00

Travel by motor coach through the countryside to the Loessnitz hills, center of the Saxon wine-growing region. Enjoy a guided tour through the winery at Schloss Wackerbarth. You will see the big wine casks and the romantic vineyards and get an impression of the Saxon wine culture in this traditional residence. There will be a wine tasting and the opportunity to make purchases at the factory shop.

Tour #18 Walking Tour through the Historical City Center

Saturday, October 25, 8:30 – 11:30

A guided walking tour through the pedestrian area of the historical city centre of Dresden is a "must" for visitors. In a three hour tour you will get an overview of the most famous sights of Dresden, such as the Residence Castle, the Semper Opera House, the Zwinger and the Church of Our Lady. Good walking shoes and an ability to walk on uneven pavement are recommended. This tour will be offered on

several days and, with sufficient pre-registration, a Japanese-speaking tour guide may be arranged.

This tour is offered on other days – see Tour #2, Tour #7 and Tour #14.

Tour #19 Museum Tour of the Historical Green Vault

Saturday, October 25, 11:30 – 14:30

A short walk from the International Congress Center through the pedestrian area will lead you to one of the choicest jewel collections in the world. The Green Vault contains collected treasures of the Kings and Dukes of Saxony which survived both World War II and the transfer to Russia. This is a personal audio-guided tour. The audio version is available in German, English, French, Italian, Japanese, Polish, Russian, Czech and Spanish. It is necessary to check all coats and bags before entry and photography is not permitted inside the Green Vault.

This tour is also offered on other days. See Tour #8 and Tour #15.

Tour #20 Excursion to Saxon Switzerland

Saturday, October 25, 12:30 – 16:30

Take a motor coach trip to the beautiful Elbe sandstone massif known as Swiss Saxony. There will be a stop for a guided tour of Festung Königstein (Königstein Fortress) a unique monument to the art of European fortress construction. Its 750 year history has made it an impressive configuration of late Gothic, Renaissance, Baroque and 19th century architecture. Enjoy the spectacular views of the jagged rocks (popular with climbers) and the Elbe river gorge.

SHORT COURSE PROGRAM

An excellent set of short courses will be given at the start of the NSS/MIC/RTSD programs, covering a wide range of nuclear and medical technology. All courses include refreshments, lecture notes, and a certificate of completion as part of the registration fee. Full day courses also include lunch.



Claus Grupen
Short Course Program Co-Chair



Irène Buvat
Short Course Program Co-Chair

Course Name	Date	IEEE Member	Non Member
		by Oct. 5 After	by Oct. 5 After
1.Basics of Particle and Radiation Detection (2 days) †	Oct. 18-19	275€ 330€	330€ 400€
2.Silicon Detector Applications in Medicine, Biology, Safety and Astrophysics (Half-day) †	Oct. 18	150€ 200€	200€ 250€
3.Simulation Techniques Using Geant4 (1-day)	Oct. 18	125€ 150€	150€ 180€
4.Front-End Electronics Systems for Particle Detection and Imaging (1 day) †	Oct. 19	200€ 240€	240€ 290€
5.How to use the Grid for physics and medical applications (1day)	Oct. 19	125€ 150€	150€ 180€
6.Image Quality in Adaptive and Multimodality Imaging (1 day)	Oct. 20	125€ 150€	150€ 180€
7.The Monte Carlo Method and its Applications in Medical Imaging (1 day) †	Oct. 20	175€ 210€	210€ 250€
8.Ion Beam Therapy: Principles and Quality Assurance	Oct. 21	125€ 150€	150€ 180€
9.Image Reconstruction (1 day)	Oct. 21	125€ 150€	150€ 180€
10.PET Pharmacokinetic Course (2.5 days, special course)	Oct. 19-21	225€ 250€	250€ 300€

† Textbook included.

NSS COURSES

Short Course 1: Basics of Particle and Radiation Detection

08:30 – 17:30, Saturday, October 18 – Sunday, October 19

Location: International Conference Center, Conference 1

Organizer: Glenn Knoll, University of Michigan

Fabio Sauli, CERN,

Stephen Derenzo, LBNL

Eugene Haller, UC Berkeley

GLENN FREDERICK KNOLL is Professor Emeritus of Nuclear Engineering and Radiological Sciences at The University of Michigan. He earned a doctorate in Nuclear Engineering from the University of Michigan. His research interests have centered on radiation measurements, nuclear instrumentation, and radiation imaging. He is author or co-author of over 200 technical publications, 7 patents, and 2 textbooks. He has served as consultant to 30 industrial and governmental organizations in technical areas related to radiation measurements, and is a Registered Professional Engineer in the State of Michigan.

FABIO SAULI studied at the University of Trieste where he earned his PhD in Experimental Physics in 1965. His thesis work, prepared at CERN, describes the results of an experiment making use of optical spark chambers. From 1969 on he worked as Applied Research Physicist in the group of Georges Charpak. He has contributed to the development of numerous detectors, e.g., high accuracy drift chambers and imaging chambers. In 1997, he introduced a new concept in gas detectors: the Gas Electron Multiplier (GEM). The technology has been widely used in many experiments. Several CERN patents cover the GEM operation and the applications for particle tracking and in biomedical fields, and licenses are being granted for commercial exploitation.

STEPHEN E. DERENZO is a Senior Scientist at the Lawrence Berkeley National Laboratory, Head of the Medical Imaging Technology Department in the Life Sciences Division, and Professor-in-Residence in the Electrical Engineering and Computer Science Department at UC Berkeley. He and his colleagues constructed two pioneering positron emission tomographs (PET) and developed advanced scintillation detectors for PET that provide high spatial resolution, depth-of-interaction information, and compact integrated circuit readout. For the past 20 years he has lead a search for new heavy scintillators and currently heads a project for the discovery of scintillation detector materials that uses automation to increase the rate of synthesis and characterization. He has authored or co-authored over 200 technical publications and seven patents. He has received two awards from the IEEE Nuclear and Plasma Sciences Society: the Merit Award in 1992 and the Radiation Instrumentation Outstanding Achievement Award in 2001. He became an IEEE Fellow in 2000.

EUGENE E. HALLER is Professor of Materials Science at UC Berkeley and holds the Liao-Cho Innovation Endowed Chair and a joint appointment at the Lawrence Berkeley National Laboratory where he heads the Electronic Materials Program. He received his Ph.D. degree in nuclear and applied physics from the University of Basel, Switzerland for surface studies of large volume p-i-n germanium diodes used as gamma-ray detectors. His research interests cover a wide spectrum of semiconductor topics including basic semiconductor physics, thin film and bulk crystal growth and advanced detectors for electromagnetic radiation ranging from the far-infrared to gamma rays. He has authored and co-authored over 800

scientific/technical publications. He is a fellow of the American Physical Society and AAAS, has won an Alexander von Humboldt U.S. Senior Scientist Award in 1986, two Miller Research Professorships in 1990 and 2001, the Max-Planck-Research Prize in 1994, the James McGroddy Prize for New Materials of the American Physical Society in March 1999 and the David Turnbull Lectureship Award of the Materials Research Society in 2005. He held visiting professorships at the Max-Planck-Institute for Solid State Research in Stuttgart, at the Imperial College in London, at the DLR (German Aerospace Corporation) in Berlin, at the Paul-Drude-Institute in Berlin and at the University of Münster, Münster, Germany. In 2004 he was a Distinguished Professor at Keio University in Japan. He is a member of the Editorial Advisory Board of the “Journal of Physics and Chemistry of Solids,” of “Materials Science Foundations” and of the “Journal of Applied Physics Reviews.”

This 2-day course provides an overall review of the basic principles that underlie the operation of the major types of instruments used in the detection and spectroscopy of charged particles, gamma rays, and other forms of ionizing radiation. Examples of both established applications and recent developments are drawn from areas including particle physics, nuclear medicine, homeland security, and general radiation spectroscopy. Emphasis is on understanding the fundamental processes that govern the operation of radiation detectors, rather than on operational details that are unique to specific commercial instruments. This course does not cover radiation dosimetry or health physics instrumentation. The level of presentation is best suited to those with some prior background in radiation measurements, but can also serve to introduce topics that may be outside their experience base. A copy of the textbook ‘Radiation Detection and Measurement’, 3rd Edition, by G. Knoll and a set of course notes are provided to registrants.

Short Course 2: Silicon Detector Applications in Medicine, Biology, Safety and Astrophysics

08:30 – 12:30, Saturday, October 18

Location: International Conference Center, Conference 5

Organizer: Lothar Strüder and Peter Lechner, Semiconductor Lab., MPI for Physics and Extraterrestrial Physics, München

LOTHAR STRÜDER is a researcher at the Max-Planck-Institute for Extraterrestrial Physics in Munich (1987) and a Professor of Physics at the University of Siegen (2001). He is an expert in the development of Imaging X-ray detectors and applications of state-of-the-art semiconductor detector systems. Lothar Strüder has led the MPI Semiconductor Laboratory (HLL) since 1990. This advanced laboratory provides silicon detectors for particle physics and X-ray astronomy not available commercially. The complete silicon technology of the HLL is adapted to the special requirements of semiconductor radiation detectors. Important features are in particular the ability to build wafer size defect free double sided detectors on ultra pure silicon.

PETER LECHNER earned his PhD in 1998 at the semiconductor laboratory of the Max-Planck-Institute for Physics and for Extraterrestrial Physics (MPI-HLL) in Munich, Germany. He joined the company KETEK and worked on the commercialization of Silicon Drift Detectors with integrated readout electronics developed and produced at MPI-HLL. Today he is with the company PNsens and involved in several national and European R & D projects related to

novel silicon detector concepts for photon science, medical imaging, and space instrumentation.

The measurement of ionizing radiation like optical photons, X- and gamma-rays on one side and electrons, protons, or other massive particles on the other side is of great interest in many fields of basic science (e.g., astrophysics, high energy physics), applied science (e.g., material analysis, medical imaging, synchrotron research) and industrial science (e.g., X-ray fluorescence analysis, quality control, safety). Semiconductor detectors, in particular with the introduction of new concepts and principles have very strongly improved the measurement capabilities.

This half day course will review the basic physics of semiconductor devices used as detectors as well as for integrated electronics. A short treatment of further signal processing electronics will be given. Resulting implications for front-end electronics will be discussed. The basic physical limitations of the measurement precision will be derived from physical concepts. Special emphasis will be given to the physical limits of position resolution, energy resolution, time resolution, the quantum efficiency and the 'cleanliness' of the spectra. Basic effects affecting the long-term stability under various experimental boundary conditions will be discussed.

The course will concentrate on pn-junction type detectors as single and double sided silicon strip detectors, pin and pad detectors, silicon drift detectors, charge coupled devices and active pixel sensors. The impact of those detectors on readout and data acquisition strategies will be derived from the intrinsic detector properties and the specific application and its primary measurement goal.

For all detector types examples of applications will be presented. A textbook (G. Lutz, Semiconductor Radiation Detectors, Springer) will be supplied and is part of the registration fee.

Short Course 3: Simulation Techniques using Geant4

08:30 – 17:30, Saturday, October 18

Location: International Conference Center, Conference 3 & 4

Organizer: Maria Grazia Pia, INFN Genova

MARIA GRAZIA PIA is a high energy physicist working at CERN and the INFN. She is a skilled trainer in the application of Geant4 with valuable experience and knowledge in this field. She has provided considerable contributions to Geant4 physics design, development and validation, and is involved in various projects within Geant4. She is also active in the domain of technology transfer and software projects for Data Analysis.

Geant4 is a software toolkit for the simulation of the interaction of particles with matter, developed and maintained by a world-wide collaboration of physicists and computer scientists. Its application areas include high energy physics experiments, astrophysics and astroparticle physics, space science, medical physics and medical imaging, nuclear physics, radioprotection and radiation background studies. It exploits advanced software engineering techniques and Object Oriented technology to achieve transparency of the physics implementation, as well as openness to extension and evolution. Geant4 provides a wide set of tools for all the domains of detector simulation, such as Geometry modeling, Detector Response, Run and Event management, Tracking,

Visualization and User Interface. An abundant set of Physics Processes handles the diverse interactions of particles with matter across a wide energy range, as required by Geant4 multi-disciplinary nature; for many physics processes a choice of different models is available.

The Geant4 source code and libraries are freely available, accompanied by an extensive set of user documentation.

The course provides an overview of Geant4 capabilities, and illustrates in detail the major features available in the toolkit to simulate an experimental set-up. Specific lectures are devoted to Geant4 capabilities for medical applications. Finally, the students are guided through a real-life simulation example, offering a practical implementation of the basic concepts of a user application. As a result of the course the students would learn how to develop simulation applications based on the Geant4 Toolkit. A CD with Geant4 source code and libraries, examples and further training material is distributed to all course participants. To best profit of the course, some basic knowledge of the C++ computing language is recommended. For more details of the course, see <http://www.ge.infn.it/geant4/events/nss2008/geant4course.html>

Short Course 4: Front-End Electronics Systems for Particle Detection and Imaging

08:30 – 17:30, Sunday, October 19

Location: International Conference Center, Conference 2

Organizer: Helmuth Spieler and Peter Denes, Lawrence Berkeley National Laboratory

HELMUTH SPIELER is a Senior Physicist in the Physics Division of Lawrence Berkeley National Laboratory. He received his Ph.D. in nuclear physics from the Technical University in Munich in 1974 and has worked in many areas of instrumentation, both as a user and a designer. Much of his instrumentation work has been on large-scale semiconductor detector systems and full custom ICs for high energy physics experiments at high-luminosity colliders. He has served on numerous review panels for major detectors in the US, Europe and Japan, both for ground and space-based experiments. He is internationally known for his tutorial courses on detectors and signal processing and is active in outreach projects with local high school science teachers. His current research includes superconducting bolometer arrays for cosmic microwave background experiments (South Pole Telescope, APEX-SZ, Polarbear), radiation-resistant detectors and electronics for the Super LHC (ATLAS), and detector systems for nuclear non-proliferation monitoring. He is the author of the book Semiconductor Detector Systems published by Oxford University Press.

PETER DENES is a Senior Engineer in the Engineering and Advanced Light Source Division of Lawrence Berkeley National Laboratory. He received his Ph.D. in physics in 1984 from The University of New Mexico, and while with Princeton University spent many years at CERN working on electromagnetic calorimetry readout. At LBNL, he heads the integrated circuit design group, and has been involved in the development of various detectors for particle physics, electron microscopy and synchrotron radiation research.

Detectors come in many different forms, but sophisticated front-end electronics are a key part of practically all modern systems. Although the

implementation of these detectors varies greatly, ranging from scintillators and wire chambers to silicon pixel devices and superconducting bolometer arrays, the readout systems share many common aspects.

This course introduces the basic principles, their implementation, and discusses examples of their application to various systems. It is directed towards engineers and physicists with a basic knowledge of electronics who wish to gain an understanding of detector electronics to effectively design or operate readout systems. The emphasis is on system requirements and practical realization, but the discussion will also address some specific aspects of circuit design, both with discrete components and in large-scale integrated circuits. Topics include signal acquisition with different detector types, electronic noise, pulse shaping (analog and digital), and data readout techniques. We will present examples of applications in nuclear and particle physics, astrophysics and astronomy, in medical imaging, and also discuss emerging techniques in electron microscopy and imaging systems for materials science and biology at synchrotron light sources. The course will conclude with a discussion of common pitfalls and how to avoid them. Course handouts include a copy of the book "Semiconductor Detector Systems".

Short Course 5: How to use the Grid for Physics and Medical Applications

08:30 – 17:30, Sunday, October 19

Location: International Conference Center, Conference 3 & 4

Organizer: Patricia Méndez Lorenzo and Jakub T. Moscicki (both CERN)

PATRICIA MENDEZ LORENZO earned her PhD in particle physics at the Ludwig-Maximilians-University Munich in 2001. She has worked as researcher in the field of electron-positron annihilations with the OPAL detector at LEP, CERN. Now she is working on the ALICE experiment at the Large Hadron Collider LHC, as Information Technology Specialist from CERN/IT.

JACUB T. MOSCICKI is a researcher and software engineer at CERN. He graduated from AGH University of Science and Technology in Krakow, Poland. He works on distributed computing systems for scientific applications including Monte-Carlo simulations and data analysis in high-energy physics, bio-informatics, medical physics and telecommunications. His research interests include usability and quality of service in large computing Grids and the enabling of large-scale applications in heterogeneous computing environments.

This course is intended to introduce the Grid technology to scientists and engineers with no experience in this field. Participants will gain practical skills on how to quickly make use of distributed computing resources for their applications. The class begins with an introduction to the Grid technology and an overview of existing Grid applications. A case study will show the details of a real medical Geant4 simulation running on the Grid. Hands-on exercises will give practical experience with using the application oriented tools such as Ganga (<http://cern.ch/ganga>) and DIANE (<http://cern.ch/diane>) to support solving scientific problems. The participants will have an opportunity to get involved into using the Grid beyond the scope of the course and get further support for their applications.

MIC COURSES

Short Course 6: Image Quality in Adaptive and Multimodality Imaging

08:30 – 17:30, Monday, October 20

Location: "The Westin Bellevue Dresden" Hotel, Bellevue 1

Organizer: Harrison Barrett, Matthew A. Kupinski, Lars R. Furenlid

HARRISON BARRETT received a Ph.D. in applied physics from Harvard in 1969. He is a professor in the College of Medicine and the College of Optical Sciences, and he has appointments in Applied Mathematics, Biomedical Engineering and the Arizona Cancer Center. In 1990 he was named a Regents Professor at the U of Arizona. He is a fellow of the Optical Society of America, the Institute of Electrical and Electronic Engineers, the American Physical Society and the American Institute of Medical and Biological Engineering. He has 22 U. S. patents and over 200 technical papers, and over 50 students have received Ph. D. degrees under his direction. His awards include the Humboldt Prize, the 2000 IEEE Medical Imaging Scientist Award, an E. T. S. Walton Award from Science Foundation Ireland, and the 2005 C. E. K. Mees Medal from the Optical Society of America. His current research is in image science, with applications in medicine and astronomy. He is director of the Center for Gamma-ray Imaging, an NIH-funded research resource that develops state-of-the-art instruments for radiotracer studies of small animals. He is also active in developing new methods for the assessment and optimization of image quality and in applying parallel computers to tomographic imaging. In collaboration with Kyle J. Myers, he has written a book entitled Foundations of Image Science, which in 2006 was awarded the First Biennial J. W. Goodman Book Writing Award from OSA and SPIE.

MATTHEW A. KUPINSKI graduated from the University of Chicago in 2000. He is currently an Associate Professor of Optical Sciences at the University of Arizona. His general research occurs in the fields of image science with the current emphasis being on medical imaging. Specific topics of interest are task based assessment of image quality for both tumor detection and parameter estimation tasks, understanding the statistical characteristics of images and the objects being imaged, imaging hardware optimization, and human-observer models for image analysis.

LARS R. FURENLID was educated at the University of Arizona and the Georgia Institute of Technology. He is currently a Professor at the University of Arizona and associate director of the Center for Gamma-ray Imaging, with appointments in the Department of Radiology and the College of Optical Sciences. He is also a member of the Graduate Interdisciplinary Degree Program in Biomedical Engineering. Before moving to the University of Arizona, he was a staff scientist at the National Synchrotron Light Source at Brookhaven National Laboratory. His major research area is the development and application of detectors, electronics, and systems for biomedical imaging.

This course will survey the state of the art in gamma-ray detectors for SPECT and PET, with a discussion of emerging technologies as well as traditional semiconductor and scintillator devices. Considerable emphasis will be placed on statistical characterization of the detectors and on optimal estimation methods that take the statistical properties into account. Advanced data acquisition methods will be discussed, and

examples will be given of some current detector projects at the Center for Gamma-ray Imaging of the University of Arizona. Topics will include:

- Survey of technologies for gamma-ray detection
- Detector requirements for SPECT and PET
- State of the art in scintillation detectors
- State of the art in semiconductor detectors
- Statistical modeling and estimation methods
- Data acquisition systems
- Examples of applications

Short Course 7: The Monte Carlo Method and its Applications in Medical Imaging

08:30 – 17:30, Monday, October 20

Location: “The Westin Bellevue Dresden” Hotel, Bellevue 2

Organizer: Michael Ljungberg, Medical Radiation Physics, Lund University

Assisted by:

Robert Harrison (SIMSET), Department of Radiology, University of Washington, Seattle

Sébastien Jan (Geant4/GATE), Service Hospitalier

Frédéric Joliot, Orsay and Erik Larsson (MCNP), Medical Radiation Physics, Lund University, Lund

MICHAEL LJUNGBERG is a professor at Medical Radiation Physics, Lund University, Lund, Sweden. He received his B.S. in Radiation Physics 1983 and a Ph.D degree 1990. Dr. Ljungberg's research profile is in nuclear medicine imaging with a special focus on mathematical modeling and problems related to quantitative imaging. He is the developer of the SIMIND Monte Carlo program that today is an internationally recognized program and used by many groups. His work has included developments of attenuation and scatter correction methods in SPECT and planar scintillation camera imaging, for special applications in radionuclide therapy dosimetry and treatment planning. He has also developed methods for 3D dosimetry (macroscopic as well as for small-scale animal models) using the EGS4 and MCNP4 Monte Carlo programs.

ROBERT HARRISON, M.A., is a research scientist in the Department of Radiology at the University of Washington, Seattle, USA. His research has focused on simulation and quantitative imaging techniques for emission tomography. He is currently heading the support and expansion of the SimSET package, an emission tomography simulation package widely used in industry and academia.

SEBASTIEN JAN, PhD, is a physicist at the French Atomic Commission (CEA - Service Hospitalier Frederic Joliot) in Orsay, France. He is currently the technical coordinator of the OpenGATE collaboration and is in charge of gathering the developments made by the members of the OpenGATE collaboration to produce new releases of the GATE Monte Carlo simulation software. He has contributed to the development and integration of many functionalities in GATE. He is also an intensive user of GATE, especially to simulate dynamic PET scans in small animals and humans. He has a great experience in running GATE on Linux platforms and on distributed architectures.

ERIK LARSSON, M.Sc, is a PhD student at Medical Radiation Physics, Lund University, Lund, Sweden. He works mainly with the Monte Carlo codes MCNP5 and MCNPX to develop internal dosimetry models for

radionuclide therapy. His research includes small-scale dosimetry models of human tissues and small animal dosimetry. He has been working with the MCNP codes since 2003 and he is well acquainted with the creation of input files using mathematical geometries and Boolean operators as well as voxel based geometries.

The Monte Carlo (MC) method has proven to be very useful to evaluate many fields related to Medical Imaging. One of the major applications has been to develop and validate different scatter correction methods for SPECT and planar scintillation imaging and to categorize the components building the image. The MC method is also useful when designing new instruments. Monte Carlo calculations are also very important in radiation dosimetry for both planning of individual treatments as well as forming the base for estimating the risk for late cancerogenic effects.

Today, several very competent programs are publicly available and have been validated extensively by many research groups. Because of the access to these programs, in house program developments are mostly not required. Nevertheless, a basic knowledge about the principles behind the method, potentials and pitfalls is usually required in order to properly set-up and evaluate a Monte Carlo study successfully.

Course outline:

This full-day course will cover the basics of the method regarding random numbers, basic sampling of interactions for photons and electrons as well as variance reduction methods. The recent developments of voxel-based software phantoms will also be covered. Detailed descriptions for public domain programs dedicated for photons (SIMIND and SIMSET) and for coupled photon and electron programs (GATE/Geant4 and MCNP) will be given. Hand-outs will be included in the registration fee together with the book “Monte Carlo Calculation in Nuclear Medicine: Applications in Diagnostic Imaging”; eds. M. Ljungberg, S-E. Strand, and M.A. King; 1998 Bristol and Philadelphia, IOP Publishing.

Short Course 8: Ion Beam Therapy: Principles and Quality Assurance

08:30 – 12:30, Tuesday, October 21

Location: “The Westin Bellevue Dresden” Hotel, Bellevue 1

Organizer: Gerhard Kraft, Fine Fiedler, Wilma K. Weyrather, Gesellschaft für Schwerionenforschung (GSI), Darmstadt, and OncoRay, Dresden

GERHARD KRAFT studied Physics at Heidelberg and Cologne where he received his Ph.D. in nuclear physics. He founded the biophysics department at GSI where he developed the heavy ion tumor therapy together with Wilma K. Weyrather. She studied Physics at the University of Cologne and received her Ph.D. at the University of Giessen in Radiobiology in 1978. They both together initiated the Radiobiology program at GSI and later on the tumor therapy.

FINE FIEDLER did her Ph.D. in 2008 at the Technical University of Dresden and studied the feasibility to monitor the stopping points of the beam inside the patients. She is working in the In-beam-PET group of the OncoRay Dresden. She will report that the PET techniques are capable assessing the relevant parameters for quality assurance in respect to anatomical landmarks. But it has been also shown that it is possible to extend this technique to other ions than carbon such as protons, ^3He , ^7Li , and ^{16}O .

The novel features of the GSI tumor therapy are the extreme target conform beam delivery using an intensity-modulated scanning method, the biology based treatment planning and the in vivo control of the patient using online-PET. In order to cover the target with a dose having a homogenous biological effect and a steep gradient at the borders, the target volume is dissected in slices of equal particle energy which are covered by a grid of 20.000 to 50.000 pixels of different beam positions. For all these pixels the individual covering of particles has to be calculated according to the desired dose level and the actual value of the Relative Biological Effectiveness, RBE, at the specific pixel. These RBE values depend on the physical composition of the beam at each location and the biological properties of the affected tissue mainly on its repair capacity of complex DNA damage.

For the clinical success of the patients (now more than 400) treated with this technique, the quality assurance of the technical equipment, the biological modeling for the treatment planning, and the physical dose delivery are extremely important.

The biological corrections of the treatment planning are based on the Local Effect Model LEM verified in many experiments. It is also confirmed by the follow up of the treated patients that did not show large side and late effects. For the quality assurance of the beam delivery an online measurement of the emission of gamma quanta have been developed and used during patient irradiation. When penetrating through the patient a significant fraction of the primary beam such as carbon or other ions undergo nuclear reaction with the tissue resulting in radioactive positron emitting isotopes either from the beam such as ¹¹C and ¹⁰C or from the target atoms such as ¹⁵O. Their positron decay can be monitored from outside and can be used to track the beam stopping inside the patient.

In general, the short course will introduce the physical and biological rational of ion beam therapy. It will explain the critical features in planning and beam delivery and will give the principles for quality assurance.

Short Course 9: Image Reconstruction

08:30 – 17:30, Tuesday, October 21

Location: “The Westin Bellevue Dresden” Hotel, Bellevue 2
Organizer: Paul Kinahan

PAUL KINAHAN’s research is focused on the data acquisition and processing for medical imaging using positron emission tomography (PET). PET imaging is used for both clinical diagnosis and for basic research in areas of neuroscience, oncology, and cardiology. Trying to improve the technology of PET imaging has generated some fascinating questions and problems. His projects include: Whole-body imaging for oncology, improving combined PET/CT scanners, image reconstruction algorithms for 3D imaging, image processing to incorporate PET images into therapy systems, and evaluations of image quality. Several of his developments are now included in commercial imaging systems. He collaborates closely with physicians and other researchers on the design of acquisition and processing methods for PET experiments.

The advances in SPECT and PET imaging have come with increased options in terms of image reconstruction, including a large number of statistical reconstruction algorithms and fully 3D reconstruction methods. This course will provide an orderly overview of the potpourri of reconstruction methods that have been proposed recently. Rather

than advocating any particular method, this course will emphasize the fundamental issues that one must consider when choosing between different reconstruction approaches. The intended audience is anyone who would like to reconstruct ‘better’ images from photon-limited measurements, and who wants to make informed choices between the various methods. Both emission tomography and transmission tomography algorithms will be discussed.

Attendees should be familiar with photon-counting imaging systems at the level presented in the Medical Imaging short course offered in previous years.

Short Course 10: PET Pharmacokinetic Course

Sunday–Tuesday, Oct. 19–21, special course www.oncoray.de
Location: OncoRay – Center for Radiation Research in Oncology, University Hospital “Universitätsklinikum Carl Gustav Carus”, Fetscherstrasse 74, Building No. 31, Dresden
Time: Sunday 11:00 - 18:00
 Monday 09:00 - 18:00
 Tuesday 09:00 - 13:00
Organizer: Jörg van den Hoff,
 Forschungszentrum Dresden-Rossendorf;
Together with:
 Richard E. Carson, PET Center, Yale University School of Medicine, USA
 Vincent J. Cunningham, GlaxoSmithKline plc., UK
 Roger N. Gunn, GlaxoSmithKline plc. London, UK
 Adriaan A. Lammertsma, Department of Nuclear Medicine & PET Research, VU University Medical Centre, Amsterdam, The Netherlands
 Klaus L. Leenders, Department of Neurology, University Hospital Groningen, The Netherlands
 Paul Maguire, Novartis Pharma AG, Basel, Switzerland
 Wolfgang Müller-Schauenburg, Department of Nuclear Medicine, Tübingen University, Germany (retired since 2005)
 Antoon Willemsen, Department of Nuclear Medicine & Molecular Imaging, University Medical Center Groningen, The Netherlands

JÖRG van den HOFF is professor of positron emission tomography at the medical faculty of the Technical University Dresden and head of the Department of Positron Emission Tomography in the Institute of Radiopharmacy of the Forschungszentrum Dresden-Rossendorf (FZD). Prof. van den Hoff studied physics at the University of Bonn where he worked afterwards in nuclear spectroscopy (hyperfine interactions and g-factor measurements using perturbed angular correlation) and obtained his PhD in experimental nuclear physics in 1991. In 1991 he changed to the PET center in the Department of Nuclear Medicine at the Medical School Hannover. Here, he was mainly engaged in the development and implementation of quantification procedures for PET investigations using tracer kinetic models. In 1999 he obtained his postdoctoral lecture qualification (“Habilitation”) in Experimental Nuclear Medicine. In 2002 he took over his current position in Dresden. Besides the continuing interest in tracer kinetic modeling the group

of Prof. van den Hoff is currently mainly working on algorithms and procedures for accurate list-mode based movement correction as well as reliable volumetric evaluation of PET investigations, especially for integration of PET into radiation treatment planning.

RICHARD CARSON graduated from the University of California, Los Angeles, in 1983. After spending more than 20 years at the National Institutes of Health, Bethesda, MD, he joined Yale University in 2005, as a Professor of Diagnostic Radiology and Biomedical Engineering. He is also the Director of the Yale PET center and the section head of Yale PET imaging.

His research uses Positron Emission Tomography (PET) as a tool to non-invasively measure a wide range of in vivo physiology in human beings and laboratory animals. He mostly focuses on the development and applications of new tracer kinetic modeling methods and algorithms and on research in PET image reconstruction and image quantification. A primary focus of his more biological applications is the measurement of dynamic changes in neurotransmitters. He has published more than 150 peer-reviewed papers.

The Short Course aims at explaining the relevant techniques used for extracting quantitative information from positron emission tomography investigations. This course has developed over the last 15 years, comprises substantial computer exercises (necessitating a rather large number of tutors), and provides a 100 page manual. The course covers basic concepts such as permeability, extraction, blood flow, local blood volume, perfusion, volume of distribution, tracer principle, linear tracer kinetics, compartment modelling, parametric images and techniques for accelerating the computations (such as avoiding non-linear least squares fitting even if the model contains parameters in a non-linear way), receptor ligand techniques, etc. Some of the techniques have more recently drawn attention for evaluating dynamic contrast enhanced CT or MRI investigations, thus the concepts and the mathematical techniques are of interest with respect to other tomographic techniques beyond PET as well. During the 2.5 days catering will be provided. Social events are scheduled in the evenings.

How to find the OncoRay building:

- from Airport take shuttle train to the railway station "Bahnhof Neustadt"
- from railway station "Bahnhof Mitte" or "Bahnhof Neustadt" take tram no. 6 to "Niedersedlitz/Kleinschachwitz" and get off at tram stop "Augsburger Strasse"
- from main railway station "Hauptbahnhof" take tram no. 8 to "Hellerau" and get off at tram stop "Postplatz" or take tram no. 7 to "Weixdorf" and get off at tram stop "Pirnaischer Platz"
- from "Postplatz" or "Pirnaischer Platz" take tram no. 12 to "Striesen" and get off at tram stop "Augsburger Strasse"

From the tram stop it is a 5-minute-walk to the OncoRay building. A map can be found at

http://www.uniklinikum-dresden.de/patienten/download/uniklinikum_lageplan.pdf

The tram stop "Augsburger Strasse" is indicated on the map. The OncoRay building is labelled as no. 31 on the map. The main entrance is facing building no. 66. Within the area of the University Hospital you will also be guided by information signs.

Lost in Translation – From Basic Science to Clinical Reality

Tuesday, Oct. 21, 2008, 10:30-11:15

David W. Townsend
University of Tennessee, Knoxville, USA

Biography

David W. Townsend obtained his Ph.D. in Particle Physics from the University of London and was a staff member for eight years at the European Centre for Nuclear Research (CERN) in Geneva, Switzerland. In 1980, Dr. Townsend joined the faculty of Geneva University Hospital as a physicist in the Department of Nuclear Medicine. Working with Dr. Alan Jeavons from CERN, he explored the use of the High Density Avalanche Chamber (HDAC) for clinical PET imaging. He has worked on PET instrumentation development since the early eighties. In collaboration with Dr. Terry Jones at the Cyclotron Unit of Hammersmith Hospital, London he participated in the early development of 3D reconstruction and methodology for PET, and later designed and built the first rotating partial ring PET scanner using BGO block detectors.



In 1993, Dr. Townsend moved to the University of Pittsburgh as an Associate Professor of Radiology and Senior PET Physicist. He was co-director of the Pittsburgh PET Facility from 1996-2002, and became Professor of Radiology in 2000. In 1995, Dr. Townsend was Principal Investigator on the first proposal to design and build a combined PET/CT scanner. The PET/CT scanner, attributed to Dr. Townsend and Dr. Nutt, then President of CPS Innovations, was named by TIME Magazine as the medical invention of the year 2000. In recognition of his work on PET/CT, Dr. Townsend received the 2004 Distinguished Clinical Scientist Award from the Academy of Molecular Imaging, and the 2008 Nuclear Medicine Pioneer Award from the Austrian Society of Nuclear Medicine. In 2006, he was elected a Fellow of the IEEE. Since 2003, Dr. Townsend has been at the University of Tennessee in Knoxville as Professor of Medicine and Radiology, and Director of the Molecular Imaging and Translational Research Program.

The transfer of technology from a basic science field such as particle physics to more applied areas like medical imaging, although offering promise is not always as straightforward as it may appear. While accelerator and particle physicists are presented with problems of extreme technical complexity requiring ingenious solutions, their techniques and instrumentation may not easily translate to other fields. The particular constraints imposed by one field may complicate or even invalidate the translation of a solution that appears promising from the perspective of the other field. Medical imaging instrumentation must be cost effective, offering adequate clinical performance for reasonable levels of cost and reliability; particle physics instrumentation is designed for extremely high levels of performance and reliability, with cost concerns often being secondary. In some limited areas, such as in the development of scintillators and detector electronics, translation of the technology

has achieved a measured level of success. However, in attempting to facilitate this translation it is essential that one field understands the limitations, constraints and objectives of the other field. Without this bilateral understanding, promising advances in particle physics will have little or no impact on medical imaging; the advances will literally be lost in translation. This talk will discuss examples of techniques that originated from accelerator and particle physics and that should, or could have had a more significant impact on medical imaging, and critically examine the procedures by which the transfer of such technology might be accomplished.

NUCLEAR SCIENCE SYMPOSIUM (NSS)

The Nuclear Science Symposium (NSS) offers an outstanding opportunity for scientists and engineers interested, or actively working in the fields of nuclear science, radiation detection, accelerators, high energy physics and astrophysics, and related software. The scientific program provides a comprehensive review of the latest developments in technology and covers a wide range of applications from radiation instrumentation and new detector materials, to complex detector systems for physical sciences and advanced imaging systems for biological and medical research.

Having received a record breaking number of over 1000 abstracts from colleagues working on numerous NSS topics (and more than 2000 contributions for the combined NSS/MIC/RTSD), we have decided to expand the NSS program from Monday to Friday, with five parallel sessions running at the same time. The symposium program this year consists of 522 orals (including NSS/MIC/RTSD and NSS/MIC joint sessions) and 481 poster papers, which are presented in two oral plenary sessions, 70 NSS parallel sessions, and two poster sessions. The daily program includes two 2-hour sessions in the morning (08:00-12:30) and two 2-hour sessions (13:30-18:00) in the afternoon.

One of the true highlights of the symposium will be two NSS Plenary Sessions on Monday, October 20, 2008 (09:00-12:00) and on Friday, October 24, 2008 (10:30-12:30), where prominent experts and leaders in our field will shed a light on the most outstanding current and planned research frontiers.

In the Monday Plenary Session three topics will be presented:

- Prof. Dr. Norbert Holtkamp on "Status of the ITER Design"
- Prof. Dr. Braum-Munzinger on "Physics Prospects with the FAIR Facility at GSI"
- Dr. Heinz Graafsma on "Recent Highlights from the XFEL Project and Summary of the DESY Workshop".

This Opening Plenary Session will be followed by the traditional NSS Luncheon (12:00-14:00) during which Dr. Christer Fuglesang will talk about the research on board the International Space Station, his spacewalks and space instrumentation. The Friday Plenary Session will concentrate on the highlights from the high energy physics research program:

- Prof. Dr. Jos Engelen on "Recent Highlights from the Large Hadron Collider Project"
- Prof. Dr. Sakue Yamada on "Recent Highlights from the International Linear Collider Project".

In addition, for the first time in the conference history, contributions bridging the fields of nuclear science detection, medical imaging and solid-state radiation detectors will be presented in one dedicated NSS/MIC/RTSD joint session and two NSS-MIC joint sessions on Tuesday (10:30 to 12:30, 13:30 to 15:30 and 16:00 to 18:00).

Following the successful developments in custom-designed micro-electronics for the use in particle physics, space and medical imaging, a Round Table discussion "nano CMOS and 3D Electronics for Scientific Instrumentation and Imaging: Opportunities and Practical Aspects" on Wednesday (16:00-19:00) is organized to bring together

representatives from industry, research institutes, scientific instrument designers and users.

Re-introducing the IEEE NPSS tradition, the topic of Nuclear Power has been added to the NSS agenda with a special session being organized on Monday (16:30-18:30). Another new session has appeared this year in the area of ATCA (Advanced Telecommunication Computer Applications) on Thursday (16:00-19:00), a field which is growing quickly, reflecting the new DAQ applications and R&D developments for a variety of physics experiments including very large detectors.

To emphasize the importance of the Poster Contributions, all NSS posters will be visible from Monday morning to Wednesday evening, with no scheduled NSS parallel sessions during the 2-hour dedicated poster sessions.

Finally, five educational short courses are organized covering specialized NSS topics, and providing excellent educational opportunities for young scientists.

We would like to thank all the authors of the scientific contributions, which form the true and crucial basis for this unique event, and all conference attendees. We would also like to thank the almost 400 reviewers who contributed valuable time to read and assess submitted papers. Our special thanks go to more than 50 NSS Topic Conveners for their tireless efforts of organizing the symposium program along the lines of the scientific topics and completing the program within the scheduled time despite the very large number of submitted abstracts.

Most general information is available at our website (www.nss-mic.org/2008) but please feel free and encouraged to contact us for feedback, suggestions and questions by sending an email to nss2008@desy.de.

We sincerely hope you will enjoy the exciting 2008 IEEE NSS/MIC and are looking forward to meeting you in Dresden, Germany in October this year.



Rolf-Dieter Heuer
2008 NSS Program Chair



Maxim Titov
2008 NSS Deputy Program Chair

NSS PLENARY TALKS

N01-1 Status of the ITER Design

Norbert Holtkamp
ITER Organization, France

Monday, October 20, 09:15-10:00

Biography

Dr. Holtkamp has an M.S. equivalent degree in physics from the University of Berlin and a Ph.D. in physics from the Technical University in Darmstadt (both in Germany). His research interests include high-energy colliders, linear accelerators, storage rings, synchrotron radiation sources, and accelerator-based neutrino physics. He has served on a variety of review committees, dealing with technical, cost schedule and planning issues on Linear Colliders, Neutrino Factories and Neutrino beams, Synchrotron Radiation and XFEL designs as well as high energy colliders; more recently also Plasma Physics and Fusion Science.



Dr. Holtkamp serves on several program and advisory boards and was a member of the last HEPAP subpanel on long-range planning in high-energy physics as well as the National Academy of Science panel on Elementary Particle Physics 2010. He chaired the Particle Accelerator Conference in 2005 and the Linac Conference in 2006. Until July 2006, Dr. Holtkamp was the director of the Accelerator Systems Division for Spallation Neutron Source at Oak Ridge National Laboratory, which is a Pulsed Neutron Source based on a 1 GeV H- linac and an accumulator ring that can provide between 1-3 MW of average beam power. The facility was under construction between 1999 and 2006. Before his assignment to SNS (1992-1998), Dr. Holtkamp was a senior staff member at DESY (Hamburg, Germany). In that position he was responsible for operation of the injector linacs and for a research and development program for a normal conducting linear collider (S-Band), which included the construction and operation of a 400 MeV electron test linac. After joining Fermilab (1998-2001), Mr. Holtkamp led a multi-laboratory study on the technical feasibility of an intense neutrino source based on a muon storage ring and was involved in the commissioning of the main injector at Fermilab.

On April 1 2006 Norbert Holtkamp is the Principle Deputy Director General of the ITER project located in Cadarache (France). He is responsible for the construction part of ITER and the technical coordination of a seven party collaboration building the world's largest Tokamak with a total value of approximately 5 billion euro.

Abstract

ITER is a joint international research and development project that aims to demonstrate the scientific and technical feasibility of fusion power. The partners in the project - the ITER Parties - are the European Union (represented by EURATOM), Japan, the People's Republic of China, India, the Republic of Korea, the Russian Federation, and the USA. ITER will be constructed in Europe, at Cadarache in the South of France.

In parallel with a fast build up to almost 300 people within the International Organization (IO) in Cadarache, the project team, including many members from the member countries represented by their Domestic Agencies (DA), has concentrated its effort on an overall ITER design review. An updated technical baseline was presented to the council at the end of 2007. As a result the ITER design today provides a robust basis for a technical design that allows operation over a wide range of physical parameters that can operate stably with high gain, and can exploit the full scientific potential of the machine. The design review was a useful and necessary step enabling the IO and the Members to formally make the transition from the ITER 2001 baseline to the updated 2007 baseline. It was useful in the sense that, through the involvement of the world's experts in fusion, the understanding of what the detailed ITER design really entails could be disseminated among both the "builders" and the future users from the seven Member countries. It was necessary because the only officially recognized documentation and technical specifications dated from 2001, while the design had further developed and outstanding questions had to be addressed, cumulating in the updated new 2007 baseline. A full overview of the status of ITER design and construction will be given including the detailed discussion of the 2008 ITER baseline.

N01-2: Physics Prospects with the FAIR Facility at GSI

Peter Braun-Munzinger
University of Darmstadt and GSI, Germany

Monday, October 20, 10:00-10:45

Biography

Peter Braun-Munzinger ist currently Professor of Physics at Darmstadt, section leader at GSI, and director of the recently founded ExtreMe Matter Institute (EMMI). He obtained his PhD in physics at the University of Heidelberg and worked during his career at Heidelberg, Stony Brook, and Darmstadt. His main scientific interests are experiments with ultra-relativistic nuclei to study novel phases of QCD. He initiated research programs at the AGS and SPS accelerators and is currently in charge of the construction and operation of the ALICE TPC at the CERN LHC.



Abstract

The FAIR (Facility for Antiproton and Ion Research) project has recently been approved for construction at the GSI Laboratory in Darmstadt, Germany. It will provide antiproton and ion beams at intermediate energies but unprecedented intensities. We will, after a brief summary of the status of the facility and planned construction, review the physics prospects with emphasis on the strong interaction sector. Topics covered include novel approaches to hadron spectroscopy with cooled high intensity antiprotons as well as studies of the phase diagram of QCD in the high baryon density region.

N01-3: Recent Highlights from the XFEL Project and Summary of the DESY Workshop

Heinz Graafsma
DESY-Hamburg, Germany

Monday, October 20, 11:15-12:00

Biography

Heinz Graafsma studied applied physics at the University of Twente in the Netherlands, where he obtained his engineering degree in solid state physics and crystallography in 1988. After that he moved to the State University of New York in Buffalo, to work in the group of Prof. Philip Coppens, who was one of the pioneers in using synchrotron radiation for chemical crystallography. Using the X3 beamline at the NSLS at BNL, he studied the influence of external electric fields on the atomic and crystalline structure of piezoelectrics. Based on this work he obtained his PhD in physics at the University of Twente in 1992. In August 1992, he went as PostDoc to the new European Synchrotron Radiation Facility in Grenoble France, to work in the group of Prof. A. Kvik, and was responsible for building the end station of the materials science beamline. In 1993 he became beamline scientist at the same beamline, where he continued his research in perturbation crystallography. In 1997 he was appointed head of the Instrument Support Group, where he was, amongst other things, responsible for the detector support and development program at the ESRF. In January 2006 he moved to DESY in Hamburg in order to build up a detector group for Photon Science, and to support the detector program at the European XFEL as workpackage leader. He is currently also the coordinator of one of the large 2D detector development projects (called HPAD) for the XFEL.



Abstract

The X-ray Free Electron Lasers will require custom-made detectors for the various experiments, something that is normal to do in High Energy Physics, but uncommon in Photon Science. Both the LCLS in the USA and the XFEL in Europe have started dedicated detector development programs for large two-dimensional imaging detectors that will be able to handle the large instantaneous flux, the large dynamic range in the image, and in the case of the European XFEL the high repetition rate of 5 MHz. The specific detector requirements resulting from the source parameters will be discussed as well as fundamental challenges like radiation tolerances and charge cloud dynamics due to instantaneous and localized photon intensities. An overview of the various ongoing projects will be given, and recent highlights and details of the European project will be presented.

At various laboratories around the world a synergy between Photon Science and High Energy Physics in the field of detector developments is emerging. On one side, the experience in detector developments for High Energy Physics is being applied to construct X-ray photon detectors, while at the same time the new demands imposed by the XFEL sources stimulate the application of new technologies, which in turn will be to the benefit to future HEP experiments. A satellite workshop

was organized at DESY-Hamburg in order to evaluate the possibilities, advantages, and difficulties of joint detector developments. A summary of the workshop, and a report of the most important findings and conclusions will be presented.

N66-1: Recent Highlights from the Large Hadron Collider Project

Jos Engelen
CERN

Friday, October 24, 10:30-11:15

Biography

Chief Scientific Officer (Scientific Director) and deputy Director-General of CERN, the European Laboratory for Particle Physics.

Scientific Curriculum: study of 'soft' strong interactions; hard scattering of high energy real photons (QCD studies); deep inelastic scattering at high energy (HERA; DESY Hamburg); preparatory studies of detection of high energy cosmic neutrinos (Antares). My main interest now is in 'TeV scale physics; electroweak symmetry breaking and beyond'.



Abstract

The Large Hadron Collider (LHC) allows the study of proton-proton collisions at an unprecedented energy of 14 TeV. It also allows the study of lead-lead collisions at 5.5 TeV per nucleon pair. An overview will be given of the status of the Large Hadron Collider (LHC) project, including first operational experience and, hopefully, characteristics of multi TeV proton-proton collisions. This overview will include the challenges that were met, both by the accelerator team and the experimental collaborations. An outlook on the future of the LHC program will be given – including a brief summary of the anticipated physics program and possible future upgrades.

N66-2: Recent Highlights from ILC Project

Sakue Yamada
The University of Tokyo and KEK, Japan

Friday, October 24, 11:15 – 12:00

Biography

Dr. Sakue Yamada is Professor Emeritus of the University of Tokyo, KEK and the Graduate University for Advanced Studies in Japan. He has worked in high energy physics experiments at several electron-positron colliders and at electron-proton collider HERA at DESY. He has served as the Research Director of the ILC Project since October 2007.



He started e+e- physics activity with the BEPP-III collider at BINP in Novosibirsk around 1970 and continued at DORIS and PETRA at DESY, where a group of the University of Tokyo lead by Prof. M. Koshihara collaborated in the DASP and JADE collaborations. After participating in designing OPAL for LEP, he moved to a new field of e-p collision at HERA, in which he organized a group at Institute for Nuclear Study, University of Tokyo to participate in ZEUS. Later he served as the director of the institute and lead the planning of Japan Hadron Facility. Since the merger of the institute with KEK, to realize the JHF project as the present J-PARC, he served as the director of the Institute of Particle and Nuclear Physics of new KEK till he retired in 2003. Then he went back to research activity and spent a year at Hamburg University as a Merkator guest professor in 2005 and 2006. For his contribution for cultural exchange, he was awarded with Phillip Franz von Sielboldt Prize of Germany in 1992.

Abstract

The International electron-positron Linear Collider (ILC) is considered to be the next generation facility at the energy frontier, to be built within a large international cooperation. At the Large Hadron Collider (LHC) we expect new physics to show up in the range of a few hundred GeV, well reachable by the ILC which will complement the LHC with high-precision measurements. The design work and the required R&D for the ILC are conducted by the Global Design Effort (GDE) organized globally under ICFA. Last year the GDE completed an elaborated Reference Design Report of four volumes covering the accelerator and detector concepts and the exciting physics program. Following this achievement detailed technical design work is now going on with well defined milestones.

The physics program at the ILC requires detector systems of very high performance. Detailed and sophisticated studies are needed to reach an optimized integration of various detector components, electronics and software. Three international groups are working to finalize their designs. Many issues are identified, investigated and their solutions are aimed by worldwide R&D efforts.

Thousands of people are participating in these activities. In the design of both the accelerator and the detectors, cooperative efforts are continuing to study also the machine-detector interface so that desired performance can be obtained. The plan is to show with a completed design in 4 years that ILC is able to pursue rich physics.

A Journey to Space with Radiation and the Future in Mind

Christer Fuglesang
KTH, Sweden

Monday, October 20, 12:00-14:00

Biography

Master of Science in Physics Engineering, KTH, Sweden, 1981.

PhD in experimental particle physics, Univ. of Stockholm, 1987.

As a PhD student, I worked with the UA5 experiment at Cern and multiparticle dynamics.

CERN Fellow between 1988 and 1990, working with the CPLEAR experiment.

Assistant Professor at Manne Siegbahn Institute, Stockholm in 1991. Engaged in development work for what eventually became the Atlas experiment at LHC.

In 1992 I was selected as astronaut by ESA and joined the European Astronaut Center in Cologne.

August 1993 - July 1996 I was stationed in Star City, Russia. I trained there for the six months EuroMir95 mission. During the flight I worked at the Russian mission control center TsUP.

Since August 1996 I am stationed in Houston, working and training at the Johnson Space Center. I became a Shuttle Mission Specialist in 1998 and flew the STS-116 mission to the International Space Station (ISS) in December 2006. During the 13 days in space I performed three EVAs (space walks) on ISS.

At ESA I have been involved in space radiation projects. SilEye studied the light flashes most people experience in space and nuclear abundances on Mir. This work continues on ISS, with the Alteino detector and the ALTEA facility. The latter combines the silicon strip particle detectors of SilEye with EEG measurements. With Alteino, in the ATCRIS experiment, a mapping of the radiation environment is performed and various possible shielding materials are investigated.

I led the DESIRE (Dose Estimation by Simulation of the ISS Radiation Environment) project, which built a Geant4 model of ISS and produced radiation dose predictions for the European Columbus model, published in 2007.

Since October 2006, Affiliated Professor at KTH.



Abstract

The Space Shuttle mission STS-116 flew to the International Space Station (ISS) in December 2006. During the 13-day mission, my main task was to participate in three space-walks connected to the continuing assembly of ISS. In particular the last one was spectacular, when we unscheduled had to fix a solar array that hung up during retraction. However, I also got the opportunity to perform some work related to radiation in space and I experienced the so called light flashes. About 80% of people in space experience sudden phosphenes, commonly called light flashes. The SilEye experiment on Mir correlated light flashes with charged particles traversing the eye. It was found that a nucleus in the radiation environment has roughly a 1% probability to cause a light flash, whereas the proton probability is almost three orders of magnitude less. On ISS the ALTEA facility attempts to obtain objective data of light flashes with EEG measurements in addition to study possible long term effects on the Central Nervous System (CNS). ALTEA and the smaller Alteino detector measures particle rates and nuclear abundances inside ISS. Radiation in space is a main problem for future long voyages, for example to Mars. The DESIRE project investigated whether Geant4 simulations could be useful to predict radiation dose rates in space vehicles. Results on ESA's Columbus module that reached ISS this year will be compared to data. Europe also recently successfully launched and docked the Automatic Transfer Vehicle Jules Verne to ISS. The European Astronauts' Vision is that Europe should now decide to build a human space vehicle and with this participate in NASA's endeavor to go back to the moon and this time to stay and build a base there.

NSS PROGRAM

N01 NSS Plenary I

Monday, Oct. 20 09:00-12:00 Hall 1 & 2 & 3

Session Chairs: **Rolf-Dieter Heuer**, DESY, Germany
Maxim P. Titov, CEA Saclay, DAPNIA, France

Welcome from the NSS Program Chair & General Chair

N01-1 Status of the ITER Design

N. Holtkamp, *ITER, France*

N01-2 Physics Prospects with the FAIR Facility at GSI

P. Braun-Munzinger

University of Darmstadt and GSI, Germany

Break 10:45-11:15

N01-3 Recent Highlights from the XFEL Project and Summary of the DESY Workshop

H. Graafsma, *DESY, Germany*

N02 NSS Poster Session I

Monday, Oct. 20 14:00-16:00 Hall 4&5 (Poster)

Session Chairs: **Ralf Engels**, Forschungszentrum Juelich GmbH, Germany
Julia Furlotova, University of Bonn, Germany

Astrophysics and Space Instrumentation

N02-1 A Double-Layered Array of Silicon Pixels for Cosmic Ray Measurements in CALET

P. S. Marrocchesi¹, O. Adriani^{2,3}, L. Bonechi^{2,3}, C. Avanzini⁴, M. G. Bagliesi¹, A. Basti⁴, K. Batkov^{1,4}, G. Bigongiari¹, R. Cecchi¹, M. Y. Kim⁴, P. Maestro¹, V. Millucci¹, F. Morsani⁴, P. Papini³, E. Vannuccini³, R. Zei¹

¹University of Siena and INFN, Italy; ²University of Florence, Italy;

³INFN - sezione di Firenze, Italy; ⁴INFN - sezione di Pisa, Italy

N02-3 Basic Performance of the Polarimeter for Gamma-Ray Bursts Using MAPMTs and Segmented Scintillators

S. Gunji, Y. Kishimoto, Y. Ishikawa, M. Takada, N. Toukairin, Y. Tanaka, F. Tokanai, H. Sakurai, *Yamagata University, Japan*; T. Mihara, T. Sato, *RIKEN, Japan*; K. Hayashida, N. Anabuki, H. Tsunemi, M. Ota, *Osaka University, Japan*; T. Narita, *College of the Holy Cross, USA*; Y. Saito, *JAXA, Japan*; S. Kishimoto, *KEK, Japan*

N02-5 The Power Energy and Peak Detector ASICs with Voltage and Time-over-Threshold Read Outs: Application to Space Science Particle Instruments.

N. Paschalidis

The Johns Hopkins University Applied Physics Laboratory, USA

N02-7 Prototype of Position-Sensitive X-Ray Detector (PSXD) Based on CdTe/CdZnTe Sensitive Elements for X-Ray Space Telescope

I. N. Pappe, V. V. Akimov, M. V. Kuznetsova, V. V. Levin, M. N. Pavlinsky, A. A. Rotin, O. A. Smirnov
Space Research Institute (IKI), Russia

N02-9 SISPI: the Read-Out and Control System of the DES Camera

K. Honscheid, J. Eiting, K. Kuehn, *Ohio State University, USA*; I. Karliner, D. Kau, J. Thaler, *University of Illinois, USA*; L. Buckley-Geer, *Fermi National Accelerator Laboratory, USA*; S. Kuhlman, *Argonne National Laboratory, USA*; F. Castander, *IEEC, Spain*

N02-11 Measurement of High Energy Cosmic Rays in the Experiment CZELTA

K. Smolek, *Czech Technical University in Prague, Czech Republic*
 On behalf of the CZELTA collaboration

N02-13 Expected Performance of the PHENEX Polarimeter by Enlargement of Detection Area

Y. Kishimoto, S. Gunji, Y. Ishikawa, M. Takada, N. Toukairin, Y. Tanaka, F. Tokanai, H. Sakurai, *Yamagata University, Japan*; T. Mihara, T. Sato, *RIKEN, Japan*; K. Hayashida, N. Anabuki, Y. Ota, H. Tsunemi, *Osaka University, Japan*; T. Narita, *College of the Holy Cross, USA*; Y. Saito, M. Kohama, M. Suzuki, *JAXA, Japan*; S. Kishimoto, *KEK, Japan*

N02-15 Development of a Low Resource LaBr₃:Ce Gamma-Ray Spectrometer for Planetary Research

E. Maddox, S. Kraft, D. Lampridis, *cosine Research BV, The Netherlands*; C. Dathy, *Saint Gobain Crystals and Detectors, France*; N. Nelms, A. Owens, F. Quarati, *ESA/ESTEC, The Netherlands*

N02-17 X-Ray Spectrometer Onboard Chang'E-1 Lunar Exploration Satellite

H. Wang, C. Zhang, J. Wang, X. Liang, X. Cao, J. Yang, M. Gao, J. Zhang, W. Peng, X. Cui, Y. Chen
Institute of High Energy Physics, Chinese Academy of Sciences, China

N02-19 Silicon Photo-Multiplier Readouts for Scintillators in High-Energy Astronomy

P. F. Bloser, J. S. Legere, C. M. Bancroft, M. L. McConnell, J. M. Ryan
University of New Hampshire, USA

N02-21 Performance of a Low-Noise Two-Dimensional Analog ASIC with CdTe Detectors

G. Sato¹, T. Kishishita^{1,2}, H. Ikeda¹, T. Sakumura³, K. Tamura¹, T. Takahashi^{1,2}

¹ISAS / JAXA, Japan; ²University of Tokyo, Japan; ³RIGAKU Co., Ltd., Japan

N02-23 Beam Test Results of the Polarized Gamma-Ray Observer, PoGOLite

H. Takahashi¹, M. Arimoto², M. Axelsson³, G. Bogaert⁴, Y. Fukazawa¹, S. Gunji⁵, L. Hjalmsdotter³, T. Kamae⁶, Y. Kanai², J. Kataoka², N. Kawai², M. Kiss⁷, W. Klamra⁷, K. Kurita², S. Larsson⁷, G. Madejski⁶, C. Marini Bettolo⁷, T. Mizuno⁹, M. Pearce⁷, F. Ryde³, S. Rydstrom⁷, H. Tajima⁶, T. Takahashi⁸, T. Tanaka¹, M. Ueno², Y. Umeki¹, G. Varner⁹, H. Yoshida¹, T. Yuasa¹⁰

¹Hiroshima University, Japan; ²Tokyo Institute of Technology, Japan;

³Stockholm University, Sweden; ⁴Ecole Polytechnique, France; ⁵Yamagata University, Japan; ⁶Stanford Linear Accelerator Center, USA; ⁷Royal Institute of Technology, Sweden; ⁸JAXA, Institute of Space and Astronautical Science, Japan; ⁹University of Hawaii, USA; ¹⁰University of Tokyo, Japan

N02-25 Prototype Readout Module for Hyper Suprime-Cam

H. Miyatake¹, T. Uchida¹, H. Nakaya², H. Aihara¹, S. Miyazaki³

¹Univ. of Tokyo, Japan; ²Subaru Telescope NAOJ, USA; ³National Astronomical Observatory of Japan, Japan

N02-27 Performance of Position Sensitive Scintillator Detectors When Read-Out with a Low Noise Photodevice

C. Labanti¹, M. Marisaldi¹, F. Fuschino¹, M. Galli², B. Negri³, F. Perotti¹, H. Soltan⁴

¹INAF, Italy; ²ENEA, Italy; ³ASI, Italy; ⁴PN-Sensor, Germany

N02-29 Array of X and Gamma Ray Scintillator Detector for Space Gamma Ray Telescope Application

C. Labanti¹, M. Marisaldi¹, F. Fuschino¹, P. Bastia², B. Negri³, F. Perotti¹, H. Soltan⁴

¹INAF, Italy; ²Thales Alenia Space, Italy; ³ASI, Italy; ⁴PN Sensor, Germany

N02-31 A Simple Super-Resolution Algorithm Based on Cross Correlation for Sparsely Sampled Pulse Waveforms

T. Yuasa¹, K. Nakazawa¹, K. Makishima^{1,2}, H. Odaka³, R. Sato³, M. Kokubun³, T. Takashima³, T. Takahashi³, M. Nomachi⁴, K. Mori⁵

¹The University of Tokyo, Japan; ²The Institute of Physical and Chemical Research (RIKEN), Japan; ³Institute of Space and Astronautical Science (ISAS), Japan; ⁴Osaka University, Japan; ⁵Clear Pulse, Japan

N02-33 The Mini-Calorimeter Onboard AGILE: 18 Months in Orbit

M. Marisaldi¹, C. Labanti¹, F. Fuschino¹, M. Galli², A. Argan¹, A. Bulgarelli¹, G. Di Cocco¹, F. Gianotti¹, M. Tavani¹, M. Trifoglio¹, A. Trois¹

¹INAF-IASF, Italy; ²ENEA, Italy

N02-35 The PoGOLite Star Tracker System

C. Marini Bettolo, KTH, Sweden

On behalf of the PoGOLite collaboration

N02-37 A New Analog Sum Trigger Provides a Lower Trigger Threshold for the MAGIC Cherenkov Telescope: Concept and Realization

M. A. Shayduk¹, M. Lopes-Moya², A. N. Otte³, M. Rissi¹, T. Schweizer¹

¹Max-Planck-Institute fuer Physik, Germany; ²INFN, Italy; ³ETH, Switzerland

N02-39 On Ground Calibration of the AGILE Gamma-Ray Imager Detector and validation of the AGILE MC

P. W. Cattaneo, INFN Pavia, Italy

On behalf of the AGILE team

N02-41 The AGILE Data Handling in-Flight Performance

A. Argan, M. Tavani, A. Trois, M. Feroci, C. Labanti, F. Perotti, Istituto Nazionale di Astrofisica, Italy; M. Prest, Università dell'Insubria, Italy

N02-43 Performance of BGO Crystals for PoGOLite Gamma Ray Polarimeter

W. Klamra, Royal Institute of Technology, Sweden

On behalf of the PoGO collaboration

N02-45 The X-Ray Telescope of the CAST Experiment

M. Kuster^{1,2}, H. Bräuninger², S. Cebrian³, M. Davenport⁴, C. Eleftheriadis⁵, J. Englhauser^{2,6}, H. Fischer⁷, J. Franz⁷, P. Friedrich², R. Hartmann^{8,9}, F. H. Heinsius^{7,6}, D. H. H. Hoffmann¹⁰, G. Hoffmeister¹, J. N. Joux⁴, D. Kang⁷, K. Königsmann⁷, R. Kotthaus¹¹, T. Papaevangelou⁴, C. Lasseur⁴, A. Lippitsch⁴, G. Lutz⁹, J. Morales³, A. Nordt^{1,2}, A. Rodriguez³, L. Strüder^{9,2}, J. Vogel⁷, K. Zioutas^{4,12}

¹Technische Universität Darmstadt, Germany; ²Max-Planck-Institut für extraterrestrische Physik, Germany; ³Laboratorio de Física Nuclear y Altas Energías, Spain; ⁴European Organization for Nuclear Research (CERN), Switzerland; ⁵Aristotle University of Thessaloniki, Greece; ⁶Ruhr-Universität Bochum, Germany; ⁷Albert-Ludwigs-Universität Freiburg, Germany; ⁸PN Sensor GmbH, Germany; ⁹MPI Halbleiterlabor, Germany; ¹⁰Gesellschaft für Schwerionenforschung, Germany; ¹¹Max-Planck-Institut für Physik, Germany; ¹²University of Patras, Greece

N02-47 A Burst Chasing X-Ray Polarimeter

J. E. Hill^{1,2}, S. Barthelmy³, J. K. Black⁴, P. Deines-Jones³, K. Jahoda³, T. Sakamoto², P. Kaaret⁵, Z. R. Prieskorn⁵, M. L. McConnell⁶, P. F. Bloser⁶, J. R. Macri⁶, J. S. Legere⁶, J. M. Ryan⁶, B. R. Smith⁷, B. Zhang⁸

¹Universities Space Research Center, USA; ²CRESST and NASA GSFC, USA; ³NASA Goddard Space Flight Center, USA; ⁴Rock Creek Scientific, USA; ⁵University of Iowa, USA; ⁶University of New Hampshire, USA; ⁷United States Naval Academy, USA; ⁸University of Nevada, USA

N02-49 Horizontal Attenuation Monitor of the Pierre Auger Cosmic Ray Observatory

J. M. Chirinos, Michigan Technological University, USA

On behalf of the Pierre Auger Collaboration

N02-51 Front-End ASIC for the Focal Surface Detector of JEM-EUSO Mission

F. Kajino, T. Yamamoto, Konan University, Japan; H. Ikeda, Japan Aerospace Exploration Agency, Japan; Y. Kawasaki, RIKEN, Japan

N02-53 Particle and Photon Imaging Detector with 4-D Output: Absolute Time-of-Hit, X-Y Position, and Pulse Height: Application in Space Science Instruments

N. Paschalidis

The Johns Hopkins University Applied Physics Laboratory, USA

N02-55 Performance of Multi-Channel Charge Amplifier-Discriminator-Counter IC with Microchannel Plate Detectors

V. B. Cajipe¹, J. H. Clemmons², M. P. Zakrzewski², M. Clajus¹, S. Hayakawa¹, T. O. Tumer¹

¹NOVA R&D, Inc., USA; ²The Aerospace Corporation, USA

N02-57 In-Flight Performance of the PAMELA Anticoincidence System

P. Hofverberg, KTH, Sweden

On behalf of the PAMELA Collaboration

Computing and Software for Experiments

N02-59 A Fuzzy-Based Digital Pulse Shape Discrimination in Triple-Layer Phoswich Detectors

S. Yousefi, L. Lucchese, Oregon State University, USA

N02-61 Geant4 Simulation of High Energy Electromagnetic Effects for LHC

V. N. Ivanchenko, CERN, Switzerland

On behalf of the Geant4 Electromagnetic Standard Group

N02-63 The Status of the Simulation Project for the ATLAS Experiment in 2008

A. Rimoldi, *Universita' di Pavia & INFN, Italy*
On behalf of the ATLAS Simulation group

N02-65 The CMS Tracker Detector Control System

L. Masetti¹, F. Hartmann^{1,2}, S. Y. Shah¹, R. Stringer^{1,3}

¹CERN, Switzerland; ²University of Karlsruhe, Germany; ³University of Riverside, USA

N02-67 A Software Method to Primary Estimating of Tumor/non-Tumor Radiopharmaceutical Uptake, Based on Scintigraphic Imaging to Avoid Killing the Animal Models

M. Salouti¹, H. Rajabi², H. Babaei³, M. J. Rasaei²

¹Islmic Azad University, Zanzan Branch, Iran; ²Tarbiat Modares University, Iran; ³Atomic Energy Organization of Iran, Iran

N02-69 Hadrontherapy and Nuclear Processes : Comparison Between Monte Carlo Simulations and Measurements

M.-C. Ricol

Institut de physique nucléaire de Lyon - Université Claude Bernard Lyon 1, France

N02-71 A Software Solution for the Control, Acquisition, and Storage of CAPTAN Network Topologies

R. A. Rivera, M. Turqueti, A. Prosser, S. Kwan
Fermilab, USA

N02-73 FairRoot : the FAIR Simulation and Analysis Framework

M. Al-Turany, D. Bertini, F. Uhlig, *GSI, Germany*

N02-75 Towards the Application of Model Based Design

Methodology for Reliable Control Systems on HEP Experiments

B. Barroca¹, V. Amaral¹, M. Risoldi², M. Caprini³, D. Buchs²,

J. Araújo¹, A. Moreira¹

¹FCT Universidade Nova de Lisboa, Portugal; ²Université de Genève, Switzerland; ³Institute for Physics and Nuclear Engineering, Romania

N02-77 An Extensible Solution to Grid Resource Usage Service

X. Chen, A. Khan, *Brunel University, UK*

N02-79 CRAB: a CMS Application for Distributed Analysis

G. Codispoti¹, D. Spiga^{2,3}, A. Fanfani¹, M. Cinquilli⁴, F. Fanzago^{3,5},

S. Lacaparra⁶, F. Farina^{3,7}, E. Vaandering⁸, V. Miccio³

¹INFN Bologna and Università di Bologna, Italy; ²INFN Perugia and Università di Perugia, Italy; ³CERN, Switzerland; ⁴INFN Perugia, Italy;

⁵CNAF, Italy; ⁶INFN Legnaro, Italy; ⁷INFN Milano Bicocca, Italy;

⁸FNAL, USA

N02-81 Optimization of Light Collection in SiPM Detectors for Scintillating Fibers Readout

S. M. Ansermet-Tentindo

Ecole Polytechnique Federale de Lausanne, Switzerland

N02-83 A Proposal to Dynamically Manage Virtual Environments in Heterogeneous Batch Systems.

L. Servoli¹, M. Mariotti², R. Cefalà^{1,2}

¹INFN Perugia, Italy; ²Università di Perugia, Italy

N02-85 Assessment of Space Radiation Exposure for Future Space Exploration Missions: Moon and Beyond

H. Hussein, R. Gaza, T. Sheller, *Lockheed Martin, USA*

N02-87 An Algorithm for Automatic Counting of Electrochemically Etched Tracks in Compact Disks Used for Retrospective Measurements of Radon-222

K. K. Mitev, Y. Y. Madzhunkov, G. V. Gerganov, I. S. Dimitrova, S. B. Georgiev, D. S. Pressyanov
Sofia University, Bulgaria

N02-89 Geant4 Physics Lists: Improvements and Status

A. Ribon, J. Apostolakis, G. Folger, V. Grichine, A. Howard, V. Ivanchenko, M. Kossov, V. Uzhinskiy, *CERN, Switzerland*; D. Wright, *SLAC, USA*

N02-91 Recent Developments of Electronic Stopping Models for Heavy Ions in Geant4

A. Lechner^{1,2}, M. G. Pia³

¹CERN, Switzerland; ²Vienna University of Technology, Austria; ³INFN, Italy

N02-93 Comparison of Experimental and Simulated Energy Deposition Data Using New Geant4 Heavy Ion Stopping Models

A. Lechner^{1,2}, ¹CERN, Switzerland; ²Vienna University of Technology, Austria

On behalf of the Legnaro-Genova-Cern development team

N02-95 The Automatic Implementation of Software Implemented Hardware Fault Tolerance Algorithms as a Radiation-Induced Soft Errors Mitigation Technique

A. Piotrowski, D. Makowski, G. Jablonski, S. Tarnowski, A. Napieralski

Technical University of Lodz, Poland

N02-97 Performance Improvements of Preequilibrium and Evaporation Models in Geant4

J. M. Quesada Molina, M. A. Cortés Giraldo

University of Sevilla, Spain

N02-99 Use of SAM-SRM Interface for Movement of Monte Carlo Data

M. K. Jha, *INFN Bologna, Italy*; G. Compostella, A. Cumo,

D. Lucchesi, S. Pagan, *INFN Padova, Italy*; D. Benjamin, *Duke University, USA*; R. Illingworth, *Fermi National Laboratory, USA*

N02-101 Individual Particle Reconstruction

N. Graf, *Stanford Linear Accelerator Center (SLAC), USA*

N02-103 Performance Evaluation of the Adaptive Response Modeling Algorithm

W. R. Russ, I. D. Hau, *Canberra Industries, Inc., USA*

N02-105 Simulation of HEX ACS Response Using Geant4

M. Sudhakar^{1,2}, P. Sreekumar¹

¹ISRO Satellite Center, India; ²University of Calicut, India

N02-107 A High Speed Data Acquisition Collector for Merging and Sorting of Data

C. C. W. Robson, C. Bohm, *Stockholms universitet, Sweden*

N02-109 NA62 Geant4 Simulation and Monte Carlo Framework

P. Valente, *INFN Roma, Italy*

On behalf of the NA62 Collaboration

N02-111 Monte Carlo Simulations of a Brachytherapy HDR Source with Geant4

S. S. O. F. Rodrigues¹, P. P. Q. Filho¹, M. Begalli², D. S. Santos¹

¹Instituto de Radioproteção e Dosimetria, Brazil; ²Universidade do Estado do Rio de Janeiro, Brazil

N02-113 The Evaluation of Dose in MIRD-5 Type Human Phantom with Geant4

R. S. Silva¹, P. P. Q. Filho¹, M. Begalli², D. S. Santos¹

¹*Instituto de Radioproteção e Dosimetria, Brazil;* ²*Universidade do Estado do Rio de Janeiro, Brazil*

N02-115 Muon Track Reconstruction in the ATLAS Experiment

S. Y. Willocq, *University of Massachusetts, Amherst, USA*

On behalf of the ATLAS Collaboration

N02-117 A Recursive Neural Network for Track Reconstruction in LHCb Muon System

G. Passaleva, *Istituto Nazionale di Fisica Nucleare - Florence, Italy*

On behalf of the LHCb Muon Group

N02-119 GAMOS/Geant4 Validation in a Siemens PRIMUS Linac

M. A. Cortes Giraldo¹, P. Arce Dubois², M. I. Gallardo¹,

J. M. Quesada¹, A. Leal¹, J. Salguero¹

¹*University of Sevilla, Spain;* ²*CIEMAT, Spain*

N02-121 Implementing Linux-Enabled Condor in Windows Computer Labs

H. Severini, C. Franklin, J. Alexander, H. Neeman

University of Oklahoma, USA

N02-123 Geant4 backscattering simulation accuracy in the energy range up to 1 MeV

M. G. Pia¹, A. Lechner², M. Sudhakar¹

¹*INFN Genova, Italy;* ²*Tech. Univ. Vienna, Austria*

N02-125 Analysis of Geant4 simulation of proton depth dose profiles for radiotherapy applications

M. G. Pia, *INFN Genova, Italy;* A. Lechner, *Tech. Univ. Vienna, Austria*

N02-127 Parallel Geometries in Geant4: Foundation and Recent Enhancements

J. Apostolakis¹, M. Asai², G. Cosmo¹, A. Howard¹, V. Ivantchenko³, M. Verderi⁴

¹*CERN, Switzerland;* ²*SLAC, USA;* ³*MSU, Russia;* ⁴*IN2P3, France*

N02-129 Simulation of the Forward Proton Detector from D0 Experiment Using Geant4

M. Begalli, S. Fonseca de Souza

State University of Rio de Janeiro (UERJ), Brazil

N02-131 The Monitoring Data Archiving Service for ATLAS

F. Zema, *CERN, Switzerland*

N02-133 Cybersar: a New Computational Infrastructure for Research in Sardinia

A. Masoni, D. Mura, *INFN, Italy;* P. Anedda, C. Guidi, G. Zanetti, *CRS4, Center for Advanced Studies, Research and Development in Sardinia, Italy;* N. D'Amico, I. Porceddu, *INAF, Italy;* A. Bosin, *Universita' degli Studi di Cagliari, Italy*

N02-135 Scalable Krylov-Subspace Positron Imaging

T. Cao-Huu, G. Brownell, D. Chesler, G. Lachiver, C. Burnham, A.-L. Brownell

Massachusetts General Hospital, USA

Gaseous Detectors

N02-137 Gamma Ray Detection with a 3 X 3 Virtual Frisch Grid Array

R. A. Austin, *Constellation Technology Corporation, USA*

N02-139 Measurement of Streamer and Avalanche Size by Using RPC with Submilli-Strips

D. Miura¹, Y. Hoshi¹, Y. Kikuchi¹, S. Narita², K. Neichi¹, A. Yamaguchi³

¹*Tohoku Gakuin University, Japan;* ²*Iwate University, Japan;* ³*Tohoku University, Japan*

N02-141 Performance of Argon-xenon Mixtures in a Gas Proportional Scintillation Counter for the 0.1-10 keV X-ray Region

S. J. C. do Carmo, F. I. G. M. Borges, C. A. N. Conde

Universidade de Coimbra, Portugal

N02-143 Quenched and Non-Quenched Ar-Xe Penning Mixtures as Detection Media for a Gridded-Microstrip Gas Chamber X-Ray Detector

L. P. M. M. Carita, C. A. N. Conde, F. P. Santos

GIAN - Atomic and Nuclear Instrumentation Group, Portugal

N02-145 GEM-MIGAS Electron Multiplier Operation in Argon-Methane Gas Mixtures

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N02-147 Absolute Numbers of Excited Atoms and Ion Pairs Produced by Alpha Particles in High-Pressure Xenon Gas

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N02-149 Study on the Performance of High Rating MRPC

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N02-151 Studies on RPC Position Resolution with Different Surface Resistivity of High Voltage Provider

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N02-153 Performance of MPGDs with Portable Readout Electronics

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N02-155 Study on the Space Dispersion of Induced Charge of Resistive Plate Chamber

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N02-157 Development of High Counting Rate Measurement System for He-3 Position Sensitive Detector

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N02-159 Analytical Evaluation of Incidence Angle Correction in He Mixture Large Planar Drift Chambers

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N02-161 Improved Glass Resistive Plates Chambers for Digital HAdronic CALorimeter

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N02-163 Gas Gain of LHCb MWPC as a Function of Temperature and Pressure

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N02-165 Filtering Techniques for the Purification of the LHC Resistive Plate Chambers' Gas Mixture

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N02-167 Particle Identification and Long-Term Performance of the NA49 TPC System

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N02-169 Results of Studies with a Small TPC Prototype Readout with GEMs and TimePix

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N02-171 X-Ray Polarimetric Measurements in Xenon Gas Filled Detectors

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N02-173 The UV Laser Calibration System of the ALICE Time Projection Chamber

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N02-175 Low Energy Elastic Collision Cross Sections and Monte Carlo Simulation of the Transport of Ne⁺ Ions in Gaseous Neon under Weak Electric Fields

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N02-177 Ageing Phenomena in the Straw Tube Tracker (Outer Tracker) of LHCb

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N02-179 Performance of a Compact Multi-Purpose Mixed Gas Handling System for Gaseous Detectors

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N02-181 Development of a Two-Dimensional Position Sensitive MSGC with New Multi-Layering Technique for Neutron Application

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N02-183 A Prototype Study of the TPC for the International Linear Collider Experiment

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N02-185 Monte Carlo Photoelectron Transmission Efficiency in CO₂ and Ar-CO₂ Mixtures

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N02-187 Thick-GEM Based Trigger Detector Development for ALICE

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N02-189 Cluster Counting Drift Chambers for Collider Experiments

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N02-191 Gas VUV Photosensors Operating Face-to-Face at HpXe

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Nuclear Measurements and Monitoring Techniques

N02-193 On-Line Evaluation of Spatial Dose-Distribution by Using a 15m-Long Plastic Scintillation-Fiber Detector

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N02-195 Measurement of Blast Furnace Slag Concentration in Concrete Using PGNAA Technique

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N02-197 Development of the Stacked CdTe Gamma-ray Detector Module with High Sensitivity and High Energy Resolution

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N02-199 Sodium Fast Reactors Power Monitoring Using High Resolution and High Count Rate Gamma Spectrometry

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N02-201 Assessment of Indoor Gamma Radiation and Related Annual Effective Dose in Northwest of Iran

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N02-203 Removal of Cerenkov Light in a Fiber-Optic Dosimeter Using Optical Filters and a Charge-Coupled Device

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N02-205 Etching Techniques for CR-39 Used in Neutron Personnel Monitoring in India.

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N02-207 Development of New Version of RayMoS Gamma-Camera with Coded Mask

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N02-209 An Unattended Gamma Monitor for the Determination of Snow Water Equivalent (SWE) Using the Natural Ground Gamma Radiation

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N02-211 A Novel Method of Passive Measurement of Radiation Doses at Ultra-High Dose Range

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N02-213 Respiratory Motion Correction Utilizing Geometric Sensitivity in 3D PET

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N02-215 Dense Plasma Focus Devices for Neutron Resonance Spectroscopy using MCNPX

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N02-217 Search of New Low-Noise Patterns of Coded Apertures with Arbitrary Rank and Transparency

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N02-219 Thermoluminescent Reader with CCD Camera in Individual Dosimetry

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N02-221 CdTe Linear Arrays with Integrated Electronics for Passive Gamma Emission Tomography System

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N02-223 Design of an Electronic System with Simultaneous Registering of Pulse Amplitude and Event Time Applied to the 4pi-Beta-Gamma Coincidence Method

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N02-225 Photoactivation Studies on Astrophysically Relevant Nuclei: Measuring Techniques for Activated Samples

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N02-227 Prediction of Radiation Levels at Critical Locations of the Future European XFEL Using the Radiation Measurement Data from FLASH

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N02-229 Application of Radiochromic Films in Radiation Measurement Studies at High Energy Electron Linac Driving the Free Electron Laser in Hamburg (FLASH)

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N02-231 Measurement of the Gamma-Ray Probability per Decay of Re-186

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N02-233 Real-Time Radiation Monitoring System for FLASH

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N02-235 Distributed Gamma and Neutron Radiation Monitoring System for XFEL

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N02-237 Influence of Radon Radionuclide for Ultra Low Background Gamma Spectrometer in Underground Research Tunnel

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N02-239 Analysis of Aerosol Particles by Detection of 2D Image and Atomic Emission of Laser-Induced Plasma

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Nuclear Physics Instrumentation

N02-241 PSA Techniques to Identify Light Charged Particles in Lanthanum Halide Scintillators

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N02-243 Digital Signal Processing for Monolithic Silicon Detector Telescopes

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N02-245 Prototype Development of Silicon Array Sensor for X-Ray Detector

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N02-247 Precision High Voltage Monitoring for the KATRIN Experiment

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N02-249 Composite Germanium Detector with Electromechanical Cooling

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N02-251 A New Detector System for the Measurement of Double Differential Cross Sections of Proton-Actinide Reactions in the 600-MeV Region

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N02-253 Contactless 2-Dim Laser Sensor for 3-Dim Wire Position and Tension

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Instrumentation for Radiation Applications in Medicine

N02-255 The Investigation of CVD Films for Clinical Radiation Detector

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N02-257 X-Ray Fluorescence Study with Pixelated CZT Radiation Sensors

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N02-259 Scintillating Optical Fibers Dosimetry with Photodiode Readout

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N02-261 Study of Mass Attenuation Co-Efficient and Effective Atomic Number in Lead Compounds Using Gamma-Ray Interaction

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N02-263 Linear Accelerator Photon Beam Interaction with the Humanoid Phantoms

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N02-265 Temperature Dependence and Compensation in MOS Dosimeters Using Bias Controlled Cycled Measurement.

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N02-267 Development and Fabrication of Cylindrical Silicon-on-Insulator Microdosimeter Arrays

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N02-269 Two Dimensional Dosimetry for Radiotherapy Using 2-D Thermoluminescence Foils

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N02-271 Measurements of Sr-90 Content in Teeth of Techa River Residents

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N02-273 Performance Comparison of Position Sensitive Photomultipliers Readout Electronics

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N02-275 Proof of Concept for Use of Quantum Dots as Novel Dosimeters

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N02-277 Development of a Line Artifact Analyzer for the Proper Selection of Antiscatter Grids in the Use of Digital X-Ray Imaging

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N02-279 Integrated Readout Electronics for Multi Anode PSPMT

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N02-281 Development of a Real-Time Gamma Dosimeter of High Sensitivity

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N02-283 The RAPSODI Project: SiPM Development for Applied Research in Radiation Protection

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N02-285 Optimisation of Beam Scattering System for IFJ PAN Proton Radiotherapy Facility by Monte Carlo Simulations

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N02-287 Compton Based Imaging System for Hadron Therapy Monitoring

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N02-289 A Large Dynamic Range Charge Measurement ASIC Family for Beam Monitoring in Radiotherapy Applications

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N02-291 Use of a Silicon-PIN Photodiode Detector for Rapid Non-Destructive X-Ray Fluorescence Elemental Analysis of Plasma in Nursing Home Patients

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N02-293 Dosimetric Properties of the Proton Eye Therapy Beam at the Institute of Nuclear Physics PAN in Kraków, Poland.

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N02-295 Multi-Printed Inkjet Phantoms for Radionuclide Molecular Imaging

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N02-297 The Next Step in Cylindrical Silicon-on-Insulator Microdosimetry: Charge Collection Results

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N02-299 Investigation of Scatter and Septal Penetration Using GATE Simulation in I-131 Imaging

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N02-301 Radiation Exposure at the Proton Eye Therapy Facility at IFJ in Kraków

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N02-303 Direct Profile Measurement of ¹¹C Positron Activation of Carbon-Rich Materials by Therapeutic Proton Beam

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N02-305 First Evaluation Results of PESIC, an Integrated Front-End for PET Applications

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N02-307 IBIC Characterisation of Novel Silicon Detectors for Imaging Applications

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N02-309 Configuration Interaction Calculation of Positron Annihilation Radiation on Small Hydride Molecules

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N02-311 Low Noise CMOS Active Pixel Sensor for Digital Radiography

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N02-313 Temperature Effect on a Phototransistor Used as X-Ray Beam Detector for Diagnostic Standard Radiation Qualities

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N02-315 Combination of Stopping and Scattering for Efficient Muon Tomography

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N02-317 Study of the Influence of Energy Resolution on Image Reconstruction Quality in Emission Imaging Based on Compton Scattered Radiation

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New Solid State Detectors

N02-319 Radiophotoluminescence in Ag-Activated Phosphate Glass

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N02-321 Results of an On Pixel Sparsification Architecture in a MAPS Test Chip in STM 130nm Technology

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N02-323 DEPFET Based Detectors for Astronomy and Synchrotron Radiation Experiments

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N02-325 One Versus Three Stages Procedure for Growing Bismuth Tri-Iodide Polycrystalline Films

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N02-327 Superconducting Ultra-High Energy Resolution Gamma Detector Arrays with Frequency Domain Multiplexed Readout

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N02-329 Production of Fine Pitch and Low Material Readout Bus for Silicon Pixel Detector in PHENIX Vertex Tracker

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N02-331 Development of Monolithic Active Pixel Sensor in SOI Technology Fabricated on the Wafer with Thick Device Layer

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N02-333 First Results from 3D Detector Prototypes at SINTEF MiNaLab

T.-E. Hansen¹, A. Kok¹, C. Da Via², T. A. Hansen¹, J. Hasi², C. Kenney³, N. Lietær¹, M. Mielnik¹, S. Parker⁴, P. Storaas¹

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N02-335 The Low Radioactivity Electrical Connecting Link of the CUORE Experiment

G. Pessina, C. Arnaboldi, S. Pirro, C. Brofferio
INFN Istituto Nazionale di Fisica Nucleare, Italy

N02-337 Development and Test of Micro-Cables for Thin Silicon Detector Modules in a Prostate Probe.

P. M. Weilhammer, CERN, Switzerland

On behalf of the CIMA COMPTON PET

N02-339 High Rate Pulse Processing Algorithms for Microcalorimeters

D. Breus, W. Hennig, K. Sabourov, H. Tan, W. K. Warburton, XIA, LLC, USA; W. B. Doriese, J. N. Ullom, National Institute of Standards and Technology, USA; M. K. Bacrania, A. S. Hoover, M. W. Rabin, Los Alamos National Laboratory, USA

Scintillators and Scintillation Detectors

N02-341 Radiation Damage Effects of Li6Gd(BO3)3 and Li6Gd(BO3)3:Ce Single Crystals under Electron, γ-Ray and Fast Neutron

J. F. Chen, S. H. Wang

Shanghai institute of ceramics, Chinese Academy of Sciences, China

N02-343 Study of Surface Roughness of CsI:Tl Crystals Treated by Various Abrasives

I. V. Kilimchuk, Institute of Magnetism NAS of Ukraine, Ukraine; V. A. Tarasov, Institute for Scintillation Materials NAS of Ukraine, Ukraine; J. M. Alameda, Universidad de Oviedo, Spain

N02-345 A Large Area Silicon Drift Detector (SDD) Coupled with a Lanthanum Bromide (LaBr3) Scintillator for γ-Ray Detection

S. Barkan¹, L. A. Frank², J. S. Iwanczyk³, V. D. Saveliev¹, C. R. Tull¹, L. Feng¹, M. Takahashi¹, E. V. Damron¹

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N02-347 A Comparative Study of Undoped NaI Crystals with Different Purity

M. Moszynski, W. Czarnacki, A. Syntfeld-Kazuch, A. Nassalski, T. Szczesniak, L. Swiderski, Soltan Institute for Nuclear Studies, Poland; F. Kniest, Saint-Gobain Crystals, The Netherlands; A. Ilits, Saint-Gobain Crystals, France

N02-349 Neutron Scintillator Using Ga-Doped ZnO Phosphor with High Detection Efficiency

S. Koyama, H. Nanto, A. Kinoshita, A. Fujiwara, Y. Takei, Kanazawa Institute of Technology, Japan; M. Katagiri, Japan Atomic Energy Research Institute, Japan

N02-351 Storage Characteristics of SrBPO5:Eu2+ Phosphors by Fast Neutron Irradiation

K. Sakasai, Y. Iwamoto, K. Soyama
Japan Atomic Energy Agency, Japan

N02-353 Determination of the Absolute Light Yields of LuYAP and LYSO

M. Kronberger, E. Auffray, P. Lecoq
Crystal Clear Collaboration, CERN, Switzerland

N02-355 Radiation Damage in CWO Scintillation Crystals with Different Defects

I. A. Tupitsyna, B. V. Grinyov, K. A. Katrunov, L. L. Nagornaya, G. M. Onishchenko
Institute for scintillation materials, Ukraine

N02-357 Measurement of Light Yield of Ce3+ Perturbed Emission of CaF2 Scintillator Coupled with Avalanche Photodiode

T. Yanagida, K. J. Kim, K. Kamada, K. Aoki, N. Kawaguchi, K. Fukuda, A. Yoshikawa
Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan

N02-359 Basic Properties of Ceramic Pr:LuAG Scintillator

T. Yanagida, A. Yoshikawa, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan; A. Ikese, World Labo Co., Ltd., Japan; K. Kamada, Furukawa Co., Ltd., Japan

N02-361 Crystal Growth and Scintillation Property of Nd3+-Doped LaF3 Single Crystal

K. Fukuda, N. Kawaguchi, T. Suyama, Tokuyama corporation, Japan; T. Yanagida, A. Yoshikawa, Tohoku University, Japan; M. Nikl, The Academy of Sciences of the Czech Republic, Czech Republic

N02-363 Neutron Responses of Eu2+ Activated LiCaAlF6 Scintillator

N. Kawaguchi^{1,2}, T. Yanagida², N. Andrey², K. J. Kim², K. Fukuda^{1,2}, A. Yoshikawa², M. Miyake², M. Baba²

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N02-365 Charged-particle-induced Luminescence of Sr4Al14O25: Eu2+, Dy3+

K. Toh, K. Sakasai, T. Nakamura, K. Soyama, Japan Atomic Energy Agency, Japan; S. Nagata, B. Tsuchiya, T. Shikama, Tohoku university, Japan

N02-367 Low-Power Wide-Dynamic-Range Readout System of a 64-Channel Multi-Anode PMT for a Scintillation Camera

H. Kubo¹, K. Hattori¹, C. Ida¹, S. Iwaki¹, S. Kabuki¹, S. Kubo², S. Kurosawa¹, K. Miuchi¹, H. Nishimura¹, Y. Okada¹, A. Takada³, M. Takahashi¹, T. Tanimori¹, K. Tsuchiya¹, K. Ueno¹

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N02-369 Recent Advances in the Development of Large-Area Plastic Gamma-Ray Spectrometers

C. J. Burt, *University of Southampton, UK*; D. Ramsden, *Symetrica Ltd, UK*

N02-371 Construction and Performance of a Scintillating Fiber Detector

M. Ziemicki¹, A. Nawrot², K. Klimaszewski², P. Żabowski-Żychowicz², M. Dziewiecki¹, R. Kurjata¹

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N02-373 Progress Towards the Development of Practical Scintillation Counters Based on SiPM Devices

M. A. Foster, *University of Southampton, UK*; D. Ramsden, *Symetrica Ltd, UK*

N02-375 Scintillation Properties of Praseodymium and Cerium Doped LuAG Scintillator Compared to Cerium Doped LSO

L. Swiderski¹, M. Moszynski¹, A. Nassalski¹, A. Syntfeld-Kazuch¹, T. Szczesniak¹, K. Kamada², T. Yanagida³, K. Tsutsumi², Y. Usuki², A. Yoshikawa³

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N02-377 Characteristics of CsI(Tl) Scintillating Detector Based on Solid State Photo Multiplier

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N02-379 Design Studies for an All-Scintillator Compton Telescope

A. MacLeod, D. Hanna, *McGill University, Canada*; P. Saull, *National Research Council, Canada*; L. Sinclair, *Natural Resources Canada, Canada*

N02-381 Novel Scintillators with Neutron/Gamma Discrimination, Cs(NH₄)MYX₆:Ce³⁺ (M = Li, Na; X = F, Cl)

E. V. Van Loef¹, C. M. Wilson¹, W. W. Moses², K. S. Shah¹

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N02-383 Study of a LaBr₃/LaCl₃ Phoswich Detector

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Inst. Estructura de la Materia, CSIC, Spain

N02-385 New CdLa₂(WO₄)₄single Crystal: Growth and Properties

A. N. Shekhovtsov, V. N. Baumer, Y. N. Gorobets, M. B. Kosmyna, B. P. Nazarenko, V. M. Puzikov, *Institute for Single Crystals, NAS of Ukraine, Ukraine*; O. V. Zelenskaya, *Institute for Scintillation Materials, NAS of Ukraine, Ukraine*

N02-387 Main Parameters and Applications of ZnSe Scintillators

O. I. Lalajants, B. V. Grynyov, V. D. Ryzhikov, S. M. Galkin, Y. F. Voronkin, E. K. Lisetskaya, I. A. Rybalka
Institute for Scintillation Materials of NAS of Ukraine, Ukraine

N02-389 Trial Application of Ce:Gd₂Si₂O₇ Thick Film Scintillator for Neutron Imaging

S. Kawamura¹, J. H. Kaneko¹, S. Sato², J. Haruna¹, S. Saeki¹, M. Higuchi¹, K. Kurashige³, S. Ueda³, H. Ishibashi³, S. Nishiyama¹, F. Fujita¹, A. Homma¹, M. Furusaka¹, Y. Kiyonagi¹

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N02-391 Upgrade of Position Sensitive Detector System

R. Engels, U. Clemens, W. Erven, H. Frielinghaus, M. Heiderich, G. Kemmerling, H.-W. Löwenich, H. Nöldgen, V. Ossovy, V. Pipich, A. Radulescu, D. Schwahn, J. Schelten
Forschungszentrum Juelich GmbH, Germany

N02-393 Thin YAG:Ce and LuAG:Ce Single Crystal Imaging Plates Used for High Spatial Resolution in X-Ray Imaging Systems

J. Tous¹, M. Horváth², K. Blažek¹, L. Pina², B. Sopko³

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N02-395 Crystal Growth, Optical Properties and Neutron Responses of Ce³⁺ doped LiCaAlF₆ Single Crystal

A. Yoshikawa, T. Yanagida, K. J. Kim, *IMRAM, Tohoku University, Japan*; N. Kawaguchi, S. Ishizu, K. Fukuda, *Tokuyama Corporation, Japan*; M. Nikl, *Institute of Physics, The Academy of Sciences of the Czech Republic, Czech Republic*; M. Miyake, M. Baba, *Cyclotron and Radioisotope Center, Tohoku University, Japan*

N02-397 A Systematic Study on Polydimethyl-Diphenylsiloxane Based Organic Scintillators with High Light Yield and Radiation Resistance

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N02-399 Impact of Higher Ce Concentration and Co-Doping on Scintillation Properties of Lu₂xGd₂(1-x)SiO₅:Ce (LGSO, X=0.9)

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N02-401 High Detection Efficiency ZnS Scintillators for a Fibre-Coded Linear Neutron Detector for Thermal Neutron Scattering Instruments

T. Nakamura¹, E. M. Schooneveld², N. J. Rhodes², M. Katagiri¹, N. Tsusui³, K. Toh¹, K. Sakasai¹, K. Soyama¹

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N02-403 Test of a 3"x3" LaCl₃ Crystal for Total Absorption Measurements

C. Guerrero, T. Martínez, D. Cano-Ott, *CIEMAT, Spain*

N02-405 Proton-Recoil Detectors for Time-of-Flight Measurements of Neutrons with Kinetic Energies from Some Tens of keV to a Few MeV

R. Beyer, E. Grosse, K. Heidel, J. Hutsch, A. R. Junghans, M. Sobiella, A. Wagner, *Forschungszentrum Dresden-Rossendorf, Germany*; R. Nolte, S. Röttger, *Physikalisch-Technische Bundesanstalt, Germany*

N02-407 Transparent LSO Ceramic Scintillator for Gamma-Ray Detection

Y. Wang¹, J. Glodo¹, E. V. Loef¹, W. H. Rhodes², C. Brecher², L. Nguyen¹, A. Lempicki³, W. M. Higgins³, K. S. Shah¹, J. G. Baldoni¹

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N02-409 Fabrication and Comparison of Gd₂O₂S(Tb) and CsI(Tl) Films for X-Ray Imaging Detector Application

B. K. Cha, J.-H. Shin, J. Y. Kim, H. Jeon, J. H. Bae, C.-H. Lee, S. Chang, G. Cho

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N02-411 Growth, Optical Properties and Neutron Responses of Ce³⁺ Doped LiYF₄ Single Crystals

Y. Yokota, T. Yanagida, K. J. Kim, A. Yoshikawa, *Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan*; N. Kawaguchi, S. Ishizu, K. Fukuda, *Tokuyama Corporation, Japan*; M. Nikl, *Institute of Physics, The Academy of Sciences of the Czech Republic, Czech Republic*; M. Miyake, M. Baba, *Cyclotron and Radioisotope Center, Tohoku University, Japan*

N02-413 Characterization of a Nuclear Medicine Gamma Camera as a Gamma Spectrometer for Low Activity Sources

J. C. Engdahl, S. Portscheller, K. Bharwani
Bradley University, USA

N02-415 Scintillation Photodiode Detector Based on CsI:TI Crystal Codoped by NO₂ Ions for Registration of Protons with E < 50 MeV

A. M. Kudin, B. V. Grinyov, B. G. Zaslavsky, Y. A. Borodenko, L. N. Trefilova, *Institute for Scintillation Materials of NAS of Ukraine, Ukraine*; O. V. Dudnik, *Kharkiv National University named V.N. Karasin, Ukraine*; E. Valtonen, T. Eronen, *University of Turku, Finland*; J. Peltonen, J. Lehti, *Aboa Space Research Oy, Finland*; H. Kettunen, A. Virtanen, *University of Jyväskylä, Finland*; J. Huovelin, *University of Helsinki, Finland*

N02-417 A Compton-Scattering Coincidence System for Light Yield Measurements on Aliovalently-Doped CeBr₃

P. B. Ugorowski, M. J. Harrison, C. S. Linnick, S. O. Brinton, D. S. McGregor

Kansas State University, USA

N02-419 Investigation of Eu²⁺ - Doped Barium Silicates as Scintillators

Y. D. Porter-Chapman, E. D. Bourret-Courchesne, M. J. Weber, S. E. Derenzo

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N02-421 Simulating Scintillator Light Collection Using Measured Optical Reflectance

M. Janeczek, W. W. Moses

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N02-423 First Principles Computation Study of Ce Scintillation in YI₃

R. Bouchko, A. Canning, A. Chaudhry, M. Weber, S. Derenzo
Lawrence Berkeley National Lab, USA

N02-425 Central Time-of-Flight Sysstem of the Future CLAS++ Detector at CEBAF@JLAB

W. Kim, J. Jang, A. Kim, V. Kuznetsov, A. Ni
Kyungpook National University, South Korea

N02-427 A Large-Acceptance Lead-Scintillator Time-of-Flight Wall for Neutral and Charged Particles

V. Kuznetsov, *Kyungpook National University, South Korea*
On behalf of the GRAAL Collaboration

N02-429 Reflection of the Xenon Scintillation Light by Polytetrafluoroethylene

C. F. P. Silva^{1,2}, J. P. Cunha^{1,2}, I. Lopes^{1,2}, V. Chepel^{1,2}, A. Pereira²

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Safety Instrumentation / Homeland Security

N02-431 Skyshine Interference with Radiation Detection Systems

R. T. Kouzes, J. H. Ely, W. K. Hensley, K. R. McCormick, E. R. Siciliano

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N02-433 Picture Comparison Binarization Method for Cosmic Ray Muon Radiography

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N02-435 Directional Detection of Fast Neutrons Using a Time Projection Chamber

N. S. Bowden, M. Heffner, A. Bernstein, *Lawrence Livermore National Laboratory, USA*; I. Jovanovic, *Purdue University, USA*; L. Rosenberg, *University of Washington, USA*

N02-437 Pulsed DD Neutron Generator Measurements for HEU Oxide Fuel Pins Using Liquid Scintillators with Pulse Shape Discrimination

S. McConchie, P. Hausladen, J. Mihalcz, *Oak Ridge National Laboratory, USA*; B. Blackburn, *Raytheon, USA*; D. Chichester, *Idaho National Laboratory, USA*

N02-439 A Framework for the Solution of Inverse Radiation Transport Problems

J. K. Mattingly, D. J. Mitchell

Sandia National Laboratories, USA

N02-441 Muon Tomography for the Detection of Nuclear and Radioactive Substances in Containers

M. Benettoni¹, G. Bonomi^{2,3}, P. Calvini^{4,5}, P. Checchia¹, E. Conti¹, F. Gasparini^{1,6}, F. Gonella¹, M. Pegoraro¹, S. Pesente¹, S. Squarcia^{4,5}, S. Vanini^{1,6}, G. Viesti^{1,6}, G. Zumerle^{1,6}

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N02-443 Recognition, Distance Measurement, and Display of the Location of a Radiation Source in 3 Dimensions

N. H. Lee, S. H. Kim, S. H. Park, J. H. Ha, *Korea Atomic Energy Research Institute, South Korea*; G. U. Youk, *ServeBot Co., USA*; Y. H. Youk, *Communication Co. Inc., South Korea*; H. K. Lee, *Agency for Defense Development, South Korea*

N02-445 A Study on Dual Energy CT Imaging with Multi-MV X-Rays for Cargo Inspection

X. Duan, L. Zhang, J. Cheng, Z. Chen, Y. Xing

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N02-447 Development of Humanitarian Landmine Detection System by Irradiation of Neutron and Measurement of Neutron and Gamma-Ray

T. Misawa¹, Y. Takahashi², N. Subki², C. H. Pyeon¹, S. Shiroya¹, K. Yoshikawa³, K. Masuda³

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N02-449 X-Ray Tomographic Imaging with a Straight-Line Trajectory Scan: Feasibility Study of Its Application to Security Inspection and Experimental Results
L. Zhang, H. Gao, J. Cheng, Z. Chen, Y. Xing
Tsinghua University, China

N02-451 Performance Expectations for a Tomography System Using Cosmic Ray Muons and Micro Pattern Gas Detectors for the Detection of Nuclear Contraband
M. Hohlmann, P. Ford, K. Gnanvo, J. Helsby, D. Pena, D. Mitra, R. Hoch
Florida Institute of Technology, USA

N02-453 Nuclear Solutions for Development: Combined Devices for Explosives Detection & Humanitarian Demining
F. Mulhauser, G. Mank
International Atomic Energy Agency, Austria

N02-455 Library of Radioisotope Identifier Spectra
C. E. Moss, P. D. Felsher, B. D. Rooney
Los Alamos National Laboratory, USA

N02-457 A Volumetric Object Detection Framework with Dual-Energy CT
W. Bi, Z. Chen, L. Zhang, Y. Xing
Tsinghua University, China

N02-459 Evaluation and Use of Backpack Based Gamma and Neutron Source Search and Categorization Systems
R. Arlt¹, Z. Qu², G. Deng², Z. Xu², M. Mayorov³, M. Schrenk³, E. Bystrov⁴, J. Brutscher⁵, V. Kozhemiakin⁴, H. Shulhovich⁴, A. Birnbaum⁵
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N02-461 Investigations on the Feasibility of Fast Neutron Analysis for the Detection of Buried Explosives
A. A. Faust, J. E. McFee, C. L. Bowman, C. Mosquera, *Defence R&D Canada - Suffield, Canada*; H. R. Andrews, H. Ing, *Bubble Technology Industries, Canada*

N02-463 Low Resource Radionuclide Identification and Dose Rate Linearization Algorithms for a Miniature, Spectral Personal Radiation Detector (SPRD) Based on a CdZnTe Detector
R. Arlt, *Consultant for the International Atomic Energy Agency, Austria*; M. Swoboda, H. Boeck, *Vienna University of Technology, Austria*; M. Schrenk, *International Atomic Energy Agency, Austria*; A. Wolf, *Forschungszentrum Dresden/Rossendorf, Germany*

N02-465 Shielding and Build-up Considerations for Radiation Detection
J. H. Ely, R. T. Kouzes, E. R. Siciliano
Pacific Northwest National Laboratory, USA

N02-467 Compact Inexpensive Gamma Spectrometer Based on Silicon Photomultipliers
E. S. Heckathorne¹, L. A. Tiefer², F. Daghighian³, M. Dahlbom¹
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N02-469 Nuclear Resonance Fluorescence Using Different Photon Sources
G. Warren¹, J. Caggiano¹, M. Ahmmed², W. Bertozzi³, A. Hunt⁴, J. Johnson⁵, J. Jones⁵, S. Korbly³, E. Reedy⁵, H. Seipel³, S. Stave², S. Watson⁵, H. Weller²
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N02-471 Performance of Five-or-More-Pixel Event Sequence Reconstruction for 3-D Semiconductor Gamma-Ray-Imaging Spectrometers
C. L. Thrall, C. G. Wahl, Z. He
University of Michigan, USA

N02-473 Model Based Signal Decomposition for HPGe Double-Sided Strip Detectors
D. H. Chivers, S. G. Prussin, K. Vetter
University of California, USA

N02-475 Time Series Evaluation of Spectroscopic Portal Monitor Data
S. M. Robinson, S. E. Bender, M. L. Woodring
Pacific Northwest National Laboratory, USA

N02-477 Terrestrial Background Reduction in RPM Systems by Direct Internal Shielding
S. M. Robinson, E. D. Ashbaker, J. E. Schweppe
Pacific Northwest National Laboratory, USA

N02-479 Detectors for Harsh Active Interrogation Environments
B. W. Blackburn¹, J. L. Jones², P. A. Hausladen³, J. T. Mihalcz³, C. E. Moss⁴, K. Ianakiev⁴, A. W. Hunt⁵, M. V. Hynes¹, B. A. Harris¹
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N02-481 High-Energy Computed Tomography for Cargo Inspection
J. Bendahan, W. Garms, *GE Homeland Protection, Inc., USA*

N03 Gaseous Detectors I - New Detectors for New Applications
Monday, Oct. 20 16:30-18:30 Hall 2
Session Chairs: **Leszek Ropelewski**, CERN, Switzerland
Fabio Sauli, INFN-Trieste and CERN, Switzerland

N03-1 New Results from MPGD-GridPix Detectors
H. van der Graaf, *NIKHEF, The Netherlands*

N03-2 Collection of Photoelectrons from a CsI Photocathode in Triple GEM Detectors
C. Woody, B. Azmoun, A. Caccavano, *Brookhaven National Lab, USA*; Z. Citron, M. Durham, T. Hemmick, J. Kamin, *Stony Brook University, USA*; M. Rumore, *Worcester Polytechnic Institute, USA*

N03-3 Resistive GEMs with Double Layered Micropattern Electrodes and Their Applications
A. Di Mauro¹, P. Martinengo¹, E. Nappi², R. Oliveira¹, V. Peskov^{1,3}, F. Pietropaolo⁴, P. Picchi⁵
¹CERN, Switzerland; ²INFN Bari, Italy; ³Eole Superior des Mines, France; ⁴INFN Padova, Italy; ⁵INFN Frascati, Italy

N03-4 Construction and Operation of a Double Phase LAr Large Electron Multiplier Time Projection Chamber
A. Badertscher, L. Knecht, M. Laffranchi, A. Marchionni, G. Natterer, P. Otiougova, F. Resnati, A. Rubbia
ETHZ, Switzerland

N03-5 Micropattern Gaseous Photon Detectors for Cherenkov Imaging Counters
S. Dalla Torre, *INFN Trieste, Italy*
On behalf of the Alessandria-CERN-freiburg-Liberez-Prague-Torino-Trieste Collaboration

N03-6 Construction and Test of a Long-Strip MRPC (LMRPC)
Y. Sun, C. Li, B. Gui, H. Chen, M. Shao
University of Science and Technology of China, China

N03-7 Performances of the Full Scale Cylindrical-GEM Prototype of the KLOE-2 Inner Tracker
G. Bencivenni, S. Cerioni, D. Domenici, G. Felici, M. Gatta, M. Pistilli, *LNF - INFN, Italy*

N03-8 New Micromegas Detectors in the CAST Experiment
T. Dafni, *University of Zaragoza, Spain*
On behalf of the CAST Micromegas Group

N04 New Solid State Detectors I

Monday, Oct. 20 16:30-18:30 Hall 3
Session Chairs: **Peter M. Weilhammer**, University and INFN of Perugia and CERN, Switzerland
Chiara Guazzoni, Politecnico di Milano and INFN, Italy

N04-1 Intermediate Digital Chip Sensor for the EUDET-JRA1 Beam Telescope
M. Gelin¹, G. Bertolone², A. Besson², A. Brogna², G. Claus², C. Colledani², Y. Degerli¹, A. Dorokhov², W. Dulinski², M. Goffe², F. Guilloux¹, A. Himmi², C. Hu-Guo², K. Jaaskelainen², F. Morel², F. Orsini¹, M. Specht², I. Valin², M. Winter²
¹CEA Saclay, France; ²IPHC, France

N04-2 Study of the Charge Sharing in Silicon Pixel Detector with Heavy Ionizing Particles Interacting with a Medipix2 and a Timepix Device
J. Bouchami¹, A. Gutiérrez¹, A. Houdayer¹, J. Idárraga¹, J. Jakúbek², C. Lebel¹, C. Leroy¹, J.-P. Martin¹, M. Platkevič², S. Pospíšil²
¹Université de Montréal, Canada; ²Institute of Experimental and Applied Physics, Czech Republic

N04-3 Performance of a DNW CMOS Active Pixel Sensor Designed for the ILC Vertex Detector
G. Traversi¹, A. Bulgheroni², M. Caccia², M. Manghisoni¹, M. Jastrzab², E. Pozzati³, L. Ratti³, V. Re¹
¹University of Bergamo and INFN, Italy; ²University of Insubria and INFN, Italy; ³University of Pavia and INFN, Italy

N04-4 Monolithic Pixel Detectors in a Deep Submicron SOI Process
G. W. Deptuch, M. Trimpl, R. Yarema, *FERMILAB, USA*

N04-5 Radiation Resistance of SOI Pixel Sensors Fabricated with OKI 0.15µm FD-SOI Technology
K. Hara¹, M. Kochiyama¹, A. Mochizuki¹, T. Segal¹, Y. Arai², K. Fukuda³, H. Hayashi³, M. Hazumi², J. Ida³, H. Ikeda⁴, Y. Ikegami², H. Ishino⁵, Y. Kawai³, T. Kohriki², H. Komatsubara⁶, H. Miyake¹, M. Ohno³, M. Okihara⁶, S. Terada², T. Tsuboyama², Y. Unno²
¹University of Tsukuba, Japan; ²High Energy Accelerator Research Organization (KEK), Japan; ³Oki Electric Industry Co. Ltd., Japan; ⁴Japan Aerospace Exploration Agency (JAXA), Japan; ⁵Okayama University, Japan; ⁶Miyagi Oki Electric Industry Co. Ltd., Japan

N04-6 Development and Performance Characteristics of a P-type Semi-Coaxial Segmented Germanium Detector
T. W. Hossbach^{1,2}, F. T. Avignone, III², C. E. Cox³, W. Jennings³, G. S. King, III², J. H. Reeves⁴
¹Pacific Northwest National Laboratory, USA; ²University of South Carolina, USA; ³Princeton Gamma-Tech Instruments, Inc., USA; ⁴Reeves and Sons, LLC., USA

N04-7 GeMini: the Next Generation Mechanically-Cooled Germanium Spectrometer
M. T. Burks, *Lawrence Livermore National Laboratory, USA*
N04-8 Investigation of Single Pixel DePMOSFETs at Cryogenic Conditions
V. P. Fedl¹, L. Barl², G. Lutz¹, L. Strüder¹
¹Semiconductor Lab of the Max-Planck Institutes, Germany; ²Max-Planck Institute for extraterrestrial Physics, Germany

N05 Nuclear Power

Monday, Oct. 20 16:30-18:35 Conference 1
Session Chairs: **Christoph J. Ilgner**, Technical University of Dortmund, Germany
Richard T. Kouzes, PNNL, United States

N05-1 (invited) The Role of Nuclear in Tomorrow's Energy - Nuclear Systems of the Future
P. Pradel, *CEA, Saclay, France*

N05-2 (invited) Main Containment Issues for Nuclear Power Reactors
H. J. Allelein
Lehrstuhl für Reaktorsicherheit und -technik, Germany

N05-3 (invited) Innovative Instrumentation for Research and Industrial Nuclear Facilities
J.-F. Villard
DEN - Instrumentation and Innovative Devices Group, France

N05-4 Simulation of Postulated Accidents in Pressurized Water Reactors Using Coupled 3D Neutron Kinetic/thermal Hydraulic Code Systems
S. Kliem, U. Rohde, F. P. Weiss
Forschungszentrum Dresden-Rossendorf, Germany

N05-5 The Fission TPC Project
M. Heffner, *Lawrence Livermore National Laboratory, USA*
On behalf of the NIFFTE Collaboration

N05-6 FPGA-Based Solutions for I&C Applications
F. Daumas, T. Nguyen, P. Salaun
Electricité de France, France

N06 Data Acquisition and Analysis Systems : Big Systems in Operation

Monday, Oct. 20 16:30-18:30 Conference 2
Session Chairs: **Chikara Fukunaga**, Tokyo Metropolitan University, Japan
Alberto Aloisio, University of Naples 'Federico II' and INFN, Italy

N06-1 (invited) The ATLAS Trigger
S. M. Demers, *Stanford Linear Accelerator Center, USA*
On behalf of the ATLAS TDAQ Community

N06-2 The New DAQ System in RIKEN RIBF
H. Baba, T. Ichihara, T. Ohnishi, S. Takeuchi, K. Yoshida, Y. Watanabe, *RIKEN, Japan*; S. Ota, S. Shimoura, *University of Tokyo, Japan*

N06-3 Commissioning of the New Online System for the Super-Kamiokande Experiment
S. Yamada, Y. Obayashi, M. Shiozawa, Y. Hayato
Institute for Cosmic Ray Research, University of Tokyo, Japan

N06-4 High Performance Event Building over InfiniBand Networks.
H. G. Essel, J. Adamczewski, N. Kurz, S. Linev
GSI, Germany

N06-5 Readout and Control Electronics for the T2 Detector of the TOTEM Experiment
V. Greco^{1,2}, S. Lami¹, C. Magazzù¹, G. Magazzù¹, A. Scribano^{1,2}, E. Oliveri^{1,2}, E. Pedreschi¹, M. Sanchez³, W. Snoeys³, F. Spinella¹, N. Turini^{1,2}, P. Vulliez³
¹*INFN, Italy*; ²*University of Siena, Italy*; ³*CERN, Switzerland*

N06-6 The New Data Acquisition System for the HADES Experiment
M. Palka^{1,2}, M. Traxler¹, I. Frohlich³, P. Salabura², P. Skott¹, R. Trebacz², M. Kajetanowicz⁴, J. Michel³, J. Stroth¹, H. Strobele¹, A. Tarantola³
¹*Gesellschaft für Schwerionenforschung, Germany*; ²*Jagiellonian University, Poland*; ³*Institut für Kernphysik, Germany*; ⁴*Nowoczesna Elektronika, Poland*

N06-7 The Configuration & Control of the ATLAS Trigger and Data Acquisition System
G. Lehmann Miotto¹, I. Alexandrov², G. Avolio¹, M. Caprini³, A. Corso-Radu⁴, A. Kazarov^{1,5}, S. Kolos⁴, V. Kotov², A. J. Lankford⁴, M. Leahu^{1,3}, L. Mapelli¹, R. Murillo Garcia⁴, Y. Ryabov⁵, J. E. Sloper¹, I. Soloviev^{1,5}, I. Fedorko¹, E. Badescu³, A. Dos Anjos⁶, A. E. Bekkelien¹, A. Amorim⁷, L. Vaz Gil Lopes⁷
¹*European Laboratory for Particle Physics (CERN), Switzerland*; ²*Joint Institute for Nuclear Research, Russia*; ³*National Institute for Physics and Nuclear Engineering, Institute of Atomic Physics, Romania*; ⁴*University of California, USA*; ⁵*Petersburg Nuclear Physics Institute (PNPI), Russia*; ⁶*University of Wisconsin, USA*; ⁷*Laboratorio de Instrumentação e Física Experimental, Portugal*

N07 Instrumentation for Radiation Applications in Medicine I

Monday, Oct. 20 16:30-18:30 Conference 3
Session Chairs: **Michael L. F. Lerch**, University of Wollongong, Australia
Barbara Obryk, Institute of Nuclear Physics PAN, Poland

N07-1 (invited) Metamaterials for Novel X- or Gamma-Ray Detector Designs
P. R. Lecoq, *CERN, Switzerland*

N07-2 2D Dosimeter Based on Monolithic Silicon Sensors for Beam Verification in Conformal Radiotherapy
C. Talamonti^{1,2}, D. Menichelli^{1,2}, M. Bruzzi^{1,2}, M. Bucciolini^{1,2}, L. Marrazzo^{1,2}, M. Tesi¹, M. Brianzi², A. La Rosa², G. G. A. P. Cirrone², G. Cuttone², P. Lojacono²
¹*University of Florence, Italy*; ²*INFN, Italy*

N07-3 Gamma Spectroscopy Performance of Silicon Photomultipliers Coupled with LYSO Scintillators
M. Petasecca¹, M. L. F. Lerch¹, M. Safavi¹, R. Battiston², G. U. Pignatelli^{2,3}, A. B. Rosenfeld¹
¹*University of Wollongong, Australia*; ²*INFN, Italy*; ³*University of Perugia, Italy*

N07-4 Improvement of Energy Resolution in Geiger-Mode APD Arrays Using Curve-Fitting of Signal Decay
I. N. Weinberg, P. Stepanov, A. S. Weinberg, *Weinberg Medical Physics, USA*; P. Abshire, M. P. Dandin, *University of Maryland, USA*; K. H. Wong, P. Cheng, S. K. Mun, *Georgetown University, USA*

N07-5 Response of a PIN Diode and SOI Microdosimeter to the TSL Quasimonoenergetic Neutron Field
D. A. Prokopovich¹, I. M. Cornelius², M. I. Reinhard¹, A. B. Rosenfeld²
¹*Australian Nuclear Science and Technology Organisation, Australia*; ²*University of Wollongong, Australia*

N07-6 Online in Vivo Al₂O₃:C Luminescence Dosimetry for Brachytherapy: Characteristics of the RL and OSL Signals.
C. E. Andersen¹, S. K. Nielsen², S. Greilich¹, J. C. Lindegaard², K. Tanderup²
¹*Risoe National Laboratory for Sustainable Energy, Denmark*; ²*Aarhus University Hospital, Denmark*

N07-7 Recent Progress in Electronic Detectors for Electron Microscopy
W. Faruqi, R. Henderson, G. McMullan, S. Chen
MRC Laboratory of Molecular Biology, U.K.

N08 Gaseous Detectors II - Large Area Detectors

Tuesday, Oct. 21 08:00-10:00 Hall 2
Session Chairs: **Mar Capeans**, CERN, Switzerland
Craig L. Woody, Brookhaven National Lab, United States

N08-1 Recent Results on Large Size MPGD Production Techniques
R. de Oliveira, S. Ferry, E. van der Bij, *CERN, Switzerland*

N08-2 The Forward GEM Tracker of STAR at RHIC
F. Simon^{1,2}, J. Balewski³, R. Fatemi⁴, D. Hasell³, J. Kelsey³, R. Majka⁵, B. Page⁶, M. Plesko³, D. Underwood⁷, N. Smirnov⁵, J. Sowinski⁶, H. Spinka⁷, B. Surrow³, G. Visser⁶
¹Max-Planck-Institut fuer Physik, Germany; ²Excellence Cluster 'Universe', Germany; ³Massachusetts Institute of Technology, USA; ⁴University of Kentucky, USA; ⁵Yale University, USA; ⁶Indiana University Cyclotron Facility, USA; ⁷Argonne National Laboratory, USA

N08-3 The Triple-GEM T2 Telescope of the TOTEM Experiment
M. Berretti^{1,2}, E. David³, F. Garcia⁴, J. Heino⁴, T. Hilden⁴, W. Klemp³, K. Kurvinen⁴, S. Lami², G. Latino^{1,2}, R. Lauhakangas⁴, E. Oliveri^{1,2}, L. Ropelewski³, A. Scribano^{1,2}, N. Turini^{1,2}, M. van Stenis³
¹University of Siena, Italy; ²INFN, Italy; ³CERN, Switzerland; ⁴University of Helsinki, Finland

N08-4 A Large Area GEM Detector
S. Duarte Pinto, E. David, R. D. Oliveira, L. Ropelewski, CERN, Switzerland; I. Brock, Physikalisches Institut der Universitaet Bonn, Germany

N08-5 Development of Muon Chambers Based on Micromegas Technology for the Upgrade of the ATLAS Experiment for SLHC
P. Iengo, CERN, Switzerland
On behalf of the Atlas Muon Micromegas Collaboration

N08-6 Large Surfaces MicroMegas with Embedded Front-End Electronics for a Digital Hadronic Calorimeter
C. Adloff, LAPP - Université de Savoie, France
On behalf of the CALICE Collaboration

N08-7 Installation and Commissioning of a High-Efficiency and High-Resolution Straw Tube Tracker for the LHCb Experiment
A. Pellegrino, NIKHEF Amsterdam, Netherlands
On behalf of the OT Group of the LHCb Collaboration

N08-8 Final Study of Aging in BaBar RPCs
H. R. Band, U. of Wisconsin, USA
On behalf of the BaBar Ifr Group

N09 Instrumentation for Radiation Applications in Medicine II
Tuesday, Oct. 21 08:00-10:00 Hall 3
Session Chairs: **Irving N. Weinberg**, Weinberg Medical Physics, United States
Pawel Olko, Institute of Nuclear Physics, Poland

N09-1 (invited) Characterization of an "In-Beam" PET Prototype for Proton Therapy with Different Target Compositions
A. Del Guerra, F. Attanasi, N. Belcari, S. Moehrs, V. Rosso, S. Vecchio, University of Pisa and INFN, Italy; G. A. P. Cirrone, G. Cuttone, P. Lojacono, S. Romano, INFN, Italy; N. Lanconelli, University of Bologna and INFN, Italy

N09-2 A Novel X-Ray Imaging Technique Based on Coded Apertures Making Phase Contrast Imaging Feasible with Conventional Sources
A. Olivo, R. Speller, University College London, UK

N09-3 Phase Contrast Imaging with a PILATUS 100K Detector
C. Broennimann^{1,2}, C. David², T. Donath², O. Bunk², E. Eikenberry¹, F. Pfeiffer^{2,3}, M. Bech⁴
¹DECTRIS AG, Switzerland; ²Paul Scherrer Institut, Switzerland; ³Ecole Polytechnique Federal, Switzerland; ⁴Niels Bohr Institut, Denmark

N09-4 DEI-Based Phase-Contrast Tomosynthetic Experiment on Biological Samples with High Resolution X-Ray CCD Camera
K. Kang¹, Z. Huang¹, P. Zhu², L. Zhang¹
¹Key Laboratory of Particle & Radiation Imaging (Tsinghua University), China; ²Beijing Synchrotron Radiation Facility, Institute of High Energy Physics, China

N09-5 Hybrid Dose Calculation with a Pencil Beam Algorithm and a Geant4 Simulation for Hadron Therapy Application
T. Aso^{1,2}, S. Kameoka^{3,2}, T. Nishio^{3,2}, A. Kimura^{4,2}, K. Murakami^{5,2}, T. Sasaki^{5,2}, T. Yamashita^{6,2}
¹Toyama National College of Maritime Technology, Japan; ²Japan Science and Technology Corporation, Japan; ³National Cancer Center, Japan; ⁴Ashikaga Institute of Technology, Japan; ⁵High Energy Accelerator Research Organization, Japan; ⁶Hyogo Ion Beam Medical Center, Japan

N09-6 Dose Distributions in Phantoms with Different Dimensions Exposed to BNCT Epithermal Neutron Beam: Measurements and Calculations
G. Bartesaghi¹, J. Burian², M. Carrara³, G. Gambarini¹, M. Marek², A. Negri¹, L. Viererbl²
¹University of Milan and INFN, Italy; ²Nuclear Research Institute, Czech Republic; ³Fondazione IRCCS "Istituto Nazionale Tumori", Italy

N09-7 Measurement of the Fragmentation of 400 MeV/nucleon Carbon Nuclei Used in Hadron-Therapy by the Nuclear Emulsion Technology
G. De Lellis¹, M. Pasquale², P. Yuri³, S. Paolo¹
¹University of Naples, Italy; ²Istituto Nazionale Fisica Nucleare, Italy; ³Joint Institute for Nuclear Research, Russia

N10 Astrophysics and Space Instrumentation I-Gamma and High-Energy detectors
Tuesday, Oct. 21 08:00-10:00 Conference 1
Session Chairs: **Ronaldo Bellazzini**, INFN Pisa, Italy
Marco Feroci, INAF / Istituto di Astrofisica Spaziale e Fisica Cosmica - Roma, Italy

N10-1 (invited) The GLAST Large Area Telescope: Preliminary Results from on-Orbit Calibration
L. Latronico, INFN-Pisa, Italy
On behalf of the GLAST Collaboration

N10-2 On-Orbit Performance of GLAST Tracker
H. Tajima, Stanford Linear Accelerator Center, USA
On behalf of the GLAST LAT Tracker team

N10-3 Gamma-ray Burst Monitor for the CALET Mission using LaBr₃(Ce) crystal
S. Nakahira, K. Yamaoka, A. Yoshida, T. Kotani, K. Suzuki, T. Doshida, T. Ooyama, Aoyama Gakuin University, Japan; T. Hiroshi, Japan Aerospace Exploration Agency, Japan; S. Hatori, K. Kume, Wakasa Wan Energy Research Center, Japan; S. Torii, Waseda University, Japan

N10-4 POLAR: a Novel Gamma-Ray Burst Polarimeter
E. Suarez-Garcia, D. Haas, University Geneva, Switzerland

N10-5 PoGOLite - a High Sensitivity Balloon-Borne Soft Gamma-Ray Polarimeter

M. Pearce, *The Royal Institute of Technology (KTH), Sweden*
On behalf of the PoGOLite collaboration

N10-6 FFAST: Formation Flight All Sky Telescope Covering the High Energy X-Ray Sky

H. Tsunemi¹, K. Hayashida¹, H. Kunieda², Y. Ogasaka², M. Itoh³, M. Ozaki⁴, I. Kawano⁴, N. Anabuki¹
¹Osaka University, Japan; ²Nagoya University, Japan; ³Kobe University, Japan; ⁴JAXA, Japan

N10-7 The Camera and Readout System of the MAGIC-II Telescope

F. Goebel, *Max-Planck-Institut fuer Physik, Germany*
On behalf of the MAGIC collaboration

N11 Analog and Digital Circuits I

Tuesday, Oct. 21 08:00-10:00 Conference 4&5

Session Chairs: **Richard Van Berg**, University of Pennsylvania, United States
Anthony Lavietes, LLNL, United States

N11-1 A Novel Output Baseline Holder Circuit for CMOS Front-End Analog Channels

F. Corsi, M. Foresta, C. Marzocca, G. Matarrese, A. Tauro
Politecnico Di Bari, Italy

N11-2 MSGCROC – an ASIC for High Count Rate Readout of Double-Sided Neutron Sensitive Microstrip Gas Chambers

P. Wiaček¹, A. Brogna^{2,3}, S. Buzzetti^{4,3}, W. Dabrowski¹, T. Fiutowski¹, B. Gebauer², B. Mindur^{1,2}, C. Schmidt^{3,5}, C. Schulz², H. K. Soltveit³, R. Szczygiel¹, U. Trunk^{3,6}
¹AGH University of Science and Technology, Poland; ²Hahn-Meitner-Institut, Germany; ³Physikalisches Institut der Universität Heidelberg, Germany; ⁴INFN & Politecnico di Milano, Italy; ⁵Gesellschaft für Schwerionenforschung GmbH, Germany; ⁶Max-Planck-Institut für Kernphysik, Germany

N11-3 VEAT2 : A Front-End “System on Chip” Providing Fast Trigger Information and Digitized Data Storage for the Charge Sensitive Readout of Multi-Channel Silicon and Gas Particle Detectors.

P. Aspell¹, G. Anelli¹, P. Chalmet², J. Kaplon¹, K. Kloukinas¹, H. Mugnier², W. Snoeys¹
¹CERN, Switzerland; ²CAI, France

N11-4 A Fast Binary Front-End ASIC for the RICH Detector of the COMPASS Experiment at CERN

A. Rivetti¹, M. Chiosso¹, O. Cobanoglu^{1,2}, G. Mazza¹, D. Panzieri^{1,3}
¹Istituto Nazionale di Fisica Nucleare - INFN, Italy; ²University of Turin, Italy; ³University of Eastern Piedmont, Italy

N11-5 A 0.13µm CMOS Front-End for Cluster Counting Technique in Ionization Detectors

S. D'Amico^{1,2}, A. Baschiroto³, M. De Matteis¹, F. Grancagnolo², G. Chiodini², M. Panareo^{1,2}, R. Perrino², A. Corvaglia²
¹Università del Salento, Italy; ²INFN, Italy; ³Università di Milano-Bicocca, Italy

N11-6 A Custom 12-Bit Cyclic ADC for the Electromagnetic Calorimeter of the International Linear Collider

P. Gay, S. Manen, L. Royer, *CNRS/IN2P3, France*

N11-7 A Low Power 12-Bit and 25-MS/s Pipelined ADC for the ILC / Ecal Integrated Readout.

D. Dzahini, *IN2P3-LPSC, France*
On behalf of the CALICE

N11-8 Design and Performance of the 5 GHz Waveform Digitizing Chip DRS4

S. Ritt, *Paul Scherrer Institute, Switzerland*

N12 Photon Detectors and Radiation Imaging Detectors I

Tuesday, Oct. 21 08:00-10:00 Conference 6

Session Chairs: **Peter Krizan**, University of Ljubljana, Slovenia
Ingrid-Maria Gregor, DESY, Germany

N12-1 (invited) Progress in the Development of Geiger-mode Avalanche Photodiodes

D. Renker, *Paul Scherrer Institute, Switzerland*

N12-2 Large Area SiPMs with Very Low Cross-Talk

R. Mirzoyan¹, P. Buzhan², B. Dolgoshein², A. Ilyin², V. Kaplin², S. Klemin², H. Miyamoto¹, E. Popova², M. Teshima¹
¹Max-Planck-Institute for Physics, Germany; ²Moscow Engineering and Physics Institute, Russia

N12-3 New Developments for CMOS SSPMs

E. B. Johnson¹, C. Stapels¹, E. Chapman¹, D. Wehe², F. Augustine³, P. Barton², J. Christian¹
¹Radiation Monitoring Devices, Inc., USA; ²University of Michigan, USA; ³Augustine Engineering, USA

N12-4 Silicon Photomultipliers for the GlueX Barrel Calorimeter

C. Zorn, *Jefferson Laboratory, USA*
On behalf of the GlueX Collaboration

N12-5 The First Measurements on the Back Illumination Drift Silicon Photomultipliers

J. Ninkovic^{1,2}, R. Eckhart^{2,3}, R. Hartmann^{2,3}, P. Holl^{2,3}, C. Koitsch^{2,3}, G. Lutz^{2,3}, R. Mirzoyan¹, H.-G. Moser^{1,2}, R. Richter^{1,2}, G. Schaller^{3,4}, F. Schopper^{3,4}, H. Soltau^{2,3}, M. Teshima¹
¹Max-Planck-Institut fuer Physik, Germany; ²Max-Planck-Institut Halbleiterlabor, Germany; ³PNSensor GmbH, Germany; ⁴Max-Planck-Institut fuer extraterrestrische Physik, Germany

N12-6 Radiation Damage Studies on SiPMs for HCAL SLHC Upgrade

A. H. Heering, J. Rohlf, E. Hazen, *Boston University, USA*; S. Los, J. Freeman, *Fermi National Accelerator Laboratory, USA*; C. Piemonte, *FBK - Fondazione Bruno Kessler, Italy*; Y. Musienko, *Northeastern University, USA*

N12-7 Effects of Radiation Damage on Multi-Pixel Photon Counters (MPPC)

T. Matsumura, *National Defense Academy in Japan, Japan*
On behalf of the KEK Detector Technology Project

NMR NSS/MIC/RTSD Joint Session

Tuesday, Oct. 21 10:30-12:30 Hall 2&3

Session Chairs: **Alberto Del Guerra**, University Pisa, Italy
Ralph James, Brookhaven National Laboratory,
 United States

NMR-1 (invited) Lost in translation – from basic science to clinical reality

D. W. Townsend, *University of Tennessee, USA*

NMR-2 New Approaches Systems in Gamma-Ray Imaging Based on CdZnTe Detector

L. Verger, F. Mathy, O. Monnet, G. Montémont, V. Rebuffel
MINATEC, France

NMR-3 Towards Direct Conversion Detectors for Medical Imaging with X-Rays

M. Overdick, C. Bäumer, C. Herrmann, M. Simon, R. Steadman,
G. Zeitler, *Philips Research Europe, Germany*

NMR-4 PICASSO: a Silicon Microstrip Detector for Mammography with Synchrotron Radiation

L. Rigon¹, F. Arfelli^{1,2}, A. Bergamaschi³, D. Dreossi^{1,4}, R. Longo^{1,2},
R. H. Menk^{1,4}, B. Schmitt³, E. Vallazza¹, E. Castelli^{1,2}
¹INFN, Italy; ²University of Trieste, Italy; ³Paul Scherrer Institut, Switzerland; ⁴Sincrotrone Trieste SPCa, Italy

NMR-5 About the Properties of Position and Energy Sensitive Semiconductor Pixel Detectors of Timepix Type and Their Possible Biomedical Applications

S. Pospisil, J. Jakubek, *Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic*; C. Leroy, *Montreal University, Canada*

NMR-6 Basic Characteristics of a Newly Developed Si/CdTe Compton Camera for Medical Imaging

N. Kawachi¹, S. Watanabe¹, T. Satoh¹, K. Arakawa^{1,2}, S. Takeda³,
S. Ishikawa³, H. Aono³, S. Watanabe³, M. Yamaguchi^{3,2},
T. Takahashi³, H. Shimada², Y. Yoshida², Y. Suzuki², H. Sakurai²,
T. Nakano²
¹Japan Atomic Energy Agency, Japan; ²Gunma University, Japan; ³Japan Aerospace Exploration Agency, Japan

N13 Nuclear Physics Instrumentation I

Tuesday, Oct. 21 10:30-12:30 Conference 1

Session Chairs: **Craig L. Woody**, Brookhaven National Lab, United States
Anna Di Ciaccio, INFN Rome, Italy

N13-1 Development of Digital Hadron Calorimeter Using Gas Electron Multiplier

J. Yu, *Univrsity of Texas at Arlington, USA*
 On behalf of the University of Texas at Arlington HEP group

N13-2 Commissioning and Calibration of the ALICE Zero Degree Calorimeters

N. De Marco, *INFN - sezione di Torino, Italy*
 On behalf of the ALICE ZDC Collaboration

N13-3 The Performance of the LHCb RICH Detectors

S. Easo, *Rutherford-Appleton Laboratory, UK*
 On behalf of the LHCb-RICH Collaboration

N13-4 Results from the HERMES Recoil Detector

S. Yaschenko, *Universität Erlangen-Nürnberg, Germany*
 On behalf of the HERMES Collaboration

N13-5 Prototype of a DIRC-Barrel for the PANDA Experiment

R. Hohler^{1,2}, K. Peters^{1,2}, G. Schepers¹, C. Schwarz¹, C. Sfienti¹
¹Gesellschaft für Schwerionenforschung, Germany; ²JWG University, Germany

N13-6 Frontend Electronics of the Hades RPC Wall: Full Sector Test

A. Gil¹, D. Belver², P. Cabanelas², J. Díaz¹, J. A. Garzón²,
D. Gonzalez-Diaz³, W. Koenig³, M. Traxler³
¹Instituto de Física Corpuscular (CSIC-Universidad de Valencia), Spain;
²LabCAF, Universidad de Santiago de Compostela, Spain; ³Gesellschaft für Schwerionenforschung, Germany

N13-7 The Forward Silicon Vertex Tracker Upgrade for the PHENIX Experiment at RHIC

J. S. Kapustinsky, *Los Alamos National Laboratory, USA*
 On behalf of the PHENIX Collaboration

N13-8 Scintillation Hodoscope with SiPM Readout for the CLAS Detector at JLAB

S. Stepanyan, *Jefferson Lab, USA*

N14 Synchrotron Radiation and FEL Instrumentation

Tuesday, Oct. 21 10:30-12:30 Conference 2

Session Chairs: **Stephanie Hustache-Ottini**, Synchrotron SOLEIL, France
Niels van Bakel, Stanford Linear Accelerator Center, United States

N14-1 (invited) The Challenges of Detector Developments for Photon Sources

P. Fajardo, *ESRF, France*

N14-2 Liquid-Cryogen-Free Superconducting Spectrometers for High-Resolution Soft X-Ray Analysis at the Synchrotron

S. Friedrich¹, T. Hertrich², O. B. Drury¹, J. Hoehne²
¹Lawrence Livermore National Laboratory, USA; ²VeriCold Technologies, Germany

N14-3 A Low Energy X-Ray Fluorescence Spectrometer for Elemental Mapping X-Ray Microscopy

A. Longoni^{1,2}, R. Alberti^{1,2}, T. Klakta^{1,2}, A. Gianoncelli³, D. Bacescu³,
B. Kaulich³
¹Politecnico di Milano, Italy; ²INFN Sezione di Milano, Italy;
³ELETTRA, Sincrotrone Trieste, Italy

N14-4 XPAD3, an Hybrid Pixel Detector for Scattering Applications Using Synchrotron Sources

J.-F. Berar¹, N. Boudet¹, P. Breugnot², B. Caillot¹, B. Chantepie²,
J.-C. Clemens², P. Delpierre², B. Dinkespiller², S. Godiot²,
S. Hustache Ottini³, K. Medjoubi³, M. Menouni², C. Morel²,
P. Pangaud², E. Vigeolas²
¹Institut Neel-CNRS, France; ²CPPM - IN2P3, France; ³Synchrotron Soleil, France

N14-5 Femtosecond Radiation Experiment Detector for X-Ray Free-Electron Laser (XFEL) Coherent X-Ray Imaging

H. T. Philipp, L. J. Koerner, M. S. Hromalik, M. W. Tate,
S. M. Gruner
Cornell University, USA

N14-6 XAMPS Prototypes for the X-Ray Pump Probe Instrument at the LCLS

G. A. Carini, W. Chen, J. Fried, A. Kuczweski, Z. Li, R. Mitcha, P. Rehak, D. P. Siddons
Brookhaven National Laboratory, USA

N14-7 Large Format X-Ray Imager with Mega-Frame Readout Capability for XFEL Based on the DEPFET Active Pixel Sensor

M. Porro^{1,2}, L. Andricek^{3,2}, A. Castoldi^{4,5}, C. Fiorini^{4,5}, P. Fischer⁶, H. Graafma⁷, K. Hansen⁷, A. Kugel⁶, G. Lutz^{8,2}, U. Pietsch⁹, V. Re¹⁰, L. Strueder^{1,2}

¹Max Planck Institut fuer Extraterrestrische Physik, Germany; ²MPI Halbleiterlabor, Germany; ³Max Planck Institut fuer Physik, Germany; ⁴Politecnico di Milano, Italy; ⁵Italian National Institute of Nuclear Physics (INFN), Italy; ⁶Universitaet Heidelberg, Germany; ⁷Deutsches Elektronen-Synchrotron DESY, Germany; ⁸PNSensor GmbH, Germany; ⁹Universitaet Siegen, Germany; ¹⁰Università di Bergamo, Italy

N15 Radiation Damage Effects on Detection Materials I.

Tuesday, Oct. 21 10:30-12:30 Conference 4&5

Session Chairs: **Robert Klanner**, University of Hamburg, Germany
Doris Eckstein, Institute of Experimental Physics, Hamburg University, Germany

N15-1 (invited) Radiation Induced Point- and Cluster-Related Defects with Strong Impact to Damage Properties of Silicon Detectors

I. Pintilie, National Institute of materials Physics, Romania; E. Fretwurst, A. Junkes, G. Lindstroem, Institute for Experimental Physics, University of Hamburg, Germany

N15-2 Quantitative Effects of Neutron Irradiation on Silicon Radiation Detectors

G. Lindstroem, University of Hamburg, Germany
On behalf of the WODEAN collaboration

N15-3 Charge Collection Efficiency and Its Annealing in Silicon Detectors Irradiated by Pion, Proton, and Neutrons

H. F. F-W. Sadrozinski, Santa Cruz Institute for Particle Physics, Univ. of California Santa Cruz, USA
On behalf of the SCIPP ATLAS Upgrade Group

N15-4 Charge Carrier Trapping in FZ, MCz and Epi Silicon Diodes after Hadron Irradiation

M. K. Bock, J. Becker, D. Eckstein, E. Fretwurst, A. Junkes, J. Lange, G. Lindström
Institute of Experimental Physics, University of Hamburg, Germany

N15-5 Long Term Annealing of Proton Irradiated Magnetic Czochralski Silicon Detectors

M. Moll, K. Katharina, CERN, Switzerland

N15-6 Observation of Gamma Irradiation-Induced Suppression of Reverse Annealing in Neutron Irradiated MCZ Si Detectors

Z. Li¹, R. Gul¹, J. Harkonen², J. Kierstead¹, J. Metcalfe³, S. Seidel³
¹Brookhaven National Lab, USA; ²University of Helsinki, Finland; ³University of New Mexico, USA

N16 Monte Carlo Codes and Technology

Tuesday, Oct. 21 10:30-12:30 Conference 6

Session Chairs: **Juergen Knobloch**, CERN, Switzerland
Sunanda Banerjee, FNAL,

N16-1 (invited) The Radiation Safety Information Computational Center (RSICC): A Resource for Nuclear Science Applications

B. L. Kirk, Oak Ridge National Laboratory, USA

N16-2 The Impact of Technological Research Through an Analysis of Particle Physics Literature

M. G. Pia¹, T. Basaglia², Z. W. Bell³, P. V. Dressendorfer⁴, J. Vigen²
¹INFN Genova, Italy; ²CERN, Switzerland; ³ORNL, USA; ⁴IEEE, USA

N16-3 MCNPX 2.6.0 - New Features Demonstrated

G. W. McKinney, J. W. Durkee, M. L. Fensin, J. S. Hendricks, M. R. James, D. B. Pelowitz, R. C. Johns, L. S. Waters
Los Alamos National Laboratory, USA

N16-4 Recent Developments in the Physics and Operation of the PENELOPE Code System

E. Salvat, J. M. Fernández-Varea, Universitat de Barcelona, Spain; J. Sempau, Universitat Politècnica de Catalunya, Spain

N16-5 The FLUKA code, Galactic cosmic ray GCR and Solar Energetic Particle events: from fundamental physics to space radiation and commercial aircraft doses from fundamental physics to space radiation and commercial aircraft doses

G. Battistoni, INFN, Italy
On behalf of the FLUKA collaboration

N16-6 Comparison of the Hadron Shower Simulation Codes: the Dual Readout Calorimeter

A. Para, H. Wenzel, Fermilab, USA

N16-7 On the Suitability of Different Random Number Generators for Monte Carlo Simulations in Gamma-Ray Spectrometry

N. A. Cornejo Diaz, A. Vergara Gil, Center for Radiation Protection and Hygiene, Cuba; M. Jurado Vargas, Extremadura University, Spain

NM1 NSS/MIC Joint session I

Tuesday, Oct. 21 13:30-15:30 Hall 2&3

Session Chairs: **Patrick J. Le Du**, CEA, Saclay, France
Marek Moszynski, Soltan Institute for Nuclear Studies, Poland

NM1-1 (invited) Optimization of LSO for Time-of-Flight PET

W. W. Moses¹, M. Janeczek¹, P. Szupryczynski^{2,3}, M. A. Spurrier², W.-S. Choong¹, C. L. Melcher², M. Andreaco³
¹Lawrence Berkeley National Laboratory, USA; ²University of Tennessee, USA; ³Siemens Medical Solutions, USA

NM1-2 A High Bandwidth Preamplifier for SiPM-Based TOF PET Scintillation Detectors

S. Seifert¹, D. R. Schaart¹, H. T. van Dam¹, J. Huizenga¹, R. Vinke², P. Dendooven², H. Löhner², F. J. Beekman¹
¹Delft University of Technology, The Netherlands; ²University of Groningen, The Netherlands

NM1-3 Silicon Photomultiplier as an Alternative for APD in PET Applications

A. Nassalski, M. Moszyński, A. Syntfeld-Każuch, T. Szczęśniak, L. Świdorski, D. Wolski, T. Batsch, *Soltan Institute for Nuclear Studies, Poland*; J. Baszak, *Hamamatsu Photonics Deutschland GmbH, Polish Office, Poland*

NM1-4 Evaluation of a Linear Array of Silicon Photomultipliers for Beta Imaging

E. S. Heckathorne¹, L. A. Tiefer², F. Daghighian³, M. Dahlbom¹
¹*UCLA School of Medicine, USA*; ²*Tiefertronix, USA*; ³*IntraMedical Imaging, USA*

NM1-5 Potentials for Large Axial Field of View Positron Camera Systems

L. A. Eriksson^{1,2,3,4}, D. W. Townsend⁵, M. Conti¹, C. L. Melcher⁴, M. Eriksson², B. W. Jakoby^{1,5,6}, H. Rothfuss^{1,4}, M. E. Casey¹, B. Bendriem¹

¹*Siemens Medical Solutions, Molecular Imaging, USA*; ²*Karolinska Institute, Sweden*; ³*University of Stockholm, Sweden*; ⁴*University of Tennessee, USA*; ⁵*University of Tennessee Medical Center, USA*;

⁶*University of Surrey, UK*

NM1-6 A Scintillating Gas Detector for 2D Dose Imaging in Hadron Therapy

E. Seravalli¹, M. R. De Boer¹, F. Geurink¹, J. Huizenga¹, R. Kreuger¹, M. J. Schippers², C. W. E. Eijk¹

¹*Delft University of Technology, The Netherlands*; ²*Paul Scherrer Institute, Switzerland*

NM1-7 Design and Performance of a LXe Detector for a Micro-PET Detector

A. Muennich¹, P. Amaudruz¹, D. Bryman², L. Kurchaninov¹, P. Lu², C. Marshall¹, J. P. Martin³, F. Retiere¹, A. Sher¹

¹*TRIUMF, Canada*; ²*The University of British Columbia, Canada*; ³*The University of Montreal, Canada*

N17 Nuclear Physics Instrumentation II

Tuesday, Oct. 21 13:30-15:30 Conference 1

Session Chairs: **Rainer W. Novotny**, 2nd Physics Institute, University Giessen, Germany
Herbert Orth, GSI, Darmstadt,
Herbert Loehner, KVI, University Groningen, The Netherlands

N17-1 Geant4 Simulation of a New 4-Pi Sum-Spin Spectrometer at TIFR

A. K. Gourishetty, I. Majumdar, D. A. Gothe
Tata Institute of Fundamental Research, India

N17-2 A Hermetic Semi-Spherical Electron-Positron Pair Spectrometer for High Energy Nuclear Transitions

A. Hatzikoutelis, *Lancaster University, UK*; I. Mazumdar, *TIFR, India*; I. Diosezegy, *BNL, USA*; P. Paul, *SBU, USA*

N17-3 Detector System of the Focal Plane Detector of KATRIN

L. Petzold¹, J. Amsbaugh², T. Buritt², J. Formaggio³, H. Gemmeke¹, M. Leber², H. Robertson², M. Steidl¹, T. V. Wechel², J. F. Wilkerson², S. Wüstling¹

¹*Forschungszentrum Karlsruhe, Germany*; ²*University of Washington, Seattle U.S., U.S.*; ³*Massachusetts Institute of Technology, U.S.*

N17-4 A Silicon Strip Detector for Multiplicity Measurements in the Forward Regions of ALICE

B. S. Nielsen, K. Gulbrandsen, C. H. Christensen, H. H. Dalsgaard, J. J. Gaardhøje
Niels Bohr Institute, Denmark

N17-5 Measurements of Large CsI(Tl) Crystals for the R3B Calorimeter

H. Alvarez-Pol, J. Benlliure, E. Casarejos, D. Cortina, I. Durán, M. Gascón
Univ. Santiago de Compostela, Spain

N17-6 Test of an APD and PD/SiPM readout for the Crystal-Barrel CsI(Tl) Calorimeter

C. Wendel, *Universitaat Bonn, Germany*
On behalf of the CBELSA/TAPS collaboration

N17-7 Detector Developments for the Hypernuclear Programme at PANDA

P. Achenbach, A. Sanchez Lorente, J. Pochodzalla
Institut für Kernphysik, Universität Mainz, Germany

N17-8 Position-, Spectral- and Time-Sensitive Spectroscopy of Fission Fragments with TimePix Pixel Detectors

C. Granja¹, J. Jakubek¹, Y. Kopatch², S. Pospisil¹, S. A. Telezhnikov², Z. Vykydal¹

¹*Czech Technical University in Prague, Czech Republic*; ²*Joint Institute for Nuclear Research JINR, Russia*

N18 Data Acquisition and Analysis Systems : Analysis Methods

Tuesday, Oct. 21 13:30-15:30 Conference 2

Session Chairs: **Kay Rehlich**, DESY, Germany
Heinz Graafsma, DESY, Germany

N18-1 Digital Signal Processing Methods for Room Temperature 3-D Position Sensitive CdZnTe Detectors

Y. Zhu, Z. He, S. Anderson, *University of Michigan, USA*

N18-2 An Efficient Algorithm for Spatial Localization of Multiple Events from Detector Arrays in FPGA Devices

A. Abba, A. Manenti, A. Suardi, C. Fiorini, A. Geraci
Politecnico di Milano, Italy

N18-3 Digital Delay Line Shaping-Zero Crossing Algorithm for Timestamp Extraction in PET

J. D. Martinez, J. M. Monzo, J. Toledo, V. Herrero, A. Sebastia, *Universidad Politecnica de Valencia, Spain*; J. M. Benlloch, *Instituto de Fisica Corpuscular, Spain*

N18-4 Maximum Likelihood Estimation Techniques for High Rate, High Throughput Digital Pulse Processing.

P. A. B. Scoullar, *Southern Innovation, Australia*; R. J. Evans, *The University of Melbourne, Australia*

N18-5 Time Profile Analysis of Signals from the DREAM Dual Read-Out Calorimeter with Domino Ring Samplers (DRS)

F. Scuri, *INFN Sezione di Pisa, Italy*
On behalf of the DREAM Collaboration

N18-6 The Readout of the ATLAS LAr Calorimeter: Online Energy and Time Calculation

M. Aleksa, *CERN, Switzerland*
On behalf of the ATLAS LAr group

N18-7 Database Architecture for the Calibration of ATLAS

Monitored Drift Tube Chambers

M. Verducci, P. Bagnaia, *INFN Roma1, Italy*; P. Celio, D. Orestano, *INFN Roma TRE and University of Roma TRE, Italy*; M. Cirilli, S. Mckee, *University of Michigan Ann Arbor, USA*; G. Dimitrov, *L. Berkeley National Lab., USA*; J. Rothberg, *University of Washington, USA*; F. Tique Aires Viegas, *CERN, Switzerland*; E. Vilucchi, *INFN LAB. Di Frascati, Italy*

N18-8 Unifying the Approach to Histogram Visualisation in ATLAS: the Online Histogram Presenter

P. Adragna¹, D. Carpana², D. Cimino^{2,3}, A. Dotti^{2,3}, R. A. Vitillo²
¹Queen Mary, University of London, UK; ²Università di Pisa, Italy;
³Istituto Nazionale di Fisica Nucleare, Italy

N19 Radiation Damage Effects on Detection Materials II

Tuesday, Oct. 21 13:30-15:30 Conference 4&5

Session Chairs: **Robert Klanner**, University of Hamburg, Germany
Doris Eckstein, Institute of Experimental Physics,
Hamburg University, Germany

N19-1 (invited) The Lifetime of the D0 Silicon Microstrip Tracker and Experiences at the Tevatron

M. Aoki, *Fermi National Accelerator Laboratory, USA*
On behalf of the D0 Collaboration

N19-2 Characteristics of the irradiated Hamamatsu P-Bulk Silicon Microstrip Sensors

K. Hara, H. Hatano, T. Meguro, S. Mitsui, T. Okuyama, *University of Tsukuba, Japan*; Y. Ikegami, T. Terada, S. Terada, Y. Unno, *KEK, Japan*; K. Yamamura, S. Kamada, *Hamamatsu Photonics, Japan*

N19-3 Investigation of 3D Silicon Microstrip Detectors for the sLHC

S. Kuehn¹, G.-F. Dalla Betta², S. Eckert¹, K. Jakobs¹, G. Pahn¹, U. Parzefall¹, S. Ronchin³, A. Zoboli², N. Zorzi³

¹University of Freiburg, Germany, Germany; ²University of Trento and INFN, Italy; ³Fondazione Bruno Kessler, Italy

N19-4 Radiation Hardness Tests of Double-Sided 3D Detectors

D. Pennicard¹, C. Fleta¹, G. Pellegrini², M. Lozano², R. Bates¹, C. Parkes¹, L. Eklund¹, T. Szumlak¹
¹University of Glasgow, UK; ²Centro Nacional de Microelectronica, Spain

N19-5 Measurement of the Current Related Damage Rate at -50° C and Consequences on Macropixel Detectors Operation in Space Experiments

G. Segneri¹, C. Brown², J. Carpenter², B. Kuhnle³, T. Lauf³, P. Lechner¹, G. Lutz¹, S. Rummel⁴, L. Strueder³, J. F. Treis³
¹PN Sensor GmbH, Germany; ²University of Leicester, UK; ³Max Planck Institut for Extraterrestrial Physics, Germany; ⁴Max Planck Institut for Physics, Germany

N19-6 Radiation Hardness Studies of Polycrystalline and Single-Crystal Chemical Vapor Deposition Diamond for High Luminosity Tracking Detectors

H. Kagan, *Ohio State University, USA*
On behalf of the RD42 Collaboration

N20 Software for Detectors

Tuesday, Oct. 21 13:30-15:30 Conference 6

Session Chairs: **Marcia Begalli**, State University of Rio de Janeiro (UERJ), Brazil
Maria Grazia Pia, INFN Genova, Italy

N20-1 MarlinTPC: A Common Software Framework for TPC Development

M. Killenberg¹, J. Abernathy², K. Dehmelt³, R. Diener³, J. Hunt⁴, M. E. Janssen³, T. Krautscheid¹, A. Muennich⁵, M. Ummerhofer¹, A. Vogel³, P. Wienemann¹, S. Zimmermann¹, J. Engels³
¹University of Bonn, Germany; ²University of Victoria, Canada; ³DESY, Germany; ⁴Cornell University, USA; ⁵TRIUMF, Canada

N20-2 Alignment of the Inner Detector of the ATLAS Experiment

J. R. Schieck, *Max-Planck-Institute for Physics, Germany*
On behalf of the ATLAS Inner Detector Collaboration

N20-3 Tracking stations alignment with Kalman tracks at LHCb

A. Hicheur¹, L. Nicolas¹, W. Hulsbergen², M. D. Needham¹, J. M. Amoraal², G. H. Raven²
¹Ecole Polytechnique Federale de Lausanne, Switzerland; ²Nikhef, National institute for subatomic physics, The Netherlands

N20-4 Vertex Reconstruction in the ATLAS Experiment at LHC

K. Prokofiev, *University of Sheffield, UK*
On behalf of the ATLAS Collaboration

N20-5 Data Quality Monitoring of the CMS Endcap Muon System: Implementation, Performance, and Operation Experience

V. A. Barashko, *University of Florida, USA*
On behalf of the CMS

N20-6 Monitoring of the Muon Spectrometer of the ATLAS Detector and Reconstruction Performance Using Cosmic Rays - First Results from the Implementation of Alignment Corrections in the Software for the ATLAS Muon Spectrometer Description

S. Willocq, *University of Massachusetts, USA*
On behalf of the ATLAS Collaboration

N20-7 SIMDized Cellular Automaton Based Track Finder

S. Gorbunov¹, L. Kisel^{1,2}
¹University of Heidelberg, Germany; ²GSI, Germany

N20-8 A New Technique for Simultaneous Beta and Gamma Spectroscopy Based on Wavelet Analysis of Pulse Shapes

S. Yousefi, L. Lucchese, *Oregon State University, USA*

NM2 NSS/MIC Joint Session II

Tuesday, Oct. 21 16:00-18:00 Hall 2&3

Session Chairs: **William W. Moses**, Lawrence Berkeley National Laboratory, United States
Anatoly B. Rosenfeld, Centre for Medical Radiation Physics, University of Wollongong, Australia

NM2-1 (invited) NeuroSpin - an Accessible Resource for Ultra High Field MRI Research

C. Wiggins, *CEA Saclay, France*
On behalf of the NEUROSPIN group

NM2-2 New Structures for High Resolution THz-Imaging in Medical Applications

G. Staats, *Forschungszentrum Dresden-Rossendorf, Germany*; U. Schade, *Berliner Elektronenspeicherring - Gesellschaft für Synchrotronstrahlung m.b.H., Germany*

NM2-3 Edge-on Semiconductor X-Ray Detectors - Towards High-Rate Counting Computed Tomography

E. Roessler, *J.-P. Schlomka, R. Proksa
Philips Research Europe - Hamburg, Germany*

NM2-4 Radiation Detectors Based on Silicon Monolithic Telescope in Medical Applications

A. Fazzi, *S. Agosteo, M. V. Introini, A. Pola, V. Varoli
Politecnico di Milano, Italy*

NM2-5 3D Dosimetry of High Intensity Therapeutic Electron Beams

E. Lamanna^{1,2}, *A. S. Fiorillo*¹, *A. Trapasso*¹, *R. Vena*², *A. Berdondini*³, *M. Bettuzzi*³, *R. Brancaccio*³, *F. Casali*³, *M. P. Morigi*³, *H. Bilokon*⁴, *G. Barca*⁵, *F. Castrovillari*⁵, *Y. F. T. Siaka*⁶
¹Magna Graecia University Cz, Italy; ²INFN Gruppo Collegato Cs, Italy; ³University of Bologna & INFN Bologna, Italy; ⁴INFN Laboratori Nazionali di Frascati, Italy; ⁵Azienda Ospedaliera Cosenza, Italy; ⁶Centre for Atomic Molecular Physics and Quantum Optics, University of Douala, Camerun

NM2-6 Design and Performance of a Light-Sharing Detector for 3D Gamma-Ray Imaging

S. Krishnamoorthy, *Stony Brook University, USA*; *S. Stoll*, *M. Purschke, J.-F. Pratte, C. Woody, B. Yu, P. O'Connor, D. Schlyer, P. Vaska, Brookhaven National Laboratory, USA*

NM2-7 High Spatial and Energy Resolution Gamma Imaging Based on LaBr3:Ce Continuous Crystals

R. Pani, *R. Pellegrini, P. Bennati, M. N. Cinti, F. Vittorini, Sapienza University of Rome, Italy*; *R. Scafè, Casaccia Research Centre, Italy*; *S. Lo Meo, F. Navarra, University of Bologna, Italy*; *G. Moschini, University of Padova, Italy*; *V. Orsolini Cencelli, F. de Notaristefani, University of Rome III, Italy*; *P. Russo, University of Napoli, Italy*

N21 Astrophysics and Space Instrumentation II - X-Ray detectors

Tuesday, Oct. 21 16:00-18:00 Conference 1
Session Chairs: **Toru Tamagawa**, *RIKEN, Japan*
Hiromitsu Takahashi, *Department of Physics, University of Tokyo, Japan*

N21-1 (invited) eROSITA and XEUS - Two Major X-Ray Missions in the Next Decade

L. W. J. Strueder, *MPI für extraterrestrische Physik, Germany*
On behalf of the MPI-Semiconductor Laboratory (MPE) and PN-Sensor GmbH

N21-2 CAST Probing the Axion Model Region

M. Kuster^{1,2}, ¹TU Darmstadt, Germany; ²Max-Planck Institut für Extraterrestrische Physik, Germany
On behalf of the CAST Collaboration

N21-3 Fast DEPFET Read-Out for the Simbol-X Low Energy Detector

L. Bombelli^{1,2}, *C. Fiorini*^{1,2}, *A. Ricca*¹, *M. Porro*^{3,4}, *S. Herrmann*^{3,4}, *A. Wassatsch*^{4,5}, *J. Treis*^{3,4}
¹Politecnico di Milano Dip. Elettronica e Informazione, Italy; ²INFN Sezione di Milano, Italy; ³Max-Planck-Institut für extraterrestrische Physik, Germany; ⁴MPI Halbleiterlabor, Germany; ⁵Max-Planck-Institut für Physik, Germany

N21-4 Simulation of the XEUS Optics Using Geant4

E.-J. Buis¹, *G. Vacanti*¹, *M. Beijersbergen*^{1,2}, *M. Collon*²
¹cosine Science & Computing BV, The Netherlands; ²cosine Research BV, The Netherlands

N21-5 DEPFET Macropixel Arrays as Focal Plane Instrumentation for SIMBOL-X and MIXS on BepiColombo

J. Treis^{1,2}, *P. Lechner*^{3,2}, *L. Andricek*^{4,2}, *F. Aschauer*^{5,2}, *K. Heinzinger*^{3,2}, *S. Herrmann*^{5,2}, *T. Lauf*^{5,2}, *G. Lutz*^{3,2}, *R. H. Richter*^{4,2}, *M. Porro*^{5,2}, *G. Schaller*^{5,2}, *M. Schnecke*^{4,2}, *G. Segneri*^{3,2}, *F. Schopper*^{5,2}, *H. Soltau*^{3,2}, *L. Strüder*^{5,2}
¹Max-Planck-Institute for Solar System Research, Germany; ²MPI Semiconductor Laboratory, Germany; ³PNSensor GmbH, Germany; ⁴Max-Planck-Institute for Physics, Germany; ⁵Max-Planck-Institute for extraterrestrial Physics, Germany

N21-6 Monitor of All-Sky X-Ray Image (MAXI) Mission on the International Space Station

M. Sugizaki, *RIKEN, Japan*
On behalf of the MAXI Team

N21-7 Planar Technology for the Realization of Arrays of NTD Germanium X-Ray Microcalorimeters

U. Lo Cicero^{1,2}, *A. Claudio*¹, *M. Barbera*^{1,2}, *A. Collura*², *G. Lullo*¹, *S. Varisco*²
¹Università degli Studi di Palermo, Italy; ²Istituto Nazionale di Astrofisica, Italy

N22 Nuclear Measurements and Monitoring Techniques I: Low Background

Tuesday, Oct. 21 16:00-18:00 Conference 2
Session Chairs: **Richard T. Kouzes**, *PNNL, United States*
Rolf Arlt, *Consultant for the International Atomic Energy Agency, Austria*

N22-1 (invited) The Majorana Neutrinoless Double-Beta Decay Experiment

V. E. Guiseppe, *Los Alamos National Laboratory, USA*
On behalf of the Majorana Collaboration

N22-2 Low-Background Multi-HPGe Spectrometer TGV II Used for the Study of Double Electron Capture of ¹⁰⁶Cd

I. Stekl, *IEAP CTU in Prague, Czech Republic*
On behalf of the TGV collaboration

N22-3 Low-Level γ -Ray Spectrometry in the Medium Deep Underground Laboratory Felsenkeller/Dresden

D. Degering, *M. Köhler*
Verein für Kernverfahrenstechnik und Analytik Rossendorf e.V. (VKTA), Germany

N22-4 Characterization of a Low-Background, Internal-Source Proportional Counter

A. Seifert, C. E. Aalseth, A. R. Day, J. E. Fast, E. W. Hoppe, T. W. Hossbach, B. J. Hyronimus, M. E. Keillor, K. E. Litke, G. A. Warren
Pacific Northwest National Laboratory, USA

N22-5 Experimental Set-up for Gamma-Activity Measurements of Astromaterials

P. Colombetti^{1,2}, C. Taricco^{1,2}, N. Bhandari³, A. Romero², N. Verma⁴, G. Vivaldo^{1,2}
¹*University of Torino, Italy;* ²*Istituto di Fisica dello Spazio Interplanetario IFSI-INAF, Italy;* ³*Basic Sciences Research Institute, India;* ⁴*Indian Institute of Astrophysics, India*

N22-6 P-Type Modified Electrode High Purity Germanium Detector

J. D. Kephart, H. S. Miley, C. E. Aalseth, J. L. Orrell, *Pacific Northwest National Laboratory, US;* P. S. Barbeau, J. I. Collar, *University of Chicago, US;* A. R. Young, *North Carolina State University, US;* D. C. Radford, *Oak Ridge National Laboratory, US*

N22-7 Calorimetric Measurements of the First Excited State Lifetime in 7Li

I. D. Hau, *Canberra Industries Inc., USA;* T. Niedermayr, S. Friedrich, *Lawrence Livermore National Laboratory, USA*

N23 Analog and Digital Circuits II

Tuesday, Oct. 21 16:00-18:00 Conference 4&5
Session Chairs: **Hiroyasu Tajima**, SLAC, United States
Lorenzo Fabris, Oak Ridge National Laboratory, United States

N23-1 A Multi-Channel ASIC for the Readout of the HICAM Gamma Camera

A. Gola^{1,2}, L. Bombelli^{1,2}, C. Fiorini^{1,2}, G. Membretti¹, R. Nava¹, R. Peloso^{1,2}
¹*Politecnico di Milano, Italy;* ²*INFN, sez. di Milano, Italy*

N23-2 DIRAC: a Digital Readout Asic for Hadronic Calorimeter

R. Gaglione, *IPNL/IN2P3/CNRS, France*
On behalf of the CALICE Collaboration

N23-3 Low-Power Amplifier-Discriminators for High Time Resolution Detection in High Energy Physics and Biotechnologies

M. Despeisse, F. Osmic, P. Jarron, S. Tiuraniemi, P. Riedler, A. Kluge, A. Ceccucci
CERN, Switzerland

N23-4 Development of a Readout Circuit for 2D-Imaging Using GEM

S. Sano¹, H. Hamagaki¹, Y. Tanaka², T. Fusayasu², T. Gunji¹
¹*University of Tokyo, Japan;* ²*Nagasaki Institute of Applied Science, Japan*

N23-5 Development of Waveform Multiplexing CMOS ASIC with Decay Time Modulation for Pixellated Detector

B. Shi¹, K. Shimazoe², T. Fujiwara¹, H. Takahashi¹, J. Ooi³, Y. Kumazawa³
¹*The University of Tokyo, Japan;* ²*The Univeristy of Tokyo, Japan;* ³*Shimadzu Corporation, Japan*

N23-6 Performance of ASTEROID: a 64 Channel ASIC for Source Follower Readout of DEPFET Matrices for X-Ray Astronomy

M. Porro^{1,2}, G. De Vita^{1,2}, S. Herrmann^{1,2}, A. Wassatsch^{3,2}, J. Treis^{1,2}, C. Fiorini^{4,5}, L. Bombelli^{4,5}
¹*Max Planck Institut fuer Extraterrestrische Physik, Germany;* ²*MPI Halbleiterlabor, Germany;* ³*Max Planck Institut fuer Physik, Germany;* ⁴*Politecnico di Milano, Italy;* ⁵*Italian National Institute of Nuclear Physics (INFN), Italy*

N23-7 RG64 - High Count Rate Multichannel ASIC with Energy Window Selection for X-Ray Imaging Application

R. Szczygiel, P. Grybos, P. Maj, *AGH University of Science and Technology, Department of Measurement and Instrumentation, Poland;* A. Tsukiyama, K. Matsushita, T. Taguchi, *Rigaku Corporation, Japan*

N23-8 SPIROC Measurement : Silicon Photomultiplier Read Out Chips for ILC

L. Raux, S. Callier, J. Fleury, F. Dulucq, C. de la Taille, G. Martin-Chassard
Laboratoire de l'accélérateur linéaire (LAL), France

N24 Photon Detectors and Radiation Imaging Detectors II

Tuesday, Oct. 21 16:00-18:00 Conference 6
Session Chairs: **Dieter Renker**, Paul Scherrer Institute, Switzerland
Ichiro Adachi, KEK, Japan

N24-1 Quantum Photo Detector with Optic Cross Talk Suppression

D. W. Zheng, C. C. Kung, K. Zhao, R. Shafiha, M. Asghari, *Kotura Inc., USA;* V. Saveliev, *Obninsk State University, Russia;* Y. Perevalov, *Positron Inc., USA*

N24-2 An Avalanche Diode Array with Bulk Integrated Quench Resistors for Single Photon Detection

R. H. Richter¹, L. Andricek¹, G. Liemann¹, G. Lutz², H.-G. Moser¹, J. Ninkovic¹
¹*MPI Halbleiterlabor, Germany;* ²*PN Sensor GmbH, Germany*

N24-3 Innovation in Solid State Photomultipliers: Photodetectors Based on the Discrete Amplification Mechanism

D. Shushakov, V. E. Shubin, K. Sitarsky, E. Levin, E. Shelegeda, S. Vinogradov, L. Futlik
Amplification Technologies, Inc., USA

N24-4 New Photon Detectors Made of Multi Wall Carbon Nanotubes

M. Ambrosio, *INFN - Istituto Nazionale di Fisica Nucleare, Italy*
On behalf of the GINT collaboration

N24-5 Microcalorimeters and Large-Scale Cryogenic Multiplexer Arrays - the Promise and the Pitfalls

H. Spieler, *Lawrence Berkeley National Laboratory, USA*

N24-6 A Novel CCD Concept – Single Photon Imaging via Avalanche Multiplying Readout

P. Holl¹, R. P. Eckhart¹, R. Hartmann¹, G. Lutz¹, I. Ordavo¹, R. H. Richter², G. Schaller³, H. Soltan¹, L. Strüder³
¹*PNsensor GmbH, Germany;* ²*Max-Planck-Institut für Physik, Germany;* ³*Max-Planck-Institut für extraterrestrische Physik, Germany*

N24-7 High-Speed Single-Photon Avalanche CCD

I. Ordavo^{1,2}, R. Eckhardt^{1,2}, P. Holl^{1,2}, G. Lutz^{1,2}, R. H. Richter^{1,3}, G. Schaller^{1,2}, H. Soltan^{1,2}, L. Strüder^{2,4}

¹PNSensor GmbH, Germany; ²MPI Halbleiterlabor, Germany;

³Max-Planck-Institut für Physik, Germany; ⁴Max-Planck-Institut für extraterrestrische Physik, Germany

N24-8 Development of LAAPDs for the PANDA EMC Readout

A. Wilms, GSI Darmstadt, Germany

On behalf of the PANDA EMC group

N25 Trigger and Front-end Systems I

Wednesday, Oct. 22 08:00-10:00 Conference 1

Session Chairs: **Christian Bohm**, University of Stockholm, Sweden

Alberto Aloisio, University of Naples 'Federico II' and INFN, Italy

N25-1 (invited) Development of Optical Links for SLHC

P. R. S. Moreira, J. K. Troska, CERN, Switzerland

N25-2 The ALICE Dimuon Spectrometer High Level Trigger

A. K. Szostak, INFN Cagliari, Italy

On behalf of the ALICE Collaboration

N25-3 First Data with the ATLAS Level-1 Calorimeter Trigger

R. Achenbach¹, P. Adragna², M. Aharrouché³, V. Andrei¹, B. Asman⁴, B. M. Barnett⁵, B. Bauss³, M. Bendel³, C. Bohm⁴, J. R. A. Booth⁶, J. Bracinik⁶, I. P. Brawn⁵, D. G. Charlton⁶, J. T. Childers¹, N. J. Collins⁶, C. J. Curtis⁶, A. O. Davis³, S. Eckweiler³, E. Eisenhandler², P. J. W. Faulkner⁶, J. E. Fleckner³, F. Fohlich¹, M. P. Gallacher⁶, C. N. P. Gee⁵, A. R. Gillman⁵, M. Groll³, D. R. Hadley⁶, P. Hanke¹, S. Hellman⁴, A. Hidvegi⁴, S. J. Hillier⁶, M. Johansen⁴, E. E. Kluge¹, T. Kuhl³, M. Landon², V. Lendermann¹, J. N. Lilley⁶, K. Mahboubi¹, G. Mahout⁶, K. Meier¹, C. Goringe³, R. P. Middleton⁵, T. Moa⁴, J. D. Morris², F. Muller¹, A. Neusiedl³, C. Ohm⁴, B. Oltmann³, V. J. O. Perera⁵, D. P. F. Prieur⁵, W. Qian⁵, S. Rieke³, F. Ruhr¹, D. P. C. Sankey⁵, U. Schafer³, K. Schmitt¹, H. C. Schultz-Coulon¹, S. Silverstein⁴, J. Sjolin⁴, R. J. Staley⁶, R. Stamen¹, M. C. Stockton⁶, C. L. A. Tan⁶, S. Tapprogge³, J. P. Thomas⁶, P. D. Thompson⁶, P. M. Watkins⁶, A. Watson⁶, P. Weber¹, M. Wessels¹, M. Wildt³

¹University of Heidelberg, Germany; ²Queen Mary, University of London, UK; ³University of Mainz, Germany; ⁴Stockholm University, Sweden; ⁵STFC Rutherford Appleton Laboratory, UK; ⁶University of Birmingham, UK

N25-4 Study of the Performances of the Level-1 Trigger System for Muons in the Barrel of ATLAS with Cosmic Rays

F. Pastore, INFN Rome, Italy

On behalf of the ATLAS Collaboration

N25-5 The Trigger System of the CMS Experiment

M. Felcini, University College Dublin - School of Physics, Ireland

On behalf of the CMS Collaboration

N25-6 Commissioning and Performance of the CMS Global Calorimeter Trigger

A. Tapper, Imperial College London, UK

N25-7 PMF the Front End Electronic for the ALFA Detector

P. Barrillon¹, S. Blin¹, C. Cheikali¹, C. Dominique¹, F. Daniel¹, G. Michel¹, H. Matthieu¹, W. Iwanski², C. de la Taille¹, B. Lavigne¹, P. Puzo¹, J.-L. Socha¹

¹IN2P3/Laboratoire de l'accélérateur linéaire, France; ²CERN, Switzerland

N26 Neutron Instrumentation I: Neutron Detectors

Wednesday, Oct. 22 08:00-10:00 Conference 2

Session Chairs: **Arnd R. Junghans**, Forschungszentrum Dresden-Rossendorf, Germany

Hongjoo Kim, Kyungpook National University, South Korea

N26-1 (invited) Neutron Gas Detectors for Instrumentation on New Generation Spallation Sources

B. Guérard, Institut Laue Langevin, France

On behalf of the ILL Detector Laboratory

N26-2 Thermal Neutron Detectors with Discrete Anode Pad Readout

B. Yu., N. A. Schaknowski, G. C. Smith, G. De Geronimo, E. O. Vernon, BNL, USA; L. G. Clonts, C. L. Britton, ORNL, USA

N26-3 A Compact, Directional Neutron Detector Based on the Use of a SiPM Detector

M. A. Foster, University of Southampton, UK; D. Ramsden, Symetrica Ltd, UK

N26-4 Development of Very High Rate and Resolution Neutron Detectors with Novel Readout and DAQ Hard- and Software in DETNI

S. S. Alimov^{1,2}, A. Borga³, A. Brogna^{1,2}, S. Buzzetti^{2,4}, F. Casinini⁵, W. Dabrowski⁶, T. Fiutowski⁶, B. Gebauer¹, G. Kemmerling⁵, M. Klein², B. Mindur^{1,6}, G. Modzel², C. Petrillo⁵, F. Sacchetti⁵, C. J. Schmidt⁷, H. K. Soltveit², K. S. Solvag², R. Szczygiel⁶, C. Schulz¹, C. Thielmann³, U. Trunk^{2,8}, P. Wiacek⁶, T. Wilpert¹
¹Hahn-Meitner-Institut Berlin, Germany; ²Universität Heidelberg, Germany; ³Forschungszentrum Jülich, Germany; ⁴Politecnico di Milano, Italy; ⁵Università di Perugia, Italy; ⁶AGH University of Science and Technology, Poland; ⁷Gesellschaft für Schwerionenforschung, Germany; ⁸Max-Planck-Institut für Kernphysik, Germany

N26-5 The DT_GEM Neutron Flux Monitor: a GEM-Based Detector for Neutron Diagnostics in Fusion Reactors.

A. Ferrari¹, M. Angelone², B. Esposito², D. Marocco², F. Murtas³, M. Pillon², R. Villari²

¹CNAO Foundation, Italy; ²ENEA - Frascati, Italy; ³LNF-INFN Frascati, Italy

N26-6 Characterization of High-Efficiency Neutron Detector Array (HENDA)

P. B. Ugorowski¹, C. M. Henderson¹, S. Bellinger¹, W. L. Dunn¹, L. M. Crow², W. J. McNeil¹, R. D. Taylor¹, D. S. McGregor¹

¹Kansas State University, USA; ²Oak Ridge National Laboratory, USA

N26-7 DOSIPIX-N, Towards a CMOS Active Pixel Sensor Neutron Dosimeter

M. Trocmé, E. Baussan, S. Higuier, D. Husson, T.-D. Lê, A. Nourredine, M. Vanstalle

IPHC-DRS, ULP, CNRS, IN2P3; 23 rue du Læss, 67037 Strasbourg, France, France

N27 High Energy Physics Instrumentation: Trackers I

Wednesday, Oct. 22 08:00-10:00 Conference 3

Session Chairs: **Timothy K. Nelson**, SLAC, United States
Hartmut F. F-W. Sadrozinski, Santa Cruz Institute
 for Particle Physics, UC Santa Cruz, United States

N27-1 Aging effects and Operational Experience with the CDF Run II Silicon Detector

R. Eusebi, *Fermi National Accelerator Laboratory, USA*
 On behalf of the CDF Collaboration

N27-2 The CMS Silicon Strip Tracker Overview and Commissioning Results

J. Bernardini, *INFN Pisa, Italy*
 On behalf of the CMS Collaboration

N27-3 A Novel Technique for the Reconstruction and Simulation of Hits in the CMS Pixel Detector

V. Chiochia, *University of Zurich, Switzerland*; M. Swartz,
D. Fehling, *G. Giurgiu, P. Maksimovic, Johns Hopkins University, USA*

N27-4 Commissioning the ATLAS Silicon Microstrip Tracker

U. Parzefall, *University of Freiburg, Germany*
 On behalf of the ATLAS SCT Collaboration

N27-5 Results from the Commissioning of the ATLAS Pixel Detector

I. Ibragimov, *University of Siegen, Germany*
 On behalf of the ATLAS Pixel Collaboration

N27-6 Digital Architecture and Interface of the New Atlas Pixel Front-End IC for Upgraded LHC Luminosity

M. Barbero, *University of Bonn, Germany*
 On behalf of the Atlas Pixel Upgrade group

N27-7 Diamond Module Prototypes for the ATLAS SLHC Pixel Detector

W. Trischuk, *University of Toronto, Canada*
 On behalf of the ATLAS Diamond Pixel Upgrade collaboration

N27-8 Edge Characterization of 3D Silicon Sensors after Bump-Bonding with the ATLAS Pixel Readout Chip

E. Bolle¹, S. Chatterji², C. Da Via³, H. Gjersdal¹, J. Hasi³,
C. Kenney⁴, V. Linhart⁵, S. Parker⁶, O. Rohne¹, M. Ruspa⁷,
T. Slavicek⁵, A. Solano⁷, M. Tomasek⁸
¹University of Oslo, Norway; ²Bonn University, Germany; ³University of Manchester, UK; ⁴Molecular Biology Consortium, USA; ⁵Czech Technical University, Czech Republic; ⁶University of Hawaii, USA; ⁷University of Torino and INFN, Italy; ⁸Institute of Physics, Czech Republic

N28 Astrophysics and Space Instrumentation III - Solid State and Gas Detectors

Wednesday, Oct. 22 08:00-10:00 Conference 4&5

Session Chairs: **Luca Latronico**, INFN-Pisa, Italy
Claudio Labanti, IASF Bologna, Italy

N28-1 (invited) One Year of in-Orbit Operation of the AGILE Payload

C. Labanti¹, M. Prest², M. Feroci¹, F. Perotti¹, A. Argan¹, M. Tavani¹,
E. Al¹
¹INAF, Italy; ²Dip. Fisica, Italy

N28-2 Performance of Thin-Window Silicon Drift Detectors

W. Chen¹, G. A. Carini¹, G. De Geronimo¹, J. A. Gaskin², J. Keister³,
J. Fried¹, Z. Li¹, B. D. Ramsey², P. Rehak¹, D. P. Siddons¹
¹Brookhaven National Laboratory, USA; ²a. The MSFC/National Space Science and Technology Center, USA; ³b SFA Inc., Brookhaven National Laboratory, USA

N28-3 In Orbit Performance and Observations of the Silicon Strip Experiment SuperAGILE

M. Feroci¹, E. Costa¹, E. Del Monte¹, G. Di Persio¹,
I. Donnarumma¹, Y. Evangelista¹, M. Frutti¹, I. Lapshov^{1,2},
F. Lazzarotto¹, M. Mastropietro^{1,3}, E. Morelli⁴, L. Pacciani¹,
M. Rapisarda⁵, A. Rubini¹, P. Soffitta¹
¹INAF / Istituto di Astrofisica Spaziale e Fisica Cosmica - Roma, Italy;
²Russian Academy of Sciences, Russia; ³CNR/Istituto Sistemi Complessi, Italy; ⁴INAF/IASF Bologna, Italy; ⁵ENEA Frascati, Italy

N28-4 Ultra-Thin Silicon Solid-State Detectors to Measure dE/dx in Instruments for the Identification of Energetic Heavy Ions

M. E. Wiedenbeck¹, F. B. Eyre², J. Klemic², C. S. Tindall³,
A. C. Cummings², A. W. Labrador², R. A. Mewaldt², E. C. Stone²
¹Jet Propulsion Laboratory, California Institute of Technology, USA;
²California Institute of Technology, USA; ³Lawrence Berkeley National Laboratory, USA

N28-5 The Transition Radiation Detector of the AMS-02 Experiment

A. Sabellek, *University of Karlsruhe, Germany*
 On behalf of the AMS-02 TRD Collaboration

N28-6 Basic Properties of Gas Electron Multipliers for a Cosmic X-Ray Polarimeter

T. Iwahashi^{1,2}, T. Tamagawa^{1,2}, A. Hayato^{1,2}, A. Harayama³,
N. Yasuda⁴, H. Kitamura⁴, F. Tokana⁵, H. Sakurai⁵, K. Makishima^{6,1},
K. Abe^{1,2}, S. Iwamoto^{2,7}, S. Nakamura^{1,2}
¹RIKEN, Japan; ²Tokyo Univ. of Sci., Japan; ³Saitama Univ., Japan;
⁴NIRS, Japan; ⁵Yamagata Univ., Japan; ⁶Tokyo Univ., Japan; ⁷Tokai Univ., Japan

N28-7 Performance of a Negative Ion Drift TPC Polarimeter

Z. Prieskorn¹, K. Black², P. Deines-Jones³, J. Hill^{3,4,5}, K. Jahoda³,
P. Kaaret¹

¹University of Iowa, USA; ²Rock Creek Scientific, USA; ³NASA's Goddard Space Flight Center, USA; ⁴CRESST, USA; ⁵Universities Space Research Association, USA

N29 Grid Computing

Wednesday, Oct. 22 08:00-10:00 Conference 6

Session Chairs: **Juergen Knobloch**, CERN, Switzerland
Andreas Pfeiffer, CERN, Switzerland

N29-1 European Grid Initiative Design Study (EGI_DS)

D. Kranzlmüller, *GUP, Joh. Kepler University Linz, Austria*
 On behalf of the EGI Design Study

N29-2 The (WLCG) Common Computing Readiness Challenge(s) - CCRC'08

J. D. Shiers, *CERN, Switzerland*
 On behalf of the WLCG collaboration

N29-3 A Worldwide Production Grid Service Built on EGEE and OSG Infrastructures for the LHC Experiments / Robust and Resilient Services - How to Design, Build and Operate Them: Experiences with the LHC Experiments

P. Mendez Lorenzo, J. Shiers, M. Dimou, G. McCance
CERN, Switzerland

N29-4 Experiment Dashboard for Monitoring of the Computing Activities of the LHC Experiments on the Grid

J. Andreeva, CERN, Switzerland

On behalf of the Experiment Dashboard team

N29-5 The Commissioning of CMS Computing Centres in the WLCG Grid

A. Sciabà¹, J. Flix², S. Belforte³, A. Fanfani⁴, I. Fisk⁵, N. Magini¹, V. Miccio¹, J. Hernandez⁶, F. Würthwein⁷, J. Letts⁷, J. Klem⁸
¹CERN, Switzerland; ²Port d'Informació Científica, PIC (CIEMAT - IFAE - UAB), Spain; ³INFN, Sezione di Trieste, Italy; ⁴Università degli Studi di Bologna, Italy; ⁵Fermi National Accelerator Laboratory, USA; ⁶Centro de Investigaciones Energéticas Medioambientales y Tecnológicas, Spain; ⁷Univ. of California at San Diego, USA; ⁸Helsinki Institute of Physics, Finland

N29-6 StoRM: a Flexible Solution for Storage Resource Manager in Grid.

R. Zappi, L. Magnoni, A. Ghiselli, INFN, Italy

N29-7 Distributed Computing and Data Analysis in the CMS Experiment

P. K. Kreuzer, RWTH-Aachen, Germany

On behalf of the CMS Collaboration

N29-8 A Comparison of Data-Access Platforms for the Computing of BaBar Experiment at the Italian Tier1

D. Andreotti¹, A. Fella², L. Li Gioi², E. Luppi¹

¹Università di Ferrara, Italy; ²INFN, Italy

N30 NSS Poster Session II

Wednesday, Oct. 22 10:30-12:30 Hall 4&5 (Poster)

Session Chairs: **Susanne Kuehn**, University of Freiburg, Germany
Jean-Francois Pratte, Brookhaven National Laboratory, United States

Analogue and Digital Circuits

N30-2 PSD Read-Out Electronics Development for the New EXED Experiment at HZB

S. P. Boenisch, B. Namaschk, F. Wulf, HZB, Germany

N30-4 An ASIC for Multi-Energy X-Ray Counting

S. Mikkelsen, J. Talebi, D. Meier, G. Machlum, I. Ninive, P. Oya, B. Sundal

Gamma Medica - Ideas, Norway

N30-6 Digital Part of PARISROC: a Photomultiplier Array Readout Chip

F. Dulucq, C. de la Taille, G. Martin-chassard

Laboratoire de l'Accelérateur Lineaire, France

N30-8 CMOS RC-Cell Using Constant Transconductance Method for Readout Circuits in High Rate Particle Detector Systems

I.-I. Jung, Y.-W. Choi, J. H. Lee, C. S. Lee

Chung Ang University, Korea

N30-10 Time to Digital Converter Implementation on a Configurable Digital Processor for Scintillation Detector Events

S. Scarpa^{1,2}, S. Brambilla², F. Camera², B. Million², S. Riboldi², A. Geraci^{1,2}, M. Cuccarese², S. Caramanno²

¹Politecnico di Milano, Italy; ²INFN Sezione di Milano, Italy

N30-12 Experimental Results from an Analog Front-End Channel for Silicon Photomultiplier Detectors

C. Marzocca, Politecnico Di Bari, Italy

On behalf of the INFN-DASiPM2 collaboration - (Univ. and INFN Pisa-Bari-Bologna-Perugia-Trento and ITC-irst (Italy))

N30-14 Real Time Noise Estimation in Radiation Measurements

V. T. Jordanov, Yantel, LLC, USA

N30-16 Nuclear Pulse Height Measurement Using FPGA Techniques

P. C. Tsao, H. P. Chou

National Tsing Hua University, Taiwan

N30-18 PADI, a Fast Preamplifier-Discriminator for Time of Flight Measurements

M. Ciobanu, N. Herrmann, University of Heidelberg,

Germany; K. D. Hildenbrand, M. Kis, A. Schüttauf, Gesellschaft für Schwerionenforschung, Germany

N30-20 A Charge Sensitive Amplifier for Time and Energy Measurements

M. Ciobanu, N. Herrmann, University of Heidelberg,

Germany; K. D. Hildenbrand, M. Kis, T. I. Kang, A. Schüttauf, Gesellschaft für Schwerionenforschung, Germany

N30-22 CASA: a Readout ASIC for Gas Detectors with Self-Amplification

Z. Deng, Y. Liu, Y. Li, Tsinghua University, China

N30-24 A Low-Power-Consumption, Supply-Noise-Insensitive Charge Pump PLL with a Voltage Regulator for on-Chip Clock Generating in MAPS at STAR Experiment

Q. Sun^{1,2}, A. S. Brogna¹, C. Hu-Guo¹, Y. Hu¹

¹Institut Pluridisciplinaire Hubert Curien, France; ²Beihang University, China

N30-26 A Versatile ASIC for Gas Filled Pad and Wire Sensors at the GlueX Detector

E. M. Newcomer, N. Doshi, N. Dressnandt, M. Patel, T. Sapre

University of Pennsylvania, USA

N30-28 Improvement of CMOS Front End ASIC for MPGD μ -PIC Readout System

Y. Fujita, M. Tanaka, High Energy Accelerator Research Organization,

KEK, Japan; C. Ida, K. Hattori, H. Kubo, T. Tanimori, Kyoto University, Japan

N30-30 A FPGA-Based Design of Low Cost Portable Multichannel Analyzer

H.-H. Tseng, T.-Y. Liaw, J.-Y. Wu, J.-S. Yang

Institute of Nuclear Energy Research, Taiwan

N30-32 A New Clamp Amplifier Suitable for PET Scanner's Front-End Electronics Based on Integrated Circuit

T. Furumiya, J. Ohi, Y. Kumazawa

Shimadzu Corporation, Japan

N30-34 Analysis on Sampling Frequency Lower Limits for Digital Timing Methods

X. Deng, Z. Deng, Y. Liu, Tsinghua University, China

N30-36 Low-Overdrive Voltage and Low-Current Compact Comparator for a Diamond Dosimeter ASIC

F. Petullà¹, F. de Notaristefani¹, V. Orsolini Cencelli¹, A. Fabbri¹, E. D'Abramo¹, M. Marinelli², G. Verona²

¹University of Rome Roma Tre, Italy; ²University of Rome Tor Vergata, Italy

N30-38 Portable Gamma and Neutron Radiation Dosimeter Reader

P. Krasinski¹, D. Makowski¹, B. Mukherjee², S. Simrock², A. Napieralski¹

¹Technical University, Poland; ²Deutsches Elektronen-Synchrotron, Germany

N30-40 Low Noise Power Supply System for the Frontend Electronics of the HADES RPC Detector

A. Gil, J. Diaz, Instituto de Física Corpuscular (CSIC-Universidad de Valencia), Spain; M. Traxler, Gesellschaft für Schwerionenforschung mbH (GSI), Germany

N30-42 A Cryogenic Low-Noise JFET-CMOS Preamplifier for the HPGe Detectors of GERDA

A. Pullia^{1,2}, F. Zocca^{1,2}, S. Riboldi^{1,2}, D. Budjas³, A. D'Andragora⁴, C. Cattadori^{2,4}

¹University of Milano, Italy; ²INFN, Italy; ³MPI, Germany; ⁴INFN-LNGS, Italy

N30-44 Signal Deconvolution Concept Combined with Cubic Spline Interpolation to Improve Timing with Phoswich PET Detectors

H. Semmaoui, R. Lecomte, R. Fontaine
Université de Sherbrooke, Canada

N30-46 A 16 Channel NIM Module for a Complete Processing of the Fast Scintillator Signals

C. Boiano¹, R. Bassini¹, F. Camera^{1,2}, B. Million¹, O. Wieland¹

¹INFN, Italy; ²University of Milan, Italy

N30-48 Test of a Fully Integrated CMOS Preamplifier for HPGe Detectors

S. Riboldi^{1,2}, A. Pullia^{1,2}, F. Zocca^{1,2}, A. D'Andragora³, D. Budjas⁴, C. Cattadori⁵

¹Università degli Studi di Milano, Italy; ²INFN Milano, Italy; ³INFN-LNGS, Italy; ⁴MPIK, Germany; ⁵INFN Milano Bicocca, Italy

N30-50 A High Voltage CCD Sensor Control Chip for the Large Synoptic Survey Telescope (LSST)

Z. Ning¹, B. J. Blalock¹, M. N. Ericson^{1,2}, J. Oliver³, R. Van Berg⁴, P. O'Connor⁵, C. L. Britton^{1,2}

¹The University of Tennessee, USA; ²Oak Ridge National Laboratory, USA; ³Harvard University, USA; ⁴University of Pennsylvania, USA; ⁵Brookhaven National Laboratory, USA

N30-52 Optimization of a Time-over-Threshold Preamplifier for High Purity Germanium Detectors

A. Pullia^{1,2}, F. Zocca^{1,2}

¹University of Milano, Italy; ²INFN, Italy

N30-54 A Circuit Technique for Offset Cancellation in Low Noise Preamplifiers for Ionising Radiation Sensors

A. Pullia^{1,2}, F. Zocca^{1,2}

¹University of Milano, Italy; ²INFN, Italy

N30-56 In-the-Flash Pulse Shape Discrimination with Liquid Scintillators

K. D. Ianakiev, B. W. Blackburn, P. Hausladen, A. W. Hunt, J. T. Johnson, J. L. Jones, R. W. Williams, J. T. Mihalzo, C. E. Moss
Los Alamos National Laboratory, USA

N30-58 A Programmable Module for Fast Amplitude and Time Measurements

H. P. Lima Jr, L. M. A. Filho, A. F. Barbosa
Brazilian Center for Physics Research, Brasil

N30-60 A Very Low Power and Low Signal 5 bit 50 M Sample/s Double Sampling Pipelined ADC for Monolithic Active Pixel Sensors in High Energy Physics and Biomedical Imaging Applications

M. Dahoumane^{1,2}, D. Dzahini², Y. Hu¹

¹IPHC Strasbourg, France; ²LPSC Grenoble, France

N30-62 An Investigation of Shaper Circuit Optimization for Digitally Pulse Processing in PET

B. Zhang, Q. Xie, N. Guo, X. Guo, J. Zhu

Huazhong University of Science and Technology, China

Data Acquisition and Analysis Systems

N30-64 Maximum Likelihood Expectation Maximization Deconvolution in Spatial and Combined Spatial-Energy Domains for Combined Single-, Two- and Three-Interaction Events

W. Wang, C. G. Wahl, Z. He, University of Michigan, USA

N30-66 An 8K Pulse Height Analyzer and Multi-Channel Scaler with the USB, Ethernet and Wireless Interfaces Featuring Internal Backup File System

Z. Guzik, S. Borsuk, R. Marcinkowski, M. Płominski, J. Sześciński, K. Traczyk

Soltan Institute for Nuclear Studies, Poland

N30-68 Performance of a High Speed and High Density Data Acquisition System for Multiple Gamma-Ray Detection

A. Kimura, Y. Toh, K. Furutaka, M. Koizumi, T. Kin, M. Oshima
Japan Atomic Energy Agency, Japan

N30-70 A Novel Approach for Mass Storage Data Custodial

L. dell'Agnello¹, V. Sapunen¹, M. Mazzucato^{1,2}, A. Ghiselli¹, R. Zappi¹, L. Magnoni¹, A. Carbone³, V. Vagnoni³, E. Ronchieri¹

¹INFN-CNAF, Italy; ²INFN-Padova, Italy; ³INFN-Bologna, Italy

N30-72 Design and Implementation of BESIII Online Farm

F. Li, K. Zhu, L. Wang, Y. Liu

Institute of High-Energy Physics, The Chinese Academy of Sciences, China

N30-74 High-Precision Time-to-Digital Converters in a FPGA Device

A. Aloisio¹, P. Branchini², R. Cicalese¹, R. Giordano¹, V. Izzo¹, S. Loffredo²

¹INFN Sezione di Napoli and Università di Napoli, Italy; ²INFN Sezione di Roma Tre and Università di Roma Tre, Italy

N30-76 Research and Design of DAQ System for Daya Bay Reactor Neutrino Experiment

X. Ji^{1,2}, F. Li², M. Ye², Y. An¹, K. Zhu², Y. Wang²

¹Graduate University of Chinese Academy of Sciences, China; ²Institute of High Energy Physics, China

N30-78 A DWDM Link for Real-Time Data Acquisition Systems

A. Aloisio¹, F. Ameli², M. Bonori², F. Cevenini¹, R. Giordano¹, G. Giovanetti², V. Izzo¹

¹University of Naples 'Federico II' and INFN, Italy; ²University of Rome 'La Sapienza' and INFN, Italy

N30-80 Data Acquisition System for a Large TPC

G. W. P. De Lentdecker, Université Libre de Bruxelles, Belgium

On behalf of the Linear Collider TPC (LCTPC) Collaboration

N30-82 Performance of the Read-Out Driver for the RPCs Muon Spectrometer of the ATLAS Experiment

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N30-84 Startup and Shutdown Thermal Modeling Using a Modified Pressurized Water Reactor Simulator

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N30-86 DSP Method for BGO Crystal Detectors Readout Electronics

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N30-90 A Novel Modular and Flexible Readout Electronics for Photon Imaging Applications

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N30-92 High-Speed, Fixed-Latency Serial Links with FPGAs

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N30-94 A Modular DAQ System for Ultra – Fast Sampling for Application in High Energy and Astroparticle Physics

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N30-96 Go4 V4 Analysis Framework

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N30-100 The Upgrade of the Multiwire Drift Chamber Readout of the HADES Experiment at GSI

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N30-102 Online Data Quality Monitoring Tools of LHCb

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N30-104 Monitoring the AGILE Payload Through the WEB

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N30-106 An Acquisition System for a Large Mass Array of Bolometric Detectors

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N30-108 Functional Description of the ANTARES Electronics Containers and Their Production Test Bench.

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N30-110 Flexible DAQ System for Pixel Detectors

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N30-114 Data Analysis for Characterizing pnCCDs

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N30-118 Performance of the Final Data-Logging System of the Trigger and Data Acquisition for the ATLAS Experiment at CERN

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N30-144 Testbeam Measurements on Irradiated Silicon Modules

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N30-176 Signal Transmission Studies for CALICE ECAL Prototype Slabs

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A. S. Randle-Conde, A. Khan, *Brunel University, UK*; J. Yi, *University of Manchester, UK*

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N30-196 The Calibration of the High Pressure Drift Tubes of the Muon Spectrometer of the ATLAS Experiment at the Large Hadron Collider

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N30-200 A Hough Transform Based Tracking Algorithm for the LHCb Muon Detector

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N30-202 Systematic Study of the Auto-Calibration of the Drift Tubes for Muon Tracking in the ATLAS Experiment at the LHC

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N30-204 Monitored Drift Tube Chambers in Neutron Background

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N30-206 ATLAS Cathode Strip Chambers Control System

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N30-208 First Study of the Performance of the LHCb Muon System with Cosmic Rays

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N30-210 Cosmic Ray Muon Tomograph Prototype

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N30-212 The CMS Muon System

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N30-216 Mobile Test Bench for the LHC Cryogenic Instrumentation Crate Commissioning

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N30-218 Aerogel at Hadron Colliders

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N30-220 Beam Diagnostics Around the ELBE Linac at FZD

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N30-222 Development of Fast Micron-Resolution Beam Position Monitors for Linear Collider Beam-Based Feedback Systems

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N30-226 Hydrogen-Free Recombination Chambers for Dosimetry in High-Energy Neutron Radiation Fields

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N30-228 Beam Stop for Electron Accelerator Beam Characterisation

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N30-230 The Brick Assembly Machine (BAM) for the OPERA Experiment in LNGS

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N30-232 Low Cost Driver Design for Piezoelectric Actuators in Superconductive Cavity Fast Tuners

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N30-234 A New Wire Position Monitor System for Measuring Cryomodules Static and Microphonics Resonances

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N30-236 Photodetector Studies and Prototype Simulation of a Cherenkov Detector for an ILC Polarimeter

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N30-240 Real-Time Beam Loss Monitoring System for the Injector of SSRF

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N30-242 Beam and Radiation Monitoring for CMS

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N30-244 Radiation Damage Monitoring Using Gamma Camera at Cyclotron Facility

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N30-246 Gamma Detector for the Shintake Monitor at ATF2, the ILC Test Beam Facility

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N30-250 The Efficiency of Detection of Fast, Resonance and Thermal Neutrons and Gamma Ray Discrimination by Inorganic Scintillators

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N30-252 The Research on Neutron Dose Equivalent Meter for Pulse Neutron Radiation Field

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N30-254 First Measurements of the Inclined Boron Layer Thermal-Neutron Detector for Reflectometry

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N30-256 Measurement of Variations in the Neutron Background at Sea Using a Neutron Scatter Camera

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N30-258 Neutron Transmission Tomography of a Fuel Cell

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N30-260 Evaluation of the Neutron Field Spectral Composition in the ATLAS Experiment Using the MPX ATLAS Devices

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N30-262 Observation of Neutron-induced Signals with Two-dimensional Micro-pixel Gas Chamber

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N30-264 Requirements and Ideas for the Neutron Instrumentation of the IFMIF Test Facilities

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N30-266 Measurement of Detection Efficiency Using Pb-Scintillating Fiber Sampling KLOE Calorimeter for Neutrons Between 22 and 174 MeV

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N30-268 The Planar Silicon P-I-N Diodes as Sensors of Fast Neutrons

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N30-270 First Results with a Novel Type of Proton Recoil Telescope for Neutron Spectroscopy

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N30-272 BC523A Liquid Scintillator with Lowered Boron-10 Content for Fast and Thermal Neutron Detection in the Border Monitoring

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N30-274 Evaluation of Silicon Monolithic APS as a Neutron Detector

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N30-276 A High Flux Fission-Fusion Device

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N30-278 A Novel Wavelet-Based Method for Neutron/Gamma Discrimination in Liquid Scintillators

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N30-280 Thermal Neutron Depth Profiling for Diffusion of Li and B in ISOL Targets

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N30-282 Testing a Silicon Photomultiplier Time-of-Flight (TOF) System in Fermilab Test Beam Facility

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N30-284 Study of Timing Properties of Silicon Photomultipliers

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N30-286 Fast X-Ray Spectroscopy Using Si-Drift Detectors

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N30-288 Signal Evolution in Semiconductor Radiation Detectors

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N30-290 Simulation of the Focusing DIRC Optics with Mathematica

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N30-292 MISTI Imaging and Localization

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N30-294 Development of a Novel Type Compton Camera: Double-scattering Compton Imager (DOCI)

H. Seo¹, C. H. Kim¹, S. H. Lee¹, J. H. Lee², C. S. Lee², J. S. Lee³, J. K. Kim¹

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N30-296 Assessment of Novel TMO Radiation Detectors

A. M. Subahi, G. J. Royle, J. A. Griffiths, R. D. Speller, *University College London, U.K.*; J. Boardman, *Atmos Technologies Ltd., U.K.*

N30-298 Three-Dimensional Imaging of Hidden Objects Using Positron Emission Backscatter

L. C. Stonehill, M. S. Wallace, Q. Looker, E. Fenimore, M. Galassi, W. V. McNeil

Los Alamos National Laboratory, USA

N30-300 Electron-Tracking Measurements for Advanced Compton Imaging

B. Plimley, D. Chivers, K. Vetter, *UC Berkeley, USA*

N30-302 The Detector of the UV Radiation in Biologically Active Ranges of Solar Radiation on the Basis of ZnSe -Based Schottky Diodes

L. Gal'chinskii, B. Grinyov, V. Ryzhikov, G. Bendeberya, K. Katrunov, N. Starzhinskiy

Institute for Scintillation Materials of NAS of Ukraine, Ukraine

N30-304 Characterization of a γ -Ray Detection System Based on a CsI(Tl) Scintillator Coupled to a Silicon PiN Diode

A. Fazzi, V. Varoli, *Politecnico di Milano, Italy*; G. U. Pignatelli, *Universita' di Perugia, Italy*; F. Corsi, *Politecnico di Bari, Italy*; S. Carrato, *Universita' di Trieste, Italy*; G.-F. Dalla Betta, *Universita' di Trento, Italy*; F. Garibaldi, *Istituto Superiore di Sanità, Italy*

N30-306 Monte Carlo Simulations of a Multi-Layer Semiconductor Gamma Photon Tracker

J. Solc, J. Jakubek

Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic

N30-308 The Degree of Enhancement in a Gamma-Ray Image Gleaned from Recoil Electron Tracking

M. D. Hammig, *University of Michigan, USA*

N30-310 Characterization and Testing of the Geiger Mode Avalanche Photodiodes

A. Para, *Fermilab, USA*

N30-312 A Silicon Quantum Photo Detector with Low Optical Cross-talk

D. Zheng, C.-C. Kung, J. Fong, R. Shafiha, K. Zhao, X. Clairardin, M. Asghari, V. Saveliev
Kotura, Inc., USA

N30-314 Performance of Track-Typed Digital Gamma-Imaging System Based upon CdTe-CMOS Sensor and Collimated 75Se Source for Nondestructive Testings

H. S. Cho, S. Y. Lee, S. I. Choi, J. E. Oh, H. M. Cho, S. J. Lee, Y. O. Park, *Yonsei University, South Korea*; B. S. Lee, *Konkuk University, South Korea*; S. Kim, *Cheju National University, South Korea*

N30-316 Multiple X-Ray Coincidence Method and Its Application to Element Quantification

M. Oshima, Y. Muramami, M. Koizumi, Y. Toh
Japan Atomic Energy Agency, Japan

N30-318 Development of Silica Aerogel with Refractive Index Gradient for RICH Radiator

Y. Ishii¹, I. Adachi², H. Kawai¹, Y. Saito¹, T. Sumiyoshi³, M. Tabata¹, H. Yokogawa⁴

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N30-320 Material Analysis Using Characteristic Transmission Spectra

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²Institute of Experimental and Applied Physics, Czech Republic

N30-322 Detection of Low Energy Axions with an MCP Detector

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¹TU Darmstadt, Germany; ²TU Tuebingen, Germany

N30-324 Evaluation of Single-Electron Transistor as Nanoscale Thermometer for a Microcalorimeter

T. Matsui, J. Kawarabayashi, H. Tomita, T. Iguchi
Nagoya University, Japan

N30-326 Performance Evaluation of an Electron Veto Counter with Silica Aerogel of $n < 1.003$

Y. Saito¹, Y. Ishii¹, H. Kawai¹, Y. Kon², K. Mase¹, T. Nakano², H. Nakayama¹, M. Tabata¹, Y. Tajima³, H. Yoshida³, M. Yosi²
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N30-328 Study of the Multi Pixel Photon Counter for a Granular Calorimeter

K. Kotera, Shinshu university, Japan
On behalf of the GLD Calorimeter Group / KEKDTP Project Photon Sensor Group

N30-330 Reconstruction of Incident X-Ray Spectra Using the Medipix2 Detector

P. Takoukam Talla, T. Michel, M. Firsching, J. Durst, G. Anton
Universität Erlangen-Nürnberg, Germany

N30-332 Gamma Ray Spectroscopy with LaBr₃:Ce Scintillation Crystals Coupled to an Ultra High Quantum Efficiency PMT

R. Pani¹, M. N. Cinti¹, R. Scafè², P. Bennati¹, R. Pellegini¹, F. Vittorini¹, S. Ridolfi¹, S. Lo Meo³, M. Mattioli¹, G. Baldazzi³, G. Trotta¹, F. Navarra³, G. Moschini⁴, V. Orsolini Cencelli⁵
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N30-334 Fabrication of Silicon-Photomultiplier Arrays and the Performance Test

H. Y. Lee, S. Nam, J. Lee, I. H. Park, J. H. Park
Ewha Womans University, Korea

N30-336 Characterization of SiPM: Temperature Dependencies.

M. Ramilli, UNiversita' degli Studi dell' Insubria, Italy

On behalf of the RAPSODI

N30-338 LaBr₃ Hybrid Imaging Array

Y. Feng¹, R. Detwiler¹, W. Kernan², C. Seifert², J. Baciak¹
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N30-340 Timing and Cross-Talk Studies of BURLE/Photonis MCP PMTs

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N30-342 Characterization of LN₂ Cooled LAAPDs for Single Photon Counting Applications

R. Jöhren, D. Anielski, W. Buglak, D. Hampf, V. Hennen, C. Weinheimer
Institut für Kernphysik, Westfälische Wilhelms-Universität, Germany

N30-344 Optimization of a Compton Suppression Technique Using CdZnTe and Liquid Scintillation Detectors

S. D. Clarke, M. M. Bourne, S. A. Pozzi
University of Michigan, USA

N30-346 A Study of the Factors Limiting Timing Resolution in PET Detectors

S. Dolinsky, C. L. Kim, GE Global Research, USA

N30-348 An Empirical Study on the Effect of Mask Penetrations on the Image Quality of Rotating Modulation Collimators

B. R. Kowash, D. K. Wehe, University of Michigan, USA

N30-350 Characterisation of the 1.3mm x 1.3mm Multi-Pixel Photon Counter Response for the T2K-ND280 Detectors

A. Vacheret, P. Guzowsky, P. Masliha, Imperial College London, UK; F. Retière, TRIUMF, Canada

N30-352 Event by Event Energy Sensitive Imaging with TimePix Pixel Detector and Its Application for Gamma Photon Tracking

J. Jakubek, A. Cejnarova, M. Platkevici, J. Solc, Z. Vykydal
Institute of Experimental and Applied Physics of the Czech Technical University, Czech Republic

N30-354 New Developments in Fast-Sampling Analog Readout of MCP-Based Large-Area Picosecond Time-of-Flight Detectors

J. A. Anderson¹, K. Byrum¹, G. Drake¹, C. Ertley², H. Frisch², J.-F. Genat², E. May¹, D. Salek³, E. Tang²
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N30-356 Characterization and Applications of Silicon Photomultipliers

R. G. Wagner, P. De Lurgio, G. Drake
Argonne National Laboratory, USA

N30-358 Scintillation Light Readout Using Silicon Photomultiplier - Review and Experimental Results

A. Osovizky¹, U. Wengrowicz², M. Ghelman², I. Cohenzada¹, V. Pushkarsky¹, D. Ginzburg¹, Y. Gabay², A. Algom², R. Seif², A. Manor², A. Beck², E. Vulaski¹, M. Ellenbogen¹, D. Tirosh²
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Semiconductor Tracking and Spectroscopy Detectors

N30-360 A Multi-Element, Large Area Silicon Drift Detector for Advanced X-Ray Spectroscopy

L. Feng, V. D. Saveliev, C. R. Tull, S. Barkan, M. Takahashi, E. V. Damron
SII NanoTechnology USA, Inc. (SIINTUSA), USA

N30-362 Simulations of Inter-Strip Interpolation in a High-Purity Germanium Double-Sided Strip Detector

J. P. Hayward, *The University of Tennessee, USA*; D. K. Wehe, *The University of Michigan, USA*

N30-364 DEPFET Beam Test in 2007: Methods, Results, Conclusions

P. Kvasnicka, *Charles University, Czech Republic*
On behalf of the DEPFET collaboration

N30-366 Use of Standard CMOS Pixel Imagers as Ionizing Radiation Detectors.

L. Servoli¹, D. Passeri^{2,1}, D. Biagetti^{2,1}

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N30-368 Quality Assurance Tests of Edgeless Detectors for the First Phase of TOTEM Experiment

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N30-370 Application of a Simple PSA Algorithm for HPGe Segmented Detectors to in-Beam Data

F. C. L. Crespi, F. Camera, B. Million, M. Sassi, O. Wieland, A. Bracco

Università di Milano / INFN Milano, Italy

N30-372 Delay-Line Electrode Partitioning as a Means of Simplified Position-Sensing

M. D. Hammig, M. Jeong, D. K. Wehe, *University of Michigan, USA*; S. Ramadoss, *Galt LLC, USA*

N30-374 Simulations of the Behaviour of the Medipix3 Spectroscopic Imaging System

L. Tlustos, R. Ballabriga, M. Campbell, E. Heijne, X. Llopart, W. Wong

CERN, Switzerland

N30-376 Optimized Design Topologies for Position-Sensitive Silicon Drift Detectors Operating at High Drift Fields

A. Castoldi^{1,2}, C. Guazzoni^{1,2}, R. Hartmann^{3,4}, L. Strueder^{5,4,6}

¹*Politecnico di Milano, Italy*; ²*INFN, Italy*; ³*PN Sensor GmbH, Germany*; ⁴*Max Planck Institut, Germany*; ⁵*Max Planck Institut für Extraterrestrische Physik, Germany*; ⁶*Universität Siegen, Germany*

N30-378 P-Stop Designs for Reducing Electric Field Strength at Implant Edges

Y. Unno, Y. Ikegami, T. Kohriki, S. Terada, *KEK, Japan*; K. Hara, *University of Tsukuba, Japan*; K. Yamamura, S. Kamada, *Hamamatsu Photonics Co. Ltd., Japan*

N30-380 Development of Radiation Hard CMOS Monolithic Pixel Sensors

D. Contarato¹, M. Battaglia^{2,1}, D. Bisello³, P. Denes¹, D. Doering¹, P. Giubilato³, L. E. Glesener^{2,1}, T. S. Kim¹, Z. Lee¹, S. Mattiazzi³, V. R. Radmilovic¹

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N30-382 Pulse Shape Analysis with a Broad-Energy Germanium Detector

D. Budjas, M. Barnabe Heider, O. Chkvorets, S. Schoenert, *Max-Planck-Institut fuer Kernphysik, Germany*

N30-384 Performance of an Overground Low Background Germanium Facility under Heavy Shielding

H. Gastrich, C. Gößling, D. Münstermann, T. Neddermann, O. Schulz

TU Dortmund, Germany

N30-386 Noise Characterization of Double-Sided Silicon Microstrip Detectors with Punch-Through Biasing

G. Giacomini^{1,2}, L. Bosisio^{3,1}, I. Rashevskaya¹, O. Starodubtsev^{1,4}

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⁴*NSC KIPT, Ukraine*

N30-388 Low Material Budget Tracking Detector with High Intrinsic Gain

V. Saveliev, *Obninsk State University, Russia*

Radiation Damage Effects

N30-390 Neutron Irradiation Effects on UV Detection of Schottky 4H-SiC Diodes

F. Nava, *Modena and Reggio Emilia University, Italy*; A. Cavallini, *Bologna University, Italy*; A. Castaldini, ,

N30-392 The Computation Modeling of the Cascade Areas in Solids

A. K. Togambayeva, A. I. Kupchishin, T. A. Shmygaleva, *Al-Farabi National State University, Kazakhstan*; F. F. Komarov, *Institute of Applied Physics Problems, Belarus*

N30-394 Device Simulation of Monolithic Active Pixel Sensors: Radiation Damage Effects

N. T. Fourches, *CEA/DSM/IRFU, France*

N30-396 Computer Modeling of Distribution of In, As and Nanostructures on Depth in Si and SiO₂

A. K. Togambayeva, *Al-Farabi National State University, Kazakhstan*; F. F. Komarov, *Institute of Applied Physics Problems, Belarus*

N30-398 Influence of Irradiation by 100 MeV Protons on Properties of Schottky CdTe Detectors

V. V. Levin, V. V. Akimov, M. N. Pavlinsky, M. V. Kuznetzova, O. A. Smirnov, I. N. Pappe, A. A. Rotin, *Space Research Institute, IKI, Russia*

N30-400 Study of the Radiation Hardness of Silicon Sensors for the XFEL

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N30-402 Radiation Damage Effects on Epitaxial Silicon Devices for the PANDA Hybrid Pixel Detector

A. Braghieri¹, L. Busso^{2,1}, D. Calvo¹, P. De Remigis¹, R. Jakel³, O. Morra⁴, P. Montagna^{5,1}, R. Wheadon¹

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N30-404 Theoretical Foundations of Atom Displacements Induced by Fast Electron Elastic Scattering in Solids

C. M. Cruz Inclán, I. Piñera Hernández, Y. Abreu, A. Leyva Fabelo, *Center of Technological Application and Nuclear Development, Cuba*

N30-406 SPICE Model for Radiation Hard Silicon Detectors

L. Long, R. Roeder, *CiS Institute for Micro Sensors, Germany*

N30-408 Radiation Tolerance of Epitaxial Silicon at Fast Hadron Irradiation

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N30-410 Characterization of Defect Centres in MCz Silicon Irradiated with High Neutron Fluences

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N30-412 Simulations of Irradiated Edgeless Detectors

J. P. Balbuena¹, M. Lozano¹, G. Pellegrini¹, G. Ruggiero², M. Ullan¹, E. Verbitskaya³

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N30-414 Monte Carlo Assisted Classical Method for the Calculation of *dpa* Distributions in Solids Materials

I. Piñera Hernández, C. M. Cruz Inclán, Y. Abreu Alfonso,

A. Leyva Fabelo

Center of Technological Application and Nuclear Development, Cuba

N30-416 Some New Photoluminescence Features of W Line for Neutron-Irradiated MCz and FZ-Si

B. Surma, P. Kaminski, A. Wnuk, R. Kozłowski

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N30-418 Performance of DOFZ Diode as On-Line Gamma Dosimeter in Radiation Processing

F. Camargo¹, J. A. C. Gonçalves^{1,2}, E. Tuominen³, J. Härkönen³, C. C. Bueno^{1,2}

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³*Helsinki Institute of Physics – HIP, Switzerland*

N30-420 Observations of Single-Event Upsets and Multiple-Bit Upsets in Random Access Memories On-Board the Algerian Satellite

Y. Bentoutou, M. Djaifri

Centre for Space Technology, Algeria

N30-422 Extraction of Deep Level Trap Parameters in Irradiated Silicon Detectors Using Admittance Spectroscopy

H. F. F.-W. Sadrozinski, C. Betancourt, G. Alers, M. Gerling,

F. Hurley

Santa Cruz Institute for Particle Physics, Univ. of California Santa Cruz, USA

Synchrotron Radiation and FEL Instrumentation

N30-424 DiagOn: an Undulator Diagnostic for SOLEIL Low Energy Beamlines

K. Desjardins, S. Hustache-ottini, F. Polack, T. Moreno, J.-

M. Dubuisson, S. Thoraud, *Synchrotron Soleil, France;* F. Delmotte, *LCFIO, Institut d'Optique, France*

N30-426 MAXIPIX, a high frame rate and high spatial resolution 2-D photon-counting X-ray detector for synchrotron experiments

C. Ponchut, J. Clément, J.-M. Rigal, E. Papillon, A. Homs

European Synchrotron Radiation Facility (ESRF), France

N30-428 The ELBE Free-Electron Lasers - a User Facility for the Mid- and Far Infrared

U. Lehnert, P. Michel, W. Seidel, J. Teichert, R. Wünsch

Forschungszentrum Dresden-Rossendorf, Germany

N30-430 Performance of Different Readout Topologies of Silicon Drift Detectors in PIXE Spectroscopy

R. Alberti¹, N. Grassi², C. Guazzoni¹, T. Klatka¹, P. A. Mandò², A. Quattrone¹

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N30-432 A System for Distributing High-Speed Synchronous High-Precision Clock and Trigger Data over Large Distances

A. Hidvegi¹, K. Rehlich², P. Geßler², S. Rydström³, C. Bohm¹

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N30-434 Fast Spectroscopic and Imaging pnCCD Detector at BESSY and FLASH VUV-FEL

C. Reich^{1,2}, R. Hartmann^{1,2}, H. Soltau^{1,2}, L. Strüder^{2,3,4},

N. Meidinger^{2,3}, U. Pietsch⁴, W. Leitenberger⁴, C. Bostedt⁵, T. Möller⁵

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N30-436 PILATUS Detectors - Next Generation X-Ray Detectors for Advanced Studies.

M. Kobas, C. Broennimann, *DECTRIS Ltd., Switzerland*

N30-438 Beam Testing of Imaging Spectrometry Detectors for Synchrotron X-Ray Fluorescence Computed Tomography

L.-J. Meng¹, P. J. La Riviere², J.-W. Tan¹, N. H. Clinthorne³

¹*University of Illinois at Urbana-Champaign, USA;* ²*University of Chicago, USA;* ³*University of Michigan, USA*

N30-440 Feasibility Study of Using an Emission Tomography System for Synchrotron X-Ray Fluorescence Computed Tomography

L.-J. Meng¹, P. J. La Riviere², J.-W. Tan¹, N. H. Clinthorne³

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N30-442 Large Format pnCCDs as Imaging Detectors for X-Ray Free-Electron-Lasers

R. Hartmann¹, S. Epp², S. Herrmann³, P. Holl¹, N. Meidinger³,

D. Rolles², H. Soltau¹, L. Strüder³, J. Ullrich⁴, G. Weidenspointner³

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N30-444 A Fast Gaseous Integrating Detector to Study Chemical Kinetics in SAXS

K. Medjoubi, T. Bucaille, S. Hustache-ottini, F. Meneau, J. Perez,

Synchrotron SOLEIL, France; G. Chaplier, *SATIE ENS, France*

N30-446 Characterization of a Large Thin Silicon Photodiode Used as an X-Ray Beam Intensity Monitor

K. Medjoubi, S. Hustache, S. Reguer, D. Thiaudiere

Synchrotron SOLEIL, France

N30-448 Advanced Techniques for a Fast and Accurate Multi-port CCD-based Detector: The FReLoN Camera

J. C. Labiche

European Synchrotron Radiation Facility, France

Trigger and Front-end Systems

N30-450 An Optimization of 16-Point Discrete Cosine Transform

Z. Szadkowski, *University of Lodz, Poland*

N30-452 Implementation of a Hit Reconstruction Algorithm for the ALICE Dimuon High-Level Trigger

S. Siddhanta, *Istituto Nazionale di Fisica Nucleare, Italy*

On behalf of the ALICE Collaboration

N30-454 A Control and Monitor System for Serial Powering of Silicon Strip Detectors at SLHC

Y. Ikegami¹, K. Hara², T. Kohriki¹, S. Terada¹, Y. Unno¹

¹KEK, Japan; ²University of Tsukuba, Japan

N30-456 Design of Prototyping PMT Electronic System for Daya Bay Reactor Neutrino Experiment

Z. Wang, *Institute of High Energy Physics, Chinese Academy of Sciences, China*

On behalf of the Daya Bay Collaboration

N30-458 The Design and Construction of BESIII MDC Electronics System

H. Sheng, B. Zhuang, X. Jiang, Y. Zhao, P. Zhao, R. Li, H. Zhang, H. Dai

Institute of High Energy Physics, Chinese Academy of sciences, China

N30-460 The Configuration System of the ATLAS Trigger

J. Stelzer¹, P. Bell², M. Nozicka¹, J. Haller¹, S. Head², D. Berge³, S. Brunet¹, T. Kono²

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N30-462 Development of the ATLAS Trigger Menu for Early Physics Runs

T. Kono, *CERN, Switzerland*

On behalf of the ATLAS TDAQ Collaboration

N30-464 ATLAS Tau Trigger Implementation and Performance

S. Xella, *Niels Bohr Institute, Denmark*

On behalf of the ATLAS Collaboration

N30-466 Performance and Strategies of the B-Jet Selection for the ATLAS High Level Trigger

A. Coccaro, *Universita' di Genova, Italy*

On behalf of the ATLAS Collaboration

N30-468 An FPGA-Based Trigger for the Search of $\mu \rightarrow e + \gamma$ Decay in the MEG Experiment

L. Galli, *University, Italy*

On behalf of the MEG Collaboration

Nuclear Power

N30-470 Characterization System for Germanium Detectors and Other Developments for Gamma Spectroscopy Applied to Nuclear Waste Characterization

J. Roccaz, N. Saurel, *CEA-Valduc, France*

N30-472 Development of Gaseous Detectors for the RMS of Nuclear Power Plants

T.-Y. Song, H. S. Kim, S.-H. Park, J. H. Ha

Korea Atomic Energy Research Institute, Korea

N30-474 A Time Dependent Analytical Approximation Solution for a Pulsed Source Problem: P1 Transport versus Diffusion

B. Merk, *Forschungszentrum Dresden-Rossendorf, Germany*

N30-476 Flux Dependence of Cluster Formation in Neutron Irradiated Weld Material – Small-angle Neutron Scattering Experiments and Rate Theory Simulation

F. Bergner, A. Ulbricht

Forschungszentrum Dresden-Rossendorf, Germany

N31 Gaseous Detectors III - Gaseous Detectors Basics: Ionization and Scintillation

Wednesday, Oct. 22

13:30-15:30

Conference 1

Session Chairs: **Silvia Dalla Torre**, INFN Trieste, Italy

Jerry Va'ra, SLAC, United States

N31-1 Simultaneous Readout of Secondary Charge and Scintillation from GEM Avalanches

J. F. Veloso, H. Natal da Luz, C. A. Oliveira, *University of Aveiro, Portugal*; J. M. Maia, *University of Beira Interior, Portugal*; C. M. Monteiro, A. C. Bento, J. M. dos Santos, *University of Coimbra, Portugal*

N31-2 PACEM Operation in Xe-CF₄ Gas Mixture

F. D. Amaro¹, J. F. C. A. Veloso², J. M. F. dos Santos¹, A. Breskin³, R. Chechik³

¹University of Coimbra, Portugal; ²University of Aveiro, Portugal;

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N31-3 GEM Operation in CF₄: Studies of Charge and Scintillation Properties

H. Natal da Luz^{1,2}, A. S. Conceição¹, J. F. C. A. Veloso²,

J. M. F. dos Santos¹

¹University of Aveiro, Portugal; ²University of Coimbra, Portugal

N31-4 Self Quenching Streamer Mode Initiated by Alpha Particles in Pure Quenching Gases

Y. I. Davydov, *JINR, Russia*; R. Openshaw, *TRIUMF, Canada*

N31-5 Electron Counting and Energy Resolution Study from X-Ray Conversion in Argon Mixtures with an InGrid-TimePix Detector.

P. Colas¹, D. Attié¹, M. Campbell², M. Chefdeville³, E. Delagnes¹, K. Fujii⁴, I. Giomataris¹, H. van der Graaf³, X. Llopart²,

J. Timmermans³, J. Visschers³

¹CEA/IRFU, France; ²CERN, Switzerland; ³Nikhef, The Netherlands;

⁴KEK, Japan

N31-6 Time Resolution of Radiation Hard Resistive Plate Chambers for the CBM Experiment at FAIR

D. Bartos¹, G. Caragheorghopol¹, F. Dohrmann², B. Kampfer², R. Kotte², L. Naumann², M. Petris¹, M. Petrovici¹, V. Simion¹, D. Stach², C. Williams³, J. Wuestenfeld²

¹National Institute for Physics and Nuclear Engineering, Romania;

²Institut f. Strahlenphysik, FZ Dresden-Rossendorf, Germany; ³CERN, Switzerland

N31-7 Avalanche Charge Readout with THGEMs in Ar, Xe, and CF₄ Based Ne Mixtures

J. M. Maia¹, P. C. Lopes², A. Breskin³, R. Chechik³,

J. M. F. D. Santos²

¹University of Beira Interior, Portugal; ²University of Coimbra, Portugal;

³Weizmann Institute of Science, Israel

N31-8 Development of Hard X-Ray Detector with GEM

S. Uno, M. Sekimoto, T. Murakami, H. Ohshita, *KEK, Japan*; K. Nagaya, T. Koike, *Tokyo University of Science, Japan*; T. Uchida, *University of Tokyo, Japan*

N32 HEP Computing

Wednesday, Oct. 22 13:30-15:30 Conference 2

Session Chairs: **Juergen Knobloch**, CERN, Switzerland
Jamie D. Shiers, CERN, Switzerland

N32-1 Commissioning of the ATLAS Reconstruction Software with First Data

M. J. Costa, *IFIC Instituto de Fisica Corpuscular, Spain*
On behalf of the ATLAS Collaboration

N32-2 The CMS Software Performance at the Start of Data Taking

G. Benelli, *CERN, Switzerland*
On behalf of the CMS Collaboration

N32-3 The ATLAS Calibration Stream and Databases Model

M. Verducci, *INFN Roma1, Italy*
On behalf of the ATLAS Collaboration

N32-4 New Developments for the CMS Software Infrastructure Tools

A. Pfeiffer, *CERN, Switzerland*
On behalf of the CMS Collaboration

N32-5 The TriggerTool Graphical User Interface to the ATLAS Trigger Configuration Database

P. J. Bell, *University of Manchester, UK*
On behalf of the ATLAS Trigger Configuration Group

N32-6 Commissioning of the ALICE Online Data Quality Monitoring Framework

F. Roukoutakis, S. Chapeland, *CERN, Switzerland*

N32-7 The Role of the RPC DCS (Detector Control System) in the Stability and Efficiency of the ATLAS Muon Trigger

F. Marchese, *INFN sez. Tor Vergata, Italy*

N32-8 NA62 Computing Architecture

P. Valente, *INFN Roma, Italy*
On behalf of the NA62 Collaboration

N33 High Energy Physics Instrumentation: Calorimeters I

Wednesday, Oct. 22 13:30-15:30 Conference 3

Session Chairs: **Vishnu V. Zutshi**, Northern Illinois University, USA, United States
Hongjoo Kim, Department of Physics, Kyungpook National University, South Korea

N33-1 The Calorimeter of the T2K-ND280 Detector System.

A. Hatzikoutelis, *Lancaster University, UK*
On behalf of the T2K-UK collaboration

N33-2 The Atlas Liquid Argon Calorimeter: Installation, Commissioning and Performance from Selected Particle Beam Test Results

M. Aleksa, *CERN, Switzerland*
On behalf of the ATLAS LAr group

N33-3 The Electromagnetic Calorimeter of the CMS Experiment

N. Pastrone, *INFN, Italy*
On behalf of the CMS ECAL Group

N33-4 Inter-Calibration of the CMS Electromagnetic Calorimeter Using Neutral Pion Decays

Y. Yang, *California Institute of Technology, USA*
On behalf of the CMS ECAL Group

N33-5 PWO-II Scintillation Crystals for the PANDA Electromagnetic Calorimeter

A. E. Borisevich¹, A. A. Derevschikov², W. Döring³, V. I. Dorneney¹, A. A. Fedorov¹, Y. M. Goncharenko², V. A. Kachanov², M. V. Korzhik¹, Y. M. Melnik², A. P. Meschanin², O. V. Missevitch¹, V. V. Mochalov², R. W. Novotny³, A. V. Ryazantsev², P. A. Semenov², A. V. Uzunian², A. N. Vasiliev², A. E. Yakutin²
¹*Institute for Nuclear Problems, Belarus*; ²*Institute for High Energy Physics, Russia*; ³*2nd Physics Institute, Justus-Liebig-University, Germany*

N33-6 Design of a Si-W Electromagnetic Calorimeter for the International Linear Collider and Study of Crosstalk in Silicon Sensors

R. Cornat, *CNRS/IN2P3/LLR, France*
On behalf of the CALICE Collaboration

N33-7 Response of the CALICE Si-W ECAL Prototype to Electrons

D. R. Ward, *University of Cambridge, UK*
On behalf of the CALICE Collaboration

N33-8 The Liquid Argon Jet Trigger of the H1 Experiment at HERA

A. Dubak, M. Fras, W. Haberer, C. Kiesling, B. Olivier, A. Wassatsch
Max-Planck-Institut fuer Physik, Germany

N34 New Solid State Detectors II

Wednesday, Oct. 22 13:30-15:30 Conference 4&5

Session Chairs: **Jan L. Visschers**, NIKHEF Amsterdam, The Netherlands
Gabriella A. Carini, Brookhaven National Laboratory, United States

N34-1 Advanced Model of Silicon Edgeless Detector Operation

E. M. Verbitskaya, I. V. Eremin, *Ioffe Physico-Technical Institute, RAS, Russia*; G. Ruggiero, *CERN, Switzerland*; A. Cavallini, A. Castaldini, *Bologna University, Italy*; G. Pellegrini, M. Losano, *Centro Nacional de Microelectronica, Spain*; S. Golubkov, N. Egorov, *Russian Institute of Material Science and Technology, Russia*

N34-2 Analytical Approach for 3D Detectors Engineering

V. Eremin, E. Verbitskaya
Ioffe Physico-Technical Institute, RAS, Russia

N34-3 Fabrication of Edgeless Strip and Pixel Detectors by Using 3D Processing on 6" High Resistive SOI Wafers

J. J. Kalliopuska¹, S. Eränen¹, T. Virolainen¹, N. van Remortel², R. Orava^{2,3}, L. Tlustos⁴
¹*VTT, Finland*; ²*Helsinki Institute of Physics, Finland*; ³*Helsinki University, Finland*; ⁴*CERN, Switzerland*

N34-4 Functional Characterization of 3D-DDTC Detectors Fabricated at FBK-Irst

A. Zoboli¹, M. Boscardin², L. Bosisio³, G.-F. D. Betta¹, S. Eckert⁴, S. Kuhn⁴, C. Piemonte², U. Parzefall⁴, S. Ronchini², N. Zorzi²
¹University of Trento, Italy; ²Fondazione FBK-irst, Italy; ³University of Trieste, INFN, Italy; ⁴Albert Ludwig University, Germany

N34-5 Thick Silicon Drift Detectors

M. Christophersen, B. F. Philips
U.S. Naval Research Laboratory, USA

N34-6 Performance Testing and Applications of Microcalorimeter X- and Gamma-Ray Spectrometer

M. W. Rabin¹, M. K. Bacrania¹, P. Karpus¹, A. S. Hoover¹, J. N. Ullom², R. D. Horansky², W. B. Doriese², K. D. Irwin², D. T. Vo¹, D. Bennett², L. R. Vale², J. A. Beall², G. C. Hilton², E. Sassi², C. R. Rudy¹
¹Los Alamos National Laboratory, USA; ²National Institute for Standards and Technology, USA

N34-7 Ultra-High Resolution Alpha Particle Spectrometry Using Superconducting Microcalorimeter Detectors

R. D. Horansky, J. N. Ullom, J. A. Beall, G. C. Hilton, K. D. Irwin, V. Kotsubo, National Institute of Standards and Technology, USA; D. E. Dry, E. P. Hastings, A. A. Plionis, C. R. Rudy, M. W. Rabin, Los Alamos National Laboratory, USA

N34-8 ASIPET chip: Low Noise Optoelectronic Integrated Readout with n-i-p a-Si:H Photodiode Array for Positron Emission Tomography

A. Nardulli
ETH Swiss Federal Institute of Technology, Switzerland

N35 Scintillators and Scintillation Detectors I

Wednesday, Oct. 22 13:30-15:30 Conference 6

Session Chairs: **Jarek Glodo**, Radiation Monitoring Devices, Inc., United States
Rainer W. Novotny, 2nd Physics Institute, University Giessen, Germany

N35-1 (invited) Modeling Proportionality in Undoped NaI, NaI:TL, LaBr3:Ce3+, and LaCl3:Ce3+ Scintillators

G. A. Bizarti¹, N. J. Cherepy², W. S. Choong¹, G. Hull², W. W. Moses¹, S. A. Payne², J. Singh³, J. D. Valentine², A. N. Vasil'ev⁴, R. T. Williams⁵
¹Lawrence Berkeley National Laboratory, USA; ²Lawrence Livermore National Laboratory, USA; ³Faculty of Education, Health and Science, Charles Darwin University, Australia; ⁴Institute of Nuclear Physics, Moscow State University, Russia; ⁵Department of Physics, Wake Forest University, USA

N35-2 Luminescence Investigation in ZnMoO4 Single Crystals

D. A. Spassky¹, A. N. Vasil'ev¹, I. A. Kamenskikh², V. N. Kolobanov², V. V. Mikhailin^{1,2}, A. E. Savon², L. Y. Berezovskaya³, L. I. Ivleva³, I. S. Voronina³
¹Skobel'syn Institute of Nuclear Physics, M.V. Lomonosov Moscow State University, Russia; ²M.V. Lomonosov Moscow State University, Russia; ³A.M. Prokhorov General Physics Institute of RAS, Russia

N35-3 Crystal Growth and Scintillation Properties of YAP:Pr Co-Doped with Tetravalent and Trivalent Ions

M. Zhuravleva¹, M. Nikl², J. Pejchal^{1,2}, J. A. Mares², A. Yoshikawa¹
¹Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan; ²Institute of Physics AS CR, Czech Republic

N35-4 Suppression of Afterglow in Microcolumnar CsI:TI by Co-Doping with Sm²⁺: Recent Advances

V. V. Nagarkar, V. B. Gaysinskiy, O. E. Ovechkina, S. R. Miller, S. L. Cool, B. Singh, S. C. Thacker, RMD, Inc., USA; C. Brecher, ALEM Associates, USA

N35-5 Energy Resolution of Calcium Co-Doped LSO:Ce Scintillators

A. Syntfeld-Kazuch, M. Moszyński, L. Świdorski, T. Szczęśniak, A. Nassalski, Soltan Institute for Nuclear Studies, Poland; C. L. Melcher, M. A. Spurrier, University of Tennessee, USA

N35-6 Intrinsic Energy Resolution of GSO:(Ce, Zr) and GSO:Ce Measured for Different Dopant Concentrations

M. Sato, T. Yanagida, A. Yoshikawa, The Institute of Multidisciplinary Research for Advanced Materials, The Tohoku University, Japan; N. Shimura, T. Usui, Y. Kurata, H. Ishibashi, Hitachi Chemical Co., Ltd., Japan

N35-7 Scintillation Properties of Alkaline Earth Halide Crystals

C. M. Wilson¹, E. V. Van Loef¹, J. Glodo¹, N. J. Cherepy², S. A. Payne², K. S. Shah¹
¹Radiation Monitoring Devices Inc., USA; ²Lawrence Livermore National Laboratory, USA

N36 Trigger and Front-end Systems II

Wednesday, Oct. 22 16:00-18:00 Conference 1

Session Chairs: **Martin L. Purschke**, Brookhaven National Lab, United States
Chikara Fukunaga, Tokyo Metropolitan University, Japan

N36-1 SODA: a Prototype of Time Distribution System for the PANDA Experiment

I. V. Konorov, H. Angerer, A. Mann, S. Paul
Technical University of Munich, Germany

N36-2 Triggering on B-Jets at CDFII

S. Amerio¹, M. Casarsa², G. Cortiana¹, J. Donini¹, D. Lucchesi¹, S. Pagan Griso¹, L. Ristori³
¹University of Padova & INFN, Italy; ²Fermilab, USA; ³INFN Pisa, Italy

N36-3 Level-3 Calorimeter Resolutions Available for the Level-1 and Level-2 CDF Triggers.

L. Sartori, INFN, Italy
On behalf of the Level 2 and Level 1 Calorimeter Upgrade Team

N36-4 The Associative Memory for the Self-Triggered SLIM5 Silicon Telescope

M. Piendibene, INFN - Pisa, Italy
On behalf of the SLIM5 collaboration

N36-5 The Trigger System for Drift Chamber of BESIII

H. Xu, Institute of High Energy Physics, CAS, China
On behalf of the trigger group of BESIII

N36-6 A New High-Speed Pattern Recognition Trigger for Ground-Based Telescope Arrays Used in Gamma-Ray Astronomy

G. Drake¹, F. Krennrich², K. Byrum¹, T. Cundiff³, J. Dawson¹, W. Haberichter¹, D. Horan¹, A. Madhavan², M. Schroedter², A. Smith¹
¹Argonne National Laboratory, USA; ²Iowa State University, USA

N36-7 The Global Trigger System of the Magic Telescope Array
R. Paoletti¹, C. Bigongiari², M. Bitossi³, R. Cecchi¹, R. Pegna¹
¹University of Siena and INFN, Italy; ²University of Padova and INFN, Italy; ³INFN Pisa, Italy

N36-8 A Low Energy Muon Ttrigger for IceCube
C. Bohm¹, H. Kavianipour¹, D. Nygren², C. Robson¹, C. Wernhoff¹, G. Wikström¹
¹University of Stockholm, Sweden; ²Lawrence Berkeley National Laboratory, USA

N37 HEP Simulation

Wednesday, Oct. 22 16:00-18:00 Conference 2
Session Chairs: **Bernadette Kirk**, ORNL, United States
Maria Grazia Pia, INFN Genova, Italy

N37-1 Improved Description of Bremsstrahlung for High-Energy Electrons in Geant4
A. Schaeckle, DESY, Germany

N37-2 Validation of the Full Simulation of CMS ECAL Using Data
C. Rovelli, INFN Roma1, Italy
On behalf of the CMS Collaboration

N37-3 Frozen Shower Libraries for the ATLAS Simulation
J. Boudreau¹, E. Barberio², Z. Marshall³, J. Mueller¹, R. Placakyte⁴, A. Rimoldi⁵, P. Savard⁶, C. Young⁷, A. Dell'Acqua⁸, A. DiSimone⁸, W. Ehrenfeld⁴, M. V. Gallas⁸, A. Glazov⁴, E. Hughes³, B. Butler⁷, V. Tsulaia¹, A. Waugh⁹, S. L. Cheung⁶
¹University of Pittsburgh, USA; ²University of Melbourne, Australia; ³Columbia University, USA; ⁴DESY, Germany; ⁵University of Pavia, Italy; ⁶University of Toronto, Canada; ⁷SLAC, USA; ⁸CERN, Switzerland; ⁹University of Sydney, Australia

N37-4 Fast Simulation of the CMS Detector at the LHC
A. Schmidt, University of Zürich, Switzerland

N37-5 Validation of Geant4 Hadronic Physics Models at Intermediate Energies
S. Banerjee, Fermilab, USA
On behalf of the Geant4 hadronic working group

N37-6 Validation of High Energy String Models in Geant4
G. Folger, CERN, Switzerland
On behalf of the Geant4 collaboration/Hadronic working group

N37-7 Fritiof Model in Geant4
V. Uzhinsky, CERN, Switzerland
On behalf of the Geant4 Hadronic Group

N37-8 Calorimeter Simulation with Hadrons in CMS
S. Piperov, Fermilab, USA
On behalf of the CMS Collaboration

N38 High Energy Physics Instrumentation: Muon Systems I

Wednesday, Oct. 22 16:00-18:00 Conference 3
Session Chairs: **Shinwoo Nam**, Ewha Womans University, South Korea
Dmitri Denisov, Fermi National Accelerator Laboratory, United States

N38-1 Performance of the ATLAS Muon Spectrometer
C. Kourkoumelis, Univ of Athens, Greece
On behalf of the ATLAS Muon Collaboration

N38-2 Commissioning and Early Measurements of the DT Muon Detector of CMS at LHC
A. Perrotta, INFN, Italy
On behalf of the CMS Muon Barrel Collaboration

N38-3 Pre-Installation Tests of the LHCb Muon Chambers
B. Schmidt, CERN, Switzerland
On behalf of the Muon Group of the LHCb collaboration

N38-4 The OPERA Spectrometers
A. Bertolin, INFN - Sezione di Padova, Italy

N38-5 Cathode Strip Chambers in ATLAS: Installation, Commissioning and in Situ Performance
K. Nikolopoulos^{1,2}, ¹University of Athens, Greece; ²Brookhaven National Laboratory, USA
On behalf of the ATLAS CSC Collaboration

N38-6 Data Quality Monitor of the Tracking Detectors of the Muon Spectrometer of the ATLAS Experiment at the Large Hadron Collider: First Experience with Cosmic Rays
M. Iodice, INFN Roma Tre, Italy
On behalf of the ATLAS Muon Collaboration

N38-7 Alignment of the ATLAS Muon Spectrometer with Muon Tracks
B. Bittner, S. Kaiser, O. Kortner, H. Kroha, S. Kotov, Max-Planck-Institut fuer Physik, Germany; R. Harrington, J. Love, N. Nation, Boston University, USA

N38-8 The LHCb Muon System: Electronics Commissioning and Results from First Data Taking Runs
A. Lai, Istituto Nazionale Fisica Nucleare, Italy
On behalf of the LHCb collaboration

N39 Round Table - Nano CMOS and 3D Electronics for Scientific Instrumentation and Imaging: Opportunities and Practical Aspects

Wednesday, Oct. 22 16:00-19:00 Conference 4&5
A round table discussion on future directions and advanced technologies in custom-designed electronics for use in physics experiments, space, and medical imaging equipment. The panel will be composed by experts from industries, national laboratories and universities (for details, see pages 257-258)

N40 Scintillators and Scintillation Detectors II

Wednesday, Oct. 22 16:00-18:05 Conference 6
Session Chairs: **Paul R. Lecoq**, CERN, Switzerland
Edgar V. Van Loef, Radiation Monitoring Devices Inc., United States

N40-1 Gamma and Neutron Detection with Selected Elpasolite Crystals
J. Glodo, E. V. D. van Loef, C. M. Wilson, K. S. Shah
Radiation Monitoring Devices, Inc., USA

N40-2 Scintillation Properties of a $(C_6H_5(CH_2)_2NH_3)_2PbBr_4$ Crystal
C. W. E. Van Eijk, J. T. M. De Haas, *Delft University of Technology, The Netherlands*; P. A. Rodnyi, I. V. Khodyuk, *St. Petersburg State Technical University, Russia*; K. Shibuya, F. Nishikido, *National Institute of Radiological Sciences, Japan*; M. Koshimizu, *Tohoku University, Japan*

N40-3 Scintillation of Tantalate Compounds
R. B. Borade, G. A. Bizarri, S. M. Hanrahan, M. J. Weber, E. B. Bourret-Courchesne, S. E. Derenzo
Lawrence Berkeley National Laboratory, USA

N40-4 Scintillation and Optical Properties of $Li_3YCl_6:Ce^{3+}$ and Radioluminescence Studies on Eu^{2+} and Ce^{3+} Oxy-Nitride Compounds
P. Putaj¹, K. W. Kraemer², A. C. A. Delsing³, H. T. Hintzen³, P. Dorenbos¹
¹*Delft University of Technology, The Netherlands*; ²*University of Bern, Switzerland*; ³*Eindhoven University of Technology, The Netherlands*

N40-5 Lead Tungstate Scintillator for the Future Particle Physics Detectors
M. Korjik, A. Fedorov, O. Missevitch, *RINP, Belarus*; E. Auffray, P. Lecoq, *CERN, Switzerland*

N40-6 Polycrystalline and Columnar Growth of $LaBr_3:Ce$ Scintillator
V. V. Nagarkar, S. Miller, B. Singh, S. C. Thacker, V. B. Gaysinskiy
RMD, Inc., USA

N40-7 Fluorescence and Scintillation Results from Horizontal Bridgman Grown Aliovalently-Doped $CeBr_3$
M. J. Harrison¹, C. F. Linnick¹, S. O. Brinton¹, P. Ugorowski¹, F. P. Doty², D. S. McGregor¹
¹*Kansas State University, USA*; ²*Sandia National Laboratories, USA*

N40-8 Gamma Radiation Hardness of $\varnothing 1'' \times 1''$ $LaBr_3:Ce$, $LaCl_3:Ce$, and $CeBr_3$ Scintillators
W. Drozdowski, P. Dorenbos, A. J. J. Bos, *Delft University of Technology, The Netherlands*; A. Owens, *European Space Agency, The Netherlands*; D. Richaud, *Saint-Gobain Cristaux & Detecteurs, France*

N41 Simulation

Thursday, Oct. 23 08:00-10:00 Conference 1
Session Chairs: **Juergen Knobloch**, CERN, Switzerland
Adam Para, Fermilab, United States

N41-1 Cosmic Background Simulations for Gamma-Ray Telescopes with Geant4
A. Zoglauer¹, C. B. Wunderer¹, S. E. Boggs¹, G. Weidenspointner^{2,3}
¹*University of California at Berkeley, USA*; ²*Max-Planck-Institut für extraterrestrische Physik, Germany*; ³*MPI Halbleiterlabor, Germany*

N41-2 New Geant4 Developments for Doppler Broadening Simulation in Compton Scattering - Development of Charge Transfer Simulation Models in Geant4
M. G. Pia, *INFN Genova, Italy*; F. Longo, *INFN TS, Italy*; L. Pandola, *INFN LNGS, Italy*
N41-3 Validation of Geant4 X-Ray Fluorescence Transitions - Validation of Geant4 electromagnetic models against calorimetry measurements in the energy range up to 1 MeV
M. Sudhakar, *INFN Genova, Italy*
On behalf of the INFN Genova-Vienna Geant4 R&D Team

N41-4 Application of the Geant4 PIXE Implementation for Space Missions - New Models for PIXE Simulation with Geant4
G. Weidenspointner, *MPI Halbleiterlabor, Germany*
On behalf of the Geant4 high energy PIXE collaboration

N41-5 New Native QMD Code in Geant4
T. Koi, *SLAC, USA*
On behalf of the Geant4 hadronic working

N41-6 Detailed Comparison Between Geant4 and the TARC Experiment
A. S. Howard, *ETH, Switzerland*

N41-7 Influence of Low-Energy Electrons in Monte Carlo Simulations at Micrometric and Nanometric Scale
E. Gargioni¹, R. Sofia², G. Hilgers¹, B. Grosswendt¹
¹*Physikalisch-Technische Bundesanstalt, Germany*; ²*Austrian Research Centers GmbH, Austria*

N41-8 Experimental Verification of Radiation Track Structure Models
V. A. Bashkurov, R. W. Schulte, G. Couttrakon, A. Wroe, *Loma Linda University, USA*; G. Y. Garty, *Columbia University, USA*; A. Breskin, R. Chechik, S. Shchemelinin, *Weizmann Institute of Science, Israel*; E. Gargioni, B. Grosswendt, *Physikalisch-Technische Bundesanstalt, Germany*; A. B. Rozenfeld, *University of Wollongong, Australia*

N42 Neutron Instrumentation II: Neutron Facilities, Technology and Applications

Thursday, Oct. 23 08:00-10:00 Conference 2
Session Chairs: **Anna Ferrari**, CNAO Foundation & INFN, Italy
Philip B. Ugorowski, Kansas State University, United States

N42-1 (invited) Energy (TOF) and Position Sensitive Detection of Ultra Cold Neutrons with Micrometric Resolution Using the TimePix Pixel Detector
J. Jakubek¹, P. Schmidt-Wellenburg², P. Geltenbort², M. Platkevic¹, C. Plonka-Spehr², J. Solc¹, T. Soldner²
¹*Institute of Experimental and Applied Physics of the Czech Technical University, Czech Republic*; ²*Institut Laue Langevin, France*

N42-2 Energy-Resolving Neutron Transmission Radiography at the ISIS Pulsed Spallation Source with a High-Resolution Neutron Counting Detector
A. S. Tremsin¹, J. B. McPhate¹, W. Kockelmann², J. V. Vallerga¹, O. H. W. Siegmund¹, W. B. Feller³
¹*University of California at Berkeley, USA*; ²*Rutherford Appleton Laboratory, UK*; ³*NOVA Scientific, USA*

N42-3 The nELBE Neutron Time of Flight Facility

A. R. Junghans, E. Altstadt, C. Beckert, R. Beyer, V. Galindo, E. Grosse, R. Hannaske, A. Matic, B. Naumann, K.-D. Schilling, S. Schneider, R. Schlenk, R. Schwengner, A. Wagner, F.-P. Weiss, *Forschungszentrum Dresden-Rossendorf, Germany*; R. Nolte, M. Mosconi, S. Röttger, *Physikalisch-Technische Bundesanstalt, Germany*

N42-4 Electronic Neutron Generators Using Electrostatic Field Desorption and Electrostatic Field Evaporation Ion Sources

D. L. Chichester¹, K. L. Hertz², P. R. Schwoebel^{3,4}, C. E. Holland⁴, B. Reichenbach³, I. Solano³, P. J. Resnick²
¹Idaho National Laboratory, USA; ²Sandia National Laboratories, USA; ³University of New Mexico, USA; ⁴SRI International, USA

N42-5 The NPI Cyclotron-Based Fast Neutron Generators

P. Bem¹, V. Burjan¹, U. Fischer², M. Götz¹, M. Honusek¹, V. Kroha¹, J. Novák¹, S. P. Simakov², E. Šimecková¹
¹Nuclear Physics Institute v.v.i. Rez, Czech Republic; ²Forschungszentrum Karlsruhe, Germany

N42-6 New Neutron Imaging Techniques for Cultural Heritage Purposes

T. Materna, *Institut Laue-Langevin, France*
On behalf of the Ancient Charm Collaboration

N42-7 Development of a Neutron Tagger Module Using a Digital Pulse Shape Discrimination Method

H. J. Kim, *Kyungpook National University, Korea*; S. Y. Kim, *NOTICE Co. Ltd, Korea*; E. J. Kim, *Chonbuk National University, Korea*

N43 High Energy Physics Instrumentation: Trackers II

Thursday, Oct. 23 08:00-10:00 Conference 3

Session Chairs: **Michael Hauschild**, CERN, Switzerland
Marco Battaglia, LBNL and UC Berkeley, United States

N43-1 Development of Thin Sensors and a Novel Interconnection Technology for the Upgrade of the ATLAS Pixel System at SLHC

A. Macchiolo, L. Andricek, M. Beimforde, H.-G. Moser, R. Nisius, R. H. Richter, *Max-Planck-Institut fuer Physik, Germany*

N43-2 Performance of Large, Serially Powered, Integrated Silicon Tracking Elements for the Super-LHC

C. Haber, *Lawrence Berkeley National Laboratory, USA*
On behalf of the ATLAS Tracker Upgrade Stave Group

N43-3 Silicon Tracking in the SiD Detector Concept

T. K. Nelson, *SLAC, USA*
On behalf of the SiD Tracking Group

N43-4 Development of the System for Fast Readout DEPFET Sensors.

S. Furlerov¹, L. Andricek², P. Fischer³, M. Koch¹, R. Kohrs¹, H. Krüger¹, C. Kreidl³, I. Peric³, L. Reuen¹, R. Richter², H.-G. Moser², N. Wermes¹

¹University of Bonn, Germany; ²MPI, Germany; ³University of Heidelberg, Germany

N43-5 Particle Identification with the NA49 TPC Tracking System

D. Varga, *Eötvös Loránd University, Hungary*
On behalf of the NA49 Collaboration

N43-6 First Results of the PixelGEM Central Tracking System of COMPASS

M. Krämer, A. Austregesilo, F. Haas, B. Ketzer, I. Konorov, A. Mann, T. Nagel, S. Paul, F. Schneider, S. Uhl
Technische Universität München, Germany

N43-7 Time Projection Chamber with Triple GEM and Pixel Readout

C. Brezina, K. Desch, J. Kaminski, M. Killenberg, T. Krautscheid, M. Ummenhofer, P. Wienemann, S. Zimmermann
University Bonn, Germany

N43-8 Design and Construction of INGRID Neutrino Beam Monitor for T2K Neutrino Experiment.

M. Otani¹, K. Nitta¹, O. Ferreira², M. Gonin², T. Nakaya¹, M. Yokoyama¹
¹Kyoto University, Japan; ²LLREcolepolytechnique, France

N44 Analog and Digital Circuits III

Thursday, Oct. 23 08:00-10:00 Conference 4&5

Session Chairs: **Raymond J. Yarema**, Fermi National Accelerator Laboratory, United States
Angelo Dragone, Stanford Linear Accelerator Center, United States

N44-1 A Silicon Pixel Readout ASIC in CMOS 0.13 μm for the PANDA MicroVertex Detector

D. Calvo¹, T. Kugathasan^{1,2}, G. Mazza¹, M. Mignone¹, A. Rivetti¹, T. Stockmanns³, R. Wheadon¹

¹INFN, Italy; ²Universita' di Torino, Italy; ³Forschungszentrum Jülich, Germany

N44-2 Integrated Front-End Readout Electronics and Analog Filtering Strategies for DEPFETs with Special Functionalities

M. Porro^{1,2}, G. De Vita^{1,2}, S. Herrmann^{1,2}, G. Lutz^{2,3}, L. Strueder^{1,2}, J. Treis^{1,2}, C. Fiorini^{4,5}, L. Bombelli^{4,5}

¹Max Planck Institut fuer Extraterrestrische Physik, Germany; ²MPI Halbleiterlabor, Germany; ³PNSensor GmbH, Germany; ⁴Politecnico di Milano, Italy; ⁵Italian National Institute of Nuclear Physics (INFN), Italy

N44-3 Design and Noise Analysis of Charge Sensitive Amplifier for Readout of Pixelized Thin Film Amorphous Silicon Sensors

K. Poltorak, J. Kaplon, P. Jarron, *CERN, Switzerland*; W. Dabrowski, *AGH University of Science and Technology, Poland*

N44-4 CAMEX Readout ASIC for pnCCDs

S. Herrmann^{1,2}, W. Buttler³, R. Hartmann^{1,4}, N. Meidinger^{1,2}, M. Porro^{1,2}, L. Stueder^{1,2}

¹Max-Planck-Institut fuer extraterrestrische Physik, Germany; ²MPI Halbleiterlabor, Germany; ³Ingenieurbuero Werner Buttler, Germany; ⁴PNSensor GmbH, Germany

N44-5 A Low Power Front-End Prototype for Silicon Pixel Detectors with 100ps Time Resolution

S. Martoiu¹, G. Mazza¹, F. Osmic², A. Rivetti¹, F. Marchetto¹
¹INFN, Italy; ²CERN, Switzerland

N44-6 Time Invariant Analog Processors for Monolithic Deep N-Well CMOS Pixel Detectors

L. Ratti^{1,2}, C. Andreoli^{1,2}, M. Manghisoni^{3,2}, E. Pozzati^{1,2}, V. Re^{3,2}, V. Speziali^{1,2}, G. Traversi^{3,2}
¹University of Pavia, Italy; ²INFN Pavia, Italy; ³University of Bergamo, Italy

N44-7 Optimization of Amplifiers for Monolithic Active Pixel Sensors for the STAR Detector.
A. Dorokhov¹, G. Bertolone¹, A. Besson¹, A. Brogna¹, C. Colledani¹, G. Claus¹, Y. Degerli², W. Dulinski¹, M. Goffe¹, F. Guilloux², A. Himmi¹, C. Hu-Guo¹, K. Jaaskelainen¹, M. Koziel¹, F. Morel¹, I. Valin¹, M. Specht¹, M. Winter¹
¹IPHC, France; ²CEA, France

N44-8 XAMPS Detectors Readout ASIC for LCLS
A. Dragone, *Stanford Linear Accelerator Center, USA*; J.-F. Pratte, P. Rehak, P. O'Connor, D. P. Siddons, *Brookhaven National Laboratory, USA*

N45 Scintillators and Scintillation Detectors III
Thursday, Oct. 23 08:00-10:00 Conference 6
Session Chairs: **Carel W. E. Van Eijk**, Delft University of Technology, The Netherlands
Francesca Nessi-Tedaldi, ETH Zurich, Switzerland

N45-1 Lanthanum Bromide-Based Rotation Modulation Gamma Ray Imager
B. Budden, G. L. Case, M. L. Cherry
Louisiana State University, USA

N45-2 Silicon Drift Detectors Arrays for the HICAM Gamma Camera
C. Fiorini^{1,2}, A. Gola^{1,2}, R. Peloso^{1,2}, A. Longoni^{1,2}, P. Lechner³, L. Strueder⁴, A. Niculae³, H. Soltau³
¹Politecnico di Milano, Italy; ²INFN, Italy; ³PNSensor GmbH, Germany; ⁴MPI Halbleiterlabor, Germany

N45-3 Pulse Shape Discrimination for a Fast Neutron Detector
K. J. Coakley, D. F. Vecchia, J. S. Nico, B. Fisher
National Institute of Standards and Technology, USA

N45-4 Research Status on New Fission Based Solid-State Neutron Detectors
E. I. Esch, R. E. Del Sesto, R. Muenchausen, D. Ortiz-Acosta, S. Sy, F. K. Tovesson
LANL, USA

N45-5 Cross-Correlation and Multiplicity Simulations and Measurements of Plutonium-Oxide Powders
S. D. Clarke, M. Flaska, S. A. Pozzi, *University of Michigan, USA*; P. Peerani, *Joint Research Center, Italy*

N45-6 Radiation Measurements Using Solid-State Photomultipliers: Gamma Rays, Charged Particles, and Neutrons
E. B. Johnson¹, C. Stapels¹, E. Chapman¹, F. Augustine², J. Christian¹
¹Radiation Monitoring Devices, Inc., USA; ²Augustine Engineering, USA

N45-7 Prospects of a Dual Range Photon Detector with SDD and LaBr3(Ce) Scintillator
C. Plettner, G. Pausch, C. M. Herbach, J. Stein, *ICx Radiation, Germany*; M. Moszynski, A. Nassalski, L. Swiderski, T. Szczesniak, *Soltan Institute for Nuclear Studies, Poland*; A. Niculae, H. Soltau, *PNSensor GmbH, Germany*

N45-8 Improvement of Thermal Neutron Analysis for Landmine Detection Through the Use of Lanthanum Halide Scintillators
A. A. Faust, J. E. McFee, *Defence R&D Canada - Suffield, Canada*; H. R. Andrews, V. Kovaltchouk, T. Clifford, H. Ing, *Bubble Technology Industries, Canada*

N46 Software Tools
Thursday, Oct. 23 10:30-12:30 Conference 1
Session Chairs: **Gabriela Hoff**, Pontifical Catholic University in Rio Grande do Sul, Brazil
Maria Grazia Pia, INFN Genova, Italy

N46-1 An Automatic Monitoring and Diagnostic System over a Virtual Organization for the Accelerator Science in Japan
G. Iwai¹, M. Fujii², T. Koyama², Y. Nagasaka², T. Sasaki¹, Y. Watase¹
¹KEK, Japan; ²Hiroshima Institute of Technology, Japan

N46-2 COOL Software Development and Service Deployment Status
A. Valassi, *CERN, Switzerland*

N46-3 Distributed Database Access in the LHC Computing Grid with CORAL
Z. Molnar, R. Chytracek, D. Düllmann, G. Giacomo, A. Kalkhof, A. Valassi
CERN, Switzerland

N46-4 Signal-Background Discrimination in Particle Physics with Evolutionary Algorithms
Z. Huang, L. Teodorescu
Brunel University, West London, UK

N46-5 A Novel Environment for Visual Physics Analysis (VISPA)
O. Actis, M. Erdmann, R. Fischer, A. Hinzmann, M. Kirsch, T. Klimkovich, G. Müller, J. Steggemann
III. Physikalisches Institut A, RWTH Aachen University, Germany

N46-6 Extra Dimensions
N. Graf, *Stanford Linear Accelerator Center (SLAC), USA*

N46-7 Real-Time Nuclear Fusion Application Utilizing Online HPC
M. Cerna, A. Vrancic, L. Wenzel, *National Instruments Corporation, USA*; L. Giannone, *Max-Planck-Institut für Plasmaphysik, Germany*

N46-8 Real Time Measurements for Tokamak Control with Multicore PCIe Systems
L. Giannone, *Max-Planck-Institut für Plasmaphysik, Germany*
On behalf of the ASDEX Upgrade Team and National Instruments collaborators

N47 Nuclear Measurements and Monitoring Techniques II: Safeguards
Thursday, Oct. 23 10:30-12:30 Conference 2
Session Chairs: **Rolf Arlt**, Consultant for the International Atomic Energy Agency, Austria
Richard T. Kouzes, PNNL, United States

N47-1 (invited) Advanced Safeguards for the Nuclear Renaissance
M. C. Miller, *Los Alamos National Laboratory, USA*

N47-2 Towards Above-Ground Antineutrino Detectors for Cooperative Monitoring: Background Radiation Studies
L. E. Sadler¹, A. Bernstein², N. S. Bowden², S. Dazeley², J. Lund¹, S. Mrowka¹, D. Reyna¹
¹Sandia National Laboratories, USA; ²Lawrence Livermore National Laboratory, USA

N47-3 Development of Fuel Assembly Tags for Nuclear Safeguards Monitoring

B. D. Reid, D. C. Gerlach, M. R. Mitchell, C. J. Gesh,
G. H. Meriwether, B. K. McNamara
Pacific Northwest National Laboratory, USA

N47-4 New Generation Enrichment Monitoring Technology for Gas Centrifuge Enrichment Plants

K. D. Ianakiev, B. S. Alexandrov, B. D. Boyer, T. R. Hill,
D. W. MacArthur, T. J. Marks, C. E. Moss, G. A. Sheppard,
M. T. Swinhoe
Nuclear Nonproliferation Division, USA

N47-5 Measurement of Neutron Yields from UF₄

Z. W. Bell¹, K. P. Ziock¹, M. F. Ohmes², Y. Xu³, T. J. Downar³,
S. A. Pozzi¹
¹*Oak Ridge National Laboratory, USA;* ²*Kansas State University, USA;*
³*Purdue University, USA*

N47-6 A Plastic Scintillator Antineutrino Detector for Reactor Monitoring and Safeguards

N. S. Bowden¹, A. Bernstein¹, J. Brennan², S. Dazeley¹, D. Reyna²,
L. Sadler², R. Svoboda¹
¹*Lawrence Livermore National Laboratory, USA;* ²*Sandia National Laboratories, USA*

N47-7 Prospect of Application of Record Characteristics of Nanocrystalline Scintillators for Radiation Monitoring

O. Krivko, N. Klassen, V. Kurlov, V. Kedrov, I. Shmyt'ko,
S. Shmurak, E. Kudrenko, A. Orlov
Institute of Solid State Physics Russian Academy of Sciences (ISSP RAS), Russian Federation

N48 High Energy Physics Instrumentation: Beam Monitors and Other Detector Systems I

Thursday, Oct. 23 10:30-12:30 Conference 3
Session Chairs: **Toshiaki Tauchi**, KEK, Japan
James E. Brau, University of Oregon, United States

N48-1 (invited) EUROTeV Overview

E. Elsen, *DESY, Germany*
On behalf of the EUROTeV Consortium

N48-2 The New Superconducting RF Photoinjector at the ELBE Linac

J. Teichert, A. Arnold, H. Buettig, D. Janssen, M. Justus, U. Lehnert,
P. Michel, P. Murcek, A. Schamlott, C. Schneider, F. Staufenbiel,
R. Xiang, *Forschungszentrum Dresden-Rossendorf, Germany;* T. Kamps,
J. Rudolph, M. Schenk, *BESSY, Germany;* A. Matheisen, *DESY, Germany;* G. Klemz, I. Will, *MBI, Germany;* P. vom Stein, *ACCEL Instruments, Germany*

N48-3 A Cyclotron project for Medical and Research Usage at Jožef Stefan Institute

Š. Stres, *Jožef Stefan institute, Slovenija*

N48-4 Beam Stabilization at the ELBE Electron Accelerator and the FELBE Infrared User Facility

M. Justus, U. Lehnert, P. Michel, D. Proehl, R. Jainsch, F. Gabriel,
W. Seidel
Forschungszentrum Dresden-Rossendorf, Germany

N48-5 The Radiation Source ELBE at the Forschungszentrum Dresden-Rossendorf

P. R. Michel, *Forschungszentrum Dresden-Rossendorf, Germany*

N48-6 New Capabilities and Performance of the Fermilab Meson Test Beam Facility

E. J. Ramberg, *Fermi National Accelerator Laboratory, USA*

N48-7 The CERN Neutrinos to Grand Sasso (CNGS) Facility – Operating a High-Intensity Neutrino Facility: Startup Issues and 2008 Operation Summary.

I. Efthymiopoulos, *CERN, Switzerland*
On behalf of the CERN - CNGS team

N49 Radiation Damage Effects on Electronics and Components

Thursday, Oct. 23 10:30-12:30 Conference 4&5
Session Chairs: **Pavel Rehak**, Brookhaven National Laboratory, United States
Doris Eckstein, Institute of Experimental Physics, Hamburg University, Germany

N49-1 (invited) Review of Radiation Effects Leading to Noise Performance Degradation in 100 nm – Scale Microelectronic Technologies

V. Re¹, L. Gaioni², M. Manghisoni¹, L. Ratti², V. Speziali²,
G. Traversi¹
¹*Università di Bergamo, Italy;* ²*Università di Pavia, Italy*

N49-2 Managing Age-Related Changes in Device Radiation-Response

K. M. Horn, *Sandia National Labs, USA*

N49-3 Critical Assessment of Oxide-Trap Based on Charge Pumping (OTCP) Method Versus MG and STS to Extract Radiation-Induced Traps in MOFET Devices

H. Tahi¹, B. Djezzar¹, A. Mokrani², S. Oussalah¹
¹*Centre de Développement des Technologies Avancées (CDTA), Algeria;*
²*Université Mouloud MAMMERI de Tizi Ouzou, Algeria*

N49-4 IHP SiGe:C BiCMOS Technologies as a Suitable Backup Solution for the ATLAS Upgrade Front-End Electronics

S. Díez, M. Ullán, M. Lozano, G. Pellegrini, *Centro Nacional de Microelectrónica (CNM-CSIC), Spain;* I. Mandic, *Jožef Stefan Institute, Slovenia;* D. Knoll, B. Heinemann, *Innovation for High Performance Microelectronics (IHP), Germany*

N49-5 Random Telegraph Signal in Monolithic Active Pixel Sensors for Charged Particle Tracking

M. Deveaux¹, S. Amar-Youcef^{1,2}, A. Büdenbender¹, D. Döring¹,
C. Müntz¹, F. M. Wagner³, J. Stroth¹
¹*University Frankfurt, Germany;* ²*Helmholtz Research School, Germany;*
³*Forschungszentrum Heinz Maier-Leibnitz (FRM II), Germany*

N49-6 Estimation of Radiation Effects in the Front-End Electronics of an ILC Electromagnetic Calorimeter

Y. Bartsch¹, M. Postranecky¹, M. Warren¹, M. Wing^{1,2,3}
¹*University College London, UK;* ²*Universitaet Hamburg, Germany;*
³*DESY, Germany*

N50 Photon Detectors and Radiation Imaging Detectors III

Thursday, Oct. 23 10:30-12:30 Conference 6
Session Chairs: **Jerry Va'vra**, SLAC, United States
Carl Zorn, Jefferson Laboratory, United States

N50-1 Development of Multi-Pixel Photon Counters for T2K Long Baseline Neutrino Experiment
A. Minamino, N. Nagai, D. Orme, T. Nakaya, M. Yokoyama, *Kyoto University, Japan*; T. Nakadaira, T. Murakami, M. Tanaka, *High Energy Accelerator Research Organization (KEK), Japan*; F. Retiere, *TRIUMF, Canada*; A. Vacheret, *Imperial College, U.K.*; Y. Kudenko, *Institute for Nuclear Research RAS, Russia*

N50-2 SiPM Readout of Scintillation Tiles for the ILC
K. Prothmann, O. Reimann, C. Kiesling, A. Frey, F. Simon
Max-Planck-Institut fuer Physik, Germany

N50-3 Silicon Photomultiplier as a Detector of Cherenkov Photons
S. Korpar^{1,2}, R. Dolenec², P. Krizan^{3,2}, R. Pestotnik², A. Stanovnik^{3,2}
¹*University of Maribor, Slovenia*; ²*J. Stefan Institute, Slovenia*;
³*University of Ljubljana, Slovenia*

N50-4 Application of Multi-Pixel-Photon-Counter to Positron Emission Tomography
M. Goettlich, E. Garutti, *DESY Hamburg, Germany*

N50-5 Silicon Photomultipliers as Photon Detectors for PET
H. Chagani, R. Dolenec, S. Korpar, P. Krizan, R. Pestotnik,
A. Stanovnik
Jozef Stefan Institute, Slovenia

N50-6 New Four Channel Square Photomultiplier Tubes for ToF PET.
M. Kapusta, P. Lavoute, A. G. Dehaine, C. Moussant
PHOTONIS France SAS, France

N50-7 Enhancing the Performance of a Pixelated Scintillation Block Detector Using a Slotted Light Guide
F. Habte, M. A. Blackston, P. Hausladen
Oak Ridge National Laboratory, USA

N50-8 PMT Test And Selection for the Daya Bay Neutrino Experiment
D. W. Liu, *Lawrence Berkeley National Laboratory, USA*
On behalf of the Daya Bay Collaboration

N51 Medical Physics Software

Thursday, Oct. 23 13:30-15:30 Conference 1
Session Chairs: **Elisabetta Gargioni**, PTB, Germany
Maria Grazia Pia, INFN Genova, Italy

N51-1 An in-Vivo Comparative Study Between Standard and PET-Based Approach to Assess the Therapeutic Dose in Neutron Capture Therapies
G. G. Daquino¹, N. Cerullo², T. Aihara³, J. Hiratsuka³, D. Bufalino², S. Caria², R. L. Moss¹, O. Sorace⁴
¹*JRC EU Commission, The Netherlands*; ²*University of Pisa, Italy*;
³*Kawasaki Medical School, Japan*; ⁴*CNR, Italy*

N51-2 The Channeler Ant Model: Object Segmentation with Virtual Ant Colonies
P. Cerello, *INFN, Italy*
On behalf of the Magic-5 Collaboration

N51-3 Comparison among Different Homogeneous Models and a Voxel Model on Mammography: a Monte Carlo Study Using the Geant4 Code
V. F. Cassola, *Universidade Federal de Pernambuco, Brazil*; G. Hoff, *Pontificia Universidade Católica do Rio Grande do Sul, Brazil*

N51-4 Effect of normalization algorithms on the analysis of Bragg peak profiles
M. G. Pia, *INFN Genova, Italy*; A. Lechner, *Tech. Univ. Vienna, Austria*

N51-5 Considerations on the Biological Effect of Laser Induced Radiation with High Dose Rates
A. A. Khaless, L. Karsch, W. Enghardt
Technische Universität Dresden, Germany

N51-6 A Volume Visualization Driver in Geant4 for Radiotherapy Simulation
A. Kimura, *Ashikaga Institute of Technology, Japan*; T. Sasaki, *High Energy Accelerator Research Organization, Japan*; S. Tanaka, *Ritsumeikan University, Japan*

N51-7 GAMOS: an Easy and Flexible Framework for Geant4 Simulations
P. Arce, P. Rato Mendes, J. I. Lagares, *CIEMAT, Spain*

N51-8 Geant4 Simulation for Education in Medical Application
K. Murakami, K. Amako, *KEK, Japan*; J. Jacquemier, M. Maire, *LAPP, France*; H. Yoshida, *Shikoku University, Japan*

N52 Data Acquisition and Analysis Systems : Small Systems

Thursday, Oct. 23 13:30-15:30 Conference 2
Session Chairs: **Patrick J. Le Du**, CEA, Saclay, France
Jean Pierre Martin, University of Montreal, Canada

N52-1 An FPGA Based DAQ System for the Readout of SiPM Arrays in PET Applications
M. G. Bisogni^{1,2}, G. Collazuol^{1,3}, A. Del Guerra^{1,2}, G. Llosa², G. Magazzu¹, S. Marcatili^{1,2}
¹*INFN, Italy*; ²*Università di Pisa, Italy*; ³*Scuola Normale Superiore, Italy*

N52-2 A High Speed Backplane for the RPC Read Out Driver of the ATLAS Muon Spectrometer
A. Aloisio, V. Izzo, L. Capasso, R. Giordano, F. Cevenini, *University of Naples 'Federico II' and INFN, Italy*; A. Jones, *HARTING Integrated Solutions Ltd, UK*; M. Schulte, *HARTING Electronics GmbH & Co. KG, Germany*

N52-3 A Two-Channel FPGA-Based System for Beta-Gamma Coincidence Detection Using Multi-Layer Phoswich Detectors
C. S. Lee, A. T. Farsoni, D. M. Hamby
Oregon State University, USA

N52-4 FPGA-Based DAQ System for Multi-Channel Detectors
A. Kopmann¹, T. Bergmann¹, H. Gemmeke¹, M. Howe², M. Kleifges¹, A. Menshikov¹, D. Tcherniakhovski¹, J. F. Wilkerson², S. Wüstling¹
¹*Forschungszentrum Karlsruhe, Germany*; ²*University of Washington, USA*

N52-5 Space and Power Effective Readout System for Cosmic-Ray Muon Radiography
T. Uchida, H. K. M. Tanaka, *University of Tokyo, Japan*; M. Tanaka, *High Energy Accelerator Research Organization (KEK), Japan*

N52-6 Digital Data Acquisition Modules for Instrumenting Large Segmented Germanium Detector Arrays

H. Tan, W. Hennig, A. Fallu-Labruyere, J. Harris, D. Breus, P. Grudberg, W. K. Warburton, *XIA LLC, USA*; C. Vaman, T. Glasmacher, P. Mantica, D. Miller, K. Starosta, P. Voss, *Michigan State University, USA*

N52-7 A Data Acquisition System for a Silicon Photomultiplier Based PET Detector

A. B. Mann, I. Konorov, S. Paul, *TU Muenchen, Physics Department E18, Germany*; S. Fürst, M. Hohberg, J. Pulko, V. C. Spanoudaki, S. I. Ziegler, *Nuklearmedizinische Klinik und Poliklinik, Klinikum rechts der Isar, Germany*

N52-8 A Portable Readout System for Microstrip Silicon Sensors (ALIBAVA)

R. Marco-Hernández, *IFIC(CSIC-UV), Spain*

N53 High Energy Physics Instrumentation: Muon Systems II

Thursday, Oct. 23 13:30-15:30 Conference 3

Session Chairs: **Dmitri Denisov**, Fermi National Accelerator Laboratory, United States

Shinwoo Nam, Ewha Womans University, South Korea

N53-1 A Gas Monitoring Chamber for the ATLAS Muon Monitored Drift Tube(MDT) System

S. Xie, F. Ahles, G. Herten, S. Zimmermann, U. Landgraf, W. Mohr *Physikalisches Institut, Germany*

N53-2 Gas monitoring system for CMS Experiment at LHC

S. Colafranceschi, *CERN, Switzerland*

On behalf of the CMS RPC collaboration

N53-3 Long Term Monitoring of the MDT Gas Performance

E. Etzion, N. Amram, Y. Benhammou, *Tel Aviv University, Israel*; E. Diehl, A. Eppig, C. Ferretti, D. Levin, R. Thun, B. Zhou, *University of Michigan, USA*

N53-4 Trigger Detectors for the ALICE Muon Spectrometer

A. Piccotti, *Istituto Nazionale di Fisica Nucleare, Italy*

On behalf of the ALICE Collaboration

N53-5 The ATLAS RPC System from the Production up to the Final Commissioning

G. Aielli, *INFN and Università di Roma, Italy*

On behalf of the ATLAS RPC collaboration

N53-6 CMS RPC Technical Triggers Performances in Cosmic Runs

S. A. Tupper, *INFN Sezione di Bari, Italy*

On behalf of the CMS Collaboration

N53-7 The Detector Control Systems for the Resistive Plate Chamber in the CMS Experiment at LHC

G. Polese, *CERN, Switzerland*

On behalf of the CMS RPC collaboration

N53-8 Precision Drift-Tube Chambers for the ATLAS Muon Spectrometer at Super-LHC

O. Kortner, H. Kroha, F. Legger, R. Richter, *Max-Planck-Institut fuer Physik, Germany*; A. Engl, F. Rauscher, *Ludwig-Maximilians-Universität München, Germany*

N54 Semiconductor Tracking and Spectroscopy Detectors I

Thursday, Oct. 23 13:30-15:30 Conference 4&5

Session Chairs: **Phil P. Allport**, University of Liverpool, United Kingdom

Kai T. Zuber, Technische Universität Dresden, Germany

N54-1 (invited) A Novel Technique for the Characterization of a HPGe Detector Response Based on Pulse Shape Comparison

F. C. L. Crespi, F. Camera, B. Million, M. Sassi, O. Wieland, A. Bracco

Università di Milano / INFN Milano, Italy

N54-2 Operation of the ALICE Silicon Pixel Detector using Cosmics and First Proton Beam

P. Riedler, *CERN, Switzerland*

On behalf of the ALICE SPD Project in the ALICE Collaboration

N54-3 Application of a Position Sensitive Si(Li) Detector as a Compton Polarimeter

H. Bräuning¹, S. Hess¹, U. Spillmann¹, C. Brandau¹, S. Geyer¹, C. Kozhuharov¹, T. Krings^{2,3}, A. Kumar¹, R. Märtin¹, I. Mohos^{2,3}, D. Protić^{2,3}, R. Reuschl¹, M. Trassinelli¹, S. Trotsenko¹, G. Weber¹, T. Stöhlker¹

¹Gesellschaft fuer Schwerionenforschung mbH, Germany;

²Forschungszentrum Juelich GmbH, Germany; ³SEMIKON Detector GmbH, Germany

N54-4 Development on Deep N Well MAPS in a 130 Nm CMOS Technology and Beam Test Results on a 4k-Pixel Matrix with Digital Sparsified Readout

S. Bettarini, *University of Pisa and INFN, Italy*

On behalf of the SLIM5 Collaboration

N54-5 Diamond Detectors for Heavy Ions

S. Schwertel, M. Boehmer, R. Gernhaeuser, R. Kruecken, L. Maier, S. Winkler

TU Muenchen, Physik-Department E12, Germany

N54-6 Studies on Charge Collection Efficiencies for Planar Silicon Detectors after Doses up to 10^{16} N_{eq}/cm² and the Effect of Varying Substrate Thickness

G. Casse, P. P. Allport, A. Affolder

Dep. of Physics, University of Liverpool, UK

N54-7 Bumpless Hybrid Pixelated Particle Detector

L. Peric, P. Fischer, C. Kreidl

University of Heidelberg, Germany

N55 Scintillators and Scintillation Detectors IV

Thursday, Oct. 23 13:30-15:30 Conference 6

Session Chairs: **Mikhail Korjik**, RINP, Minsk, Belarus

Ralf Engels, Forschungszentrum Juelich GmbH, Germany

N55-1 Studies of Hadron Damage in Lead Tungstate and Cerium Fluoride Crystals for HEP Calorimetry

F. Nessi-Tedaldi, P. Lecomte, D. Luckey, F. Pauss, *ETH, Switzerland*; D. Renker, *PSI, Switzerland*

N55-2 Radiation Hardness and Recovery Processes of Cooled PWO-II Crystals for PANDA

R. W. Novotny¹, W. M. Doering¹, V. Dorneney², S. Felsing¹, M. Korjik², S. Lugert³, P. A. Semenov⁴, A. N. Vasiliev⁴

¹2nd Physics Institute, University Giessen, Germany; ²Institute for Nuclear Problems, Belarus; ³Radiation Center, University Giessen, Germany; ⁴Institute for High Energy Physics, Russia

N55-3 Study of the Light Collection Efficiency in the CMS ECAL PbWO₄ Crystals.

A. Thea, CERN, Switzerland

On behalf of the CMS ECAL Collaboration

N55-4 Crystals for Homogeneous Hadron Calorimeter

R. Mao, L. Zhang, R.-Y. Zhu, California Institute of Technology, USA

N55-5 4pi CsI(Tl) Detector for EC/b+ Decay Searching in 84Sr

J. H. So, H. J. Kim, J. I. Kim, G. Rooh, *Kyungpook National University, Korea*; S. K. Kim, S. S. Myung, S. C. Kim, J. H. Choi, S. Ryu, J. H. Lee, *Seoul National University, Korea*; Y. D. Kim, J. I. Lee, W. G. Kang, *Sejong University, Korea*; I. S. Hahn, *Ewha Womans University, Korea*

N55-6 Dual Readout Calorimeter with Heavy Scintillating Crystal Fibers

E. Auffray, P. Lecoq, CERN, Switzerland

N55-7 Oxide Scintillators for Investigation of Rare Events Processes – Double Beta Decay and Search for Dark Matter

L. L. Nagornaya¹, B. V. Grinyov¹, A. M. Dubovik¹, Y. Y. Vostretsov¹, I. A. Tupitsyna¹, F. A. Danevich², S. S. Nagorny², V. M. Mokina², H. Kraus³, V. Mikhailik³, O. G. Shkulkova²

¹Institute for scintillation materials, Ukraine; ²Institute for Nuclear Research, Ukraine; ³University of Oxford, UK

N55-8 Construction and Performances of an High Granularity Calorimeter

P. Branchini¹, F. Ceradini², G. Corradi³, B. Dimicco², S. Loffredo², A. Passeri¹

¹INFN, Italy; ²Universita' Roma TRE, Italy; ³INFN LNF, Italy

N56 Photon Detectors and Radiation Imaging Detectors IV

Thursday, Oct. 23 16:00-18:00 Conference 1

Session Chairs: **Joe Schwiening**, SLAC, United States
Samo Korpar, J. Stefan Institute, Slovenia

N56-1 (invited) Recent Progress in Vacuum Based Photon Detectors

C. Joram, CERN, Switzerland

N56-2 Study of Multi-Anode Hybrid Avalanche Photo-Detector for Belle RICH Counter

I. Adachi¹, R. Dolenec², K. Hara³, T. Iijima³, Y. Ishii⁴, H. Kawai⁴, S. Korpar^{2,5}, P. Krizan^{2,6}, Y. Miyazawa⁷, I. Nishizawa⁸, S. Nishida¹, S. Ogawa⁹, R. Pestotnik², N. Sawafuji⁹, T. Sumiyoshi⁸, M. Tabata⁴, Y. Ueki⁸, Y. Unno¹

¹KEK, Japan; ²Jozef Stefan Institute, Slovenia; ³Nagoya University, Japan; ⁴Chiba University, Japan; ⁵University of Maribor, Slovenia; ⁶University of Ljubljana, Slovenia; ⁷Tokyo University of Science, Japan; ⁸Tokyo Metropolitan University, Japan; ⁹Toho University, Japan

N56-3 System Tests of the LHCb RICH Detectors in a Charged Particle Beam

H. P. Skottowe, University of Cambridge, UK

On behalf of the LHCb RICH Collaboration

Thursday

N56-4 A Novel HPD Based on the Timepix

U. S. Gebert, T. K. Rügheimer, T. Michel, G. Anton, *ECAP, Universität Erlangen-Nürnberg, Germany*; J. Séguinot, C. Joram, CERN, Switzerland

N56-5 New Megapixel Single Photon Position Sensitive HPD: the Electron-Bombarded CMOS Device

R. Barbier¹, J. Baudot², E. Chabanat¹, P. Depasse¹, W. Dulinski², N. Estre¹, M. Winter²

¹IPNL, France; ²IPHC, France

N56-6 Progress on Development of a New TOF Concept Using MCP-PMT Detectors

J. Vavra, J. Schwiening, B. Ratcliff, D. Leith, *SLAC, USA*

N56-7 The Timing Properties of a Picosecond MCP-PMT Measured at the Fermilab MTEST Test Beam

J. Anderson¹, K. Byrum¹, G. Drake¹, C. Ertley², H. Frisch², J.-F. Genat², E. May¹, R. Northrup², A. Ronzhin³, E. Ramberg³, F. Tang²

¹Argonne National Laboratory, USA; ²University of Chicago, USA; ³Fermi National Accelerator Laboratory, USA

N57 ATCA (Advanced Telecommunications Computing Architecture)

Thursday, Oct. 23 16:00-18:10 Conference 2

Session Chairs: **Raymond S. Larsen**, Stanford Linear Accelerator Center, United States

F. V. Pavlicek, Fermi National Accelerator Lab, United States

N57-1 (invited) The Data Acquisition and Trigger System of PANDA

W. Kuehn, Giessen University, Germany

On behalf of the PANDA collaboration at FAIR

N57-2 (invited) A new proposal for the construction of high speed, massively parallel, ATCA based Data Acquisition Systems

M. Huffer, M. Freytag, G. Haller, C. O'Grady, A. Perazzo, L. Sapozhnikov, E. Siskind, M. Weaver

Stanford Linear Accelerator, USA

N57-3 Modular Trigger Processing, the LHC GCT Muon and Quiet Bit System

M. Stettler^{1,2}, M. Hansen¹, C. Foudas³, G. Iles³, J. Jones⁴

¹CERN, Switzerland; ²Los Alamos National Laboratory, USA; ³Imperial College, UK; ⁴Princeton University, USA

N57-4 DAQ and Control Interfaces for the CMS Global Calorimeter Trigger Matrix Processor

J. Jones, Princeton University, USA; M. Stettler, Los Alamos National Laboratory, USA; J. Marrouche, C. Foudas, Imperial College, UK

N57-5 (invited) Design of Shelf Management Systems for ATCA and MicroTCA

T. Romero, Performance Technologies Inc, USA

N57-6 (invited) Summary of 2nd ATCA Workshop for Physics Applications

R. S. Larsen, Stanford Linear Accelerator, USA

Thursday

N58 High Energy Physics Instrumentation: Beam Monitors and Other Detector Systems II

Thursday, Oct. 23 16:00-18:15 Conference 3

Session Chairs: **Karsten Buesser**, DESY, Germany
Jae Yu, University of Texas, United States

N58-1 (invited) EUDET: Detector R&D Towards the International Linear Collider

J. Mnich, DESY, Germany
On behalf of the EUDET

N58-2 Hydrogen Isotope Ion Source Studies for Neutron Generators

B. Reichenbach¹, I. Solano¹, K. Hertz², C. Holland³, D. Chichester⁴,
P. Resnick², P. Schwoebel^{1,3}
¹University of New Mexico, USA; ²Sandia National Laboratories, USA;
³SRI International, USA; ⁴Idaho National Laboratory, USA

N58-3 The EUDET High Resolution Telescope - Towards the Final Digital Readout

D. Haas, Université de Genève, Switzerland
On behalf of the EUDET Collaboration

N58-4 Fast Beam Conditions Monitoring (BCM1F) for CMS

R. Hall-Wilton¹, W. Lange², A. Macpherson¹, V. Ryjov¹, R. L. Stone³
¹CERN, Switzerland; ²DESY Zeuthen, Germany; ³Rutgers University, USA

N58-5 The MERIT (nTOF-11) High Intensity Liquid Mercury Target Experiment at the CERN PS

I. Efthymiopoulos, CERN, Switzerland
On behalf of the MERIT/nTOF-11 Collaboration

N58-6 Commissioning of the Beam Conditions Monitor of the LHCb Experiment at CERN

M. Domke¹, C. J. Ilgner¹, S. Köstner², M. Lieng¹, M. Nedos¹,
J. Sauerbrey¹, S. Schleich¹, B. Spaan¹, K. Warda¹
¹Technische Universität Dortmund, Germany; ²CERN, Switzerland

N58-7 Expected Performance of Shintake Monitor (IP Beam Size Monitor at ATF2)

T. Yamanaka, M. Oroku, Y. Kamiya, T. Suehara, H. Yoda,
T. Nakamura, S. Komamiya, *The University of Tokyo, Japan*;
T. Tauchi, N. Terunuma, S. Araki, R. Sugahara, T. Kume,
Y. Honda, *KEK, Japan*; T. Sanuki, *Tohoku University, Japan*

N58-8 Towards Precision Polarimetry at the ILC: Concepts, Simulations and Testbeam Results

C. Helebrant^{1,2}, D. Kaefer¹, J. List¹
¹DESY, Germany; ²University of Hamburg, Germany

N59 Safety Instrumentation / Homeland Security I

Thursday, Oct. 23 16:00-18:00 Conference 4&5

Session Chairs: **Giancarlo Nebbia**, INFN, Italy
Klaus P. Ziock, ORNL, United States

N59-1 Field and Remote Use System for Expert Support to Law Enforcement Officers Performing Radiation Monitoring at Borders and in a Country

R. Artl¹, M. Mayorov², M. Schrenk², G. Lasche³, A. Bacheller²,
S. Chuvaev⁴, A. Lebedev⁴, J. Brutscher⁵, V. Danilenko⁶
¹Consultant for the International Atomic Energy Agency, Austria;
²International Atomic Energy Agency, Austria; ³Sandia National

Laboratory, USA; ⁴Federal State Unitary Enterprise Scientific Engineering Center Nuclear Physics Researches, Russia; ⁵GBS, Germany; ⁶Laboratory for Spectrometry and Radiometry, Russia

N59-2 Research in Illicit Trafficking and Nuclear Safeguards Methods Using Pulsed Neutron Interrogation

B. Pedersen¹, A. Favalli¹, H.-C. Mehner², J.-M. Crochemore¹
¹Joint Research Centre, European Commission, Italy; ²University of Applied Sciences Zittau/Görlitz, Germany

N59-3 Surveillance of Nuclear Threats Using Multiple Autonomous Detection Units

M. J. Neuer, R. Lentering, K. Ruhnau, F. Platte, G. Pausch, J. Stein
ICx Radiation, Germany

N59-4 Fast Imaging by a Single-Slice-Detector Helical CT

W. Bi, Y. Xing, L. Zhang, Z. Chen
Tsinghua University, China

N59-5 Sensitivity of Gamma-Ray Source Detection Using 3D-Position-Sensitive Semiconductor Detectors

C. G. Wahl, Z. He, *University of Michigan, USA*

N59-6 Alternative Method for Detection of Fissile Materials Concealed Inside Cargo Containers

K. Kishen, R. Lacey, M. Hogbin
Home Office Scientific Development Branch, UK

N59-7 Passive Time Coincidence Measurements with HEU and DU Metal Castings Using Liquid Scintillators and Pulse Shape Discrimination

S. McConchie, P. Hausladen, J. Mihalcz, M. Wright, *Oak Ridge National Laboratory, USA*; T. Hawk, *Y-12 National Security Complex, USA*

N59-8 Temporal Delayed Neutron Spectroscopy for the Quantification of Fissionable Materials in Aqueous Solution

A. W. Hunt^{1,2}, H. A. Seipel^{1,2}, E. T. E. Reedy^{1,2}
¹Idaho State University, USA; ²,

N60 Astrophysics and Space Instrumentation IV - New techniques

Thursday, Oct. 23 16:00-18:00 Conf. 7&8

Session Chairs: **Hiroyasu Tajima**, SLAC, United States
Eric Maddox, cosine Research BV, The Netherlands

N60-1 (invited) Detecting Radio Pulses from Air Showers

A. Horneffer, Radboud University, The Netherlands
On behalf of the LOPES Collaboration

N60-2 Optimization of Radio Detection of Ultra High Energy Cosmic Rays

O. Kroemer, Forschungszentrum Karlsruhe, Germany
On behalf of the LOPES Collaboration

N60-3 Long Duration Balloon Flight Exposure of a Lanthanum Bromide Crystal

G. Case, B. Budden, M. Cherry, R. Hopson, J. Isbert, R. Sankaran,
D. Smith, M. Stewart
Louisiana State University, USA

N60-4 The Miniaturized Mössbauer Spectrometer MIMOS IIA: Increased Sensitivity and New Capability for Elemental Analysis

M. Blumers¹, B. Bernhard², P. Lechner³, J. Girones Lopez¹, J. Maul¹, R. Eckhardt^{3,4}, H. Soltau^{3,4}, L. Strüder^{4,5}, H. Henkel², G. Klingelhöfer¹
¹Johannes Gutenberg-University Mainz, Inst. Inorganic and Analytical Chemistry, Germany; ²Von Hoerner & Sulger GmbH, Germany; ³PNSensor, Germany; ⁴MPI Halbleiterlabor, Germany; ⁵MPI Extraterrestrische Physik, Germany

N60-5 Optical Test Results of Fast pnCCDs

S. Ihle^{1,2}, R. Hartmann^{1,2}, M. Downing³, L. Strüder^{2,4,5}
¹PNSensor GmbH, Germany; ²MPI Halbleiterlabor, Germany; ³ESO, Germany; ⁴Max-Planck-Institut für extraterrestrische Physik, Germany; ⁵Universität Siegen, Germany

N60-6 The CCD Camera for the Large Synoptic Survey Telescope

I. Shipsey, Purdue University, USA
On behalf of the LSST Collaboration

N60-7 DECam - a New Instrument for the Dark Energy Survey

K. Honscheid, Ohio State University, USA
On behalf of the DES Collaboration

N61 Safety Instrumentation / Homeland Security II

Friday, Oct. 24 08:00-10:00 Conference 1
Session Chairs: **Sara Pozzi**, University of Michigan, United States
Richard T. Kouzes, PNNL, United States

N61-1 Low Dose Gamma Ray Transmission Radiography for Detection of SNM using Monoenergetic Gamma Rays

R. C. Lanza¹, T. Antaya¹, B. W. Blackburn², B. Harris², M. V. Hynes², R. Sheffield³, T. N. Taddeucci³, D. Williams¹
¹Massachusetts Institute of Technology, USA; ²Raytheon, USA; ³Los Alamos National Laboratory, USA

N61-2 Using Electronic Neutron Generators in Active Interrogation to Detect Shielded Fissionable Material

D. L. Chichester, E. H. Seabury
Idaho National Laboratory, USA

N61-3 Fully 3D Gamma Spectrometry for Special Materials Identification

C. J. Groiselle, I. Lefesvre, J.-L. Dumont, J.-S. Lacroix, J. Battais, M.-J. Lopez-Jimenez, F. Thébault, F. Moutrousteguy, J. Minec-Dubé, P. Le Tourneur
EADS / SODERN, France

N61-4 Results with the Neutron Scatter Camera

N. Mascarenhas, J. Brennan, K. Krenz, P. Marleau, S. Mrowka
Sandia National Laboratories, USA

N61-5 Special Nuclear Material Detection with a Water Cerenkov Based Detector

M. D. Sweany¹, A. Bernstein², N. S. Bowden², S. A. Dazeley², R. C. Svoboda¹
¹UC Davis, USA; ²LLNL, USA

N61-6 Use of an LGB Detector in Nuclear Nonproliferation Applications

M. Flaska, S. Pozzi, University of Michigan, USA; J. B. Czirr, MXI/Photogenics, USA

N61-7 First Test of Cosmic Ray Muon Tomograph Prototype Being Constructed at IHEP (Protvino)

A. S. Kozhin, B. Y. Mikhail, B. I. Nikolai, B. A. Anatoly, F. M. Riant, I. N. Alexander, S. A. Vladimir, S. A. Nikolai, S. M. Mikhail, Y. I. Victor, Y. Oleg
Institute for High Energy Physics, Russian Federation

N61-8 Bayesian Image Reconstruction for Muon Tomography

G. Wang¹, L. Schultz², J. Qi¹
¹University of California, Davis, USA; ²Los Alamos National Laboratory, USA

N62 Gaseous Detectors IV - Large TPCs and Applications

Friday, Oct. 24 08:00-10:00 Conference 2
Session Chairs: **Paul M. Colas**, CEA/IRFU, France
Makoto Kobayashi, KEK (High Energy Accelerator Research Organization), Japan

N62-1 First Experience with the ALICE TPC

C. Garabatos, GSI, Germany
On behalf of the ALICE Collaboration

N62-2 Large Bulk-MICROMEGAS as Amplification Device for the T2K Time Projection Chambers

J. Beucher, CEA / DSM / IRFU (ex-DAPNIA), France
On behalf of the T2K ND280 / TPC group

N62-3 New Results and Future Prospects of the GEM-TPC Development for PANDA

X. Zhang, F. Böhmer, C. Höppner, B. Ketzer, I. Konorov, A. Mann, V. Michael, S. Neubert, S. Paul, Q. Weitzel, L. Wörner
Technische Universität München, Germany

N62-4 The Large TPC Prototype for an ILC Detector

K. Dehmelt, DESY, Germany
On behalf of the LCTPC Collaboration

N62-5 Progress Toward a High-Pressure Xenon Gas TPC for Neutrino-Less Double Beta-Decay and WIMP Searches at the 100+ Kg Scale.

D. R. Nygren, Lawrence Berkeley National Laboratory, USA; J. J. Gomez-Cadenas, University of Valencia, Spain

N62-6 High Pressure Gas TPC Development for Double Beta Decay Studies in Xenon

C. K. Hargrove¹, M. Bowcock¹, P. Colas², M. Dixit^{1,3}, K. McFarlane¹, I. Giomataris², K. Graham¹, P. Gravelle¹, C. Greene¹, D. Sinclair¹
¹Carleton University, Canada; ²CEA, France; ³TRIUMF, Canada

N62-7 NEXT: Prospects Towards a New Neutrinoless Double Beta Decay Experiment

M. Ball, Instituto di Fisica Corpuscular (IFIC), Spain
On behalf of the NEXT Collaboration

N62-8 DM-TPC: a TPC with Optical Readout for Directional Detection of Dark Matter

G. Sciolla, MIT, USA
On behalf of the DM-TPC Collaboration

N63 High Energy Physics Instrumentation: Calorimeters II

Friday, Oct. 24 08:00-10:00 Conference 3

Session Chairs: **Ursula Bassler**, CEA Saclay, France
Sergey Barsuk, LAL Orsay, France

N63-1 Commissioning of the ATLAS Tile Calorimeter with Cosmic Ray Data

H. Okawa, *The University of Tokyo, Japan*

On behalf of the ATLAS Tile Calorimeter Group

N63-2 New Results from the DREAM Project

R. Wigmans, *Texas Tech University, USA*

On behalf of the DREAM Collaboration

N63-3 Test Beam Results from the CALICE Tile Hadron Calorimeter Prototype with SiPM Read-Out

B. Lutz, *DESY, Germany*

On behalf of the CALICE Collaboration

N63-4 Directly Coupled Scintillator Tiles as Elements of a Hadron Calorimeter with SiPM Readout

V. V. Zutshi, *A. Dyshkant, K. Francis*

Northern Illinois University, USA, USA

N63-5 Developments of Digital HAdronic Calorimeter for ILC in Europe

I. Laktineh, *IPNL, France*

On behalf of the CALICE Collaboration

N63-6 The ALICE Zero Degree Calorimeters as a Centrality Trigger Detector.

A. Ferretti, *Torino University and INFN, Italy*

On behalf of the ALICE ZDC Collaboration

N63-7 Performance Studies of the Final Prototype for the CASTOR Forward Calorimeter at the CMS Experiment

I. I. Katkov^{1,2}, *S. Basegmez*³, *D. d'Enterria*⁴, *L. Gouskos*⁵, *P. Katsas*⁵, *L. Khein*²

¹*Deutsches Elektronen Synchrotron (DESY), Germany*; ²*Moscow State University, Russia*; ³*Cukurova University, Turkey*; ⁴*CERN, Switzerland*;

⁵*University of Athens, Greece*

N63-8 BeamCal for ILC Detectors

S. Schuwalow, *DESY, Germany*

On behalf of the FCAL Collaboration

N64 Analog and Digital Circuits IV

Friday, Oct. 24 08:00-10:00 Conference 4&5

Session Chairs: **Ole Myren Røhne**, University of Oslo, Switzerland
Alberto Aloisio, University of Naples 'Federico II' and INFN, Italy

N64-1 A New Multi-Level Time over Threshold Method for Energy Resolving Multi-Channel Systems

T. Fujiwara, *H. Takahashi, The University of Tokyo, Japan*

N64-2 Dead Time Correction in the DP5 Digital Pulse Processor

R. H. Redus, *A. C. Huber, D. J. Sperry, Amptek, Inc., USA*

N64-3 Monte Carlo Time Domain Noise Simulation in Nuclear Electronics

R. H. Redus, *A. C. Huber, Amptek, Inc., USA*

N64-4 Radiation-Hard/High-Speed Data Transmission Using Optical Links

K. K. Gan, *The Ohio State University, USA*

N64-5 A Versatile Digital Readout System for the PANDA MVD

M. C. Mertens¹, *F. Hügging*², *J. Ritman*¹, *T. Stockmanns*¹

¹*Forschungszentrum Jülich, Germany*; ²*Universität Bonn, Germany*

N64-6 FPGA Based Self Calibrating Pico-Seconds Range Resolution Time to Digital Converter

S. S. Junnarkar, *P. O'Connor, Brookhaven National Laboratory, USA*;

R. Fontaine, Université De Sherbrooke, Canada

N64-7 The 10-ps Wavelet TDC: Improving FPGA TDC Resolution Beyond Its Cell Delay

J. Wu, *Z. Shi, Fermilab, USA*

N64-8 KPiX, an Array of Self Triggered Charge Sensitive Cells Generating Digital Time and Amplitude Information

D. R. Freytag¹, *R. Herbst*¹, *J. Brau*², *M. Breidenbach*¹, *R. Frey*², *G. Haller*¹, *B. Holbrook*³, *R. Lander*³, *T. Nelson*¹, *V. Radeka*⁴, *D. Strom*², *M. Tripathi*³

¹*SLAC, USA*; ²*University of Oregon, USA*; ³*UC Davis, USA*; ⁴*BNL, USA*

N65 Photon Detectors and Radiation Imaging Detectors V

Friday, Oct. 24 08:00-10:00 Conference 6

Session Chairs: **Erik H. M. Heijne**, CERN, Switzerland
Ronaldo Bellazzini, INFN Pisa, Italy

N65-1 Performance of Photomultiplier Tubes at Cryogenic Temperature

G. Fiorillo¹, *V. Gallo*², *A. G. Cocco*², *F. Carbonara*¹

¹*Università degli Studi di Napoli Federico II, Italy*; ²*INFN, Italy*

N65-2 Silicon Drift Detectors with Optimized Detection Efficiency for X- and Gamma Ray Applications

A. Niculae, *H. Soltan*, *G. Lutz*, *P. Lechner*, *A. Bechteler*, *R. Eckhardt*, *PNSensor GmbH, Germany*;

A. Liebel, *O. Jaritschin*, *A. Simsek*, *PNDetector GmbH, Germany*;

G. Schaller, *F. Schopper*, *L. Strüder*, *MPI Semiconductor Laboratory, Germany*

N65-3 The HPAD Detector for XFEL

*H. Graafsma*¹, *M. Karagounis*², *H. Krüger*², *R. Mazzocco*²,

*B. Schmitt*³, U. Trunk¹

¹*DESY Deutsches Elektronen-Synchrotron, Germany*; ²*Physikalisches Institut der Universität Bonn, Germany*; ³*PSI Paul Scherrer Institut, Switzerland*

N65-4 X-Ray Polarimetry with Hybrid Semiconductor Photon Counting Pixel Detectors

T. Michel, *J. R. Durst*

Erlangen Centre for Astroparticle Physics (ECAP), University of Erlangen-Nuernberg, Germany

N65-5 CMOS Active Pixel Sensors for Soft X-Rays Detection Applications

D. Passeri^{1,2}, *D. Biagetti*^{1,2}, *P. Delfanti*^{2,3}, *A. Marras*^{2,3}, *P. Placidi*^{1,3}, *L. Servoli*², *P. Ciampolini*^{2,3}

¹*University of Perugia (Italy), Italy*; ²*INFN Perugia (Italy), Italy*;

³*University of Parma (Italy), Italy*

N65-6 Spectroscopic Imaging with an X-Ray Microscopy Setup Using a Pixelated Detector with Single Photon Processing
B. Norlin, C. Fröjd, G. Thungström
Mid Sweden University, Sweden

N65-7 Distance Measuring Using Position Emission Backscatter
M. S. Wallace, L. C. Stonehill, Q. Looker, M. Galassi, E. Fenimore, W. Vogan McNeil
Los Alamos National Laboratory, USA

N65-8 Compton Imaging Camera Using an Electron-Tracking Gaseous TPC and a Scintillation Camera
K. Ueno¹, K. Hattori¹, C. Ida¹, S. Iwaki¹, S. Kabuki¹, H. Kubo¹, S. Kurosawa¹, K. Miuchi¹, H. Nishimura¹, Y. Okada¹, A. Takada², M. Takahashi¹, T. Tanimori¹, K. Tsuchiya¹
¹*Kyoto University, Japan*; ²*ISAS/JAXA, Japan*

N66 NSS Plenary II

Friday, Oct. 24 10:30-12:30 Hall 2 & 3
Session Chairs: **James E. Brau**, University of Oregon, United States
Roland Sauerbrey, Forschungszentrum Dresden, Germany

N66-1 Recent Highlights from the Large Hadron Collider Project
J. Engelen, *CERN, Switzerland*

N66-2 Recent Highlights from the International Linear Collider Project
S. Yamada, *University of Tokyo and KEK, Japan*

Closing by the NSS Program Chair & General Chair

N67 Applied Computing Techniques

Friday, Oct. 24 13:30-15:30 Conference 4
Session Chairs: **Juergen Knobloch**, CERN, Switzerland
Maria Grazia Pia, INFN Genova, Italy

N67-1 Employment of High Performance Virtualization Platforms for Complex Applications and Services of High Energy Physics Data Acquisition Systems and Large Data Centres
B. Martelli, G. Peco, V. Vagnoni, D. Salomoni, F. Bonifazi, A. Italiano
INFN, Italy

N67-2 The CMS Data Transfer Test Environment in Preparation for LHC Data Taking
D. Bonacorsi, *CMS experiment - INFN-CNAF, Italy*
On behalf of the CMS Collaboration

N67-3 Utilising the Grid for BaBar Skimming
M. Barrett, *Brunel University, UK*
On behalf of the BaBar computing group

N67-4 Intelligent Design
N. Graf, *Stanford Linear Accelerator Center (SLAC), USA*

N67-5 JDOT - a JAVA Detector Optimization Tool
R. Fruehwirth, *Institute of High Energy Physics, Austria*; A. Beringer, *HTBLA Spengergasse, Austria*

N67-6 Hto4IEV in the ATLAS EventView Analysis Framework
T. Lagouri, F. Barreiro, J. del Peso
Universidad Autonoma de Madrid, Spain

N67-7 SMART - Simulation of Maritime Radiological Threats
C. S. Gwon, E. I. Novikova, B. F. Philips, M. S. Strickman
Naval Research Laboratory, USA

N67-8 Geant4 Validation on Mammography Applications
P. V. Feijo, G. Hoff
Pontificia Universidade Católica do Rio Grande do Sul, Brazil

N68 Semiconductor Tracking and Spectroscopy Detectors II

Friday, Oct. 24 13:30-15:30 Conference 5
Session Chairs: **Phil P. Allport**, University of Liverpool, United Kingdom
Devis Contarato, Lawrence Berkeley National Laboratory, United States

N68-1 (invited) The DEPFET Active Pixel Sensor for Vertexing in Future Collider Experiments
L. Andricek, *MPI fuer Physik, Semiconductor Laboratory, Germany*
On behalf of the DEPFET collaboration

N68-2 Gamma-Ray Tracking for Ge Telescope Compton Camera Imaging
T. Fukuchi, S. Motomura, Y. Kanayama, H. Haba, Y. Watanabe, S. Enomoto
RIKEN, Japan

N68-3 Backside Processing for Thinned Detectors
R. J. Lipton, *Fermilab, USA*
On behalf of the Fermilab Pixel R&D Collaboration

N68-4 COBRA- Search for Double Beta Decay with CdZnTe Detectors
K. Zuber, *Technische Universität Dresden, Germany*
On behalf of the COBRA Collaboration

N68-5 Trenched Gamma-Ray Detector
M. Christophersen, B. F. Philips, F. J. Kub
U.S. Naval Research Laboratory, USA

N68-6 Beam Tests Results of Extremely Thin, Submicron Precision CMOS Monolithic Active Pixel Sensors
W. Dulinski, J. Baudot, G. Claus, M. Goffe, M. Winter
IPHC/IN2P3/CNRS, France

N68-7 Performance of Bare High-Purity Germanium Detectors in Liquid Argon
M. M. Barnabe Heider¹, C. Cattadori², O. Chkvorets¹, A. Di Vacri², K. Gusev^{3,4}, S. Schoenert¹, M. Shirchenko^{3,4}
¹*Max-Planck-Institut fuer Kernphysik, Germany*; ²*Laboratori Nazionali del Gran Sasso, Italy*; ³*Russian Reserch Center Kurchatov Institute, Russia*; ⁴*Joint Institute for Nuclear Research, Russia*

N69 Scintillators and Scintillation Detectors V

Friday, Oct. 24 13:30-15:30 Conference 6
Session Chairs: **Pieter Dorenbos**, Delft University of Technology,
The Netherlands
Etiennette Auffray, CERN, Switzerland

- N69-1 Ionizing Radiation Energy Exchange in Organic Single-Crystalline and Composite Scintillators**
N. Z. Galunov¹, N. L. Karavaeva¹, J. K. Kim², Y. K. Kim²,
O. A. Tarasenko¹, E. V. Martynenko¹, S. V. Budakovsky¹
¹*Institute for Scintillation Materials, National Ac.Science of Ukraine, Ukraine;* ²*Technology Center for Radiation Safety, Hanyang University, Korea*
- N69-2 Lu2SiO5-based Epitaxial Layers for High-Resolution X-Ray Imaging Applications**
P.-A. Douissard, T. Martin, *ESRF, France*; M. Couchaud,
CEA, France; A. Rack, A. Cecilia, T. Baumbach, *FZK-ANKA, Germany*; K. Dupré, *FEE GmbH, Germany*
- N69-3 Optical Properties and Prospects for High Light Output Proportional SrI2:Eu2+ Ceramic Scintillators**
D. J. Singh, *Oak Ridge National Laboratory, USA*
- N69-4 Alkaline-Earth Hafnate Transparent Optical Ceramics**
E. V. Van LoeF¹, Y. Wang¹, C. M. Wilson¹, C. Brecher², W. Rhodes²,
J. Centorino¹, G. Baldoni¹, H. Lingert², V. Sarin³, K. S. Shah¹
¹*Radiation Monitoring Devices, Inc., USA;* ²*ALEM Associates, USA;* ³*Boston University, USA*
- N69-5 Neutron Scintillators Using Dispersed Nanoparticles in a Blended Polymer Matrix**
I. Sen, F. Kim, D. Penumadu, L. F. Miller, *University of Tennessee, USA;* A. Stephan, *Materials Innovations, Inc, USA*
- N69-6 Development and Characterization of Nanocomposite Scintillators for Gamma-Ray Detection**
S. Strange, M. K. Bacrania, L. O. Brown, A. J. Couture,
R. E. Del Sesto, E. I. Esch, R. D. Gilbertson, L. G. Jacobsohn,
T. M. McCleskey, E. A. McKigney, R. E. Muenchausen, *Los Alamos National Laboratory, USA;* R. Reifarth, *Gesellschaft fuer Schwerionenforschung mbH, Germany*
- N69-7 On the Development of Heavy and Fast Scintillation Nano-Ceramics**
M. Korjik, A. Fedorov, O. Missevitch, V. Mechinski, *RINP, Belarus;* A. Dossovitski, *NeoChem, Russia;* O. Khasanov, *TPU, Russia;* G. Shevchenko, *RIPCP, Belarus*
- N69-8 Cerium and Yttrium Distributions in LSO Crystals and Their Influence to Optical and Scintillation Properties**
R. Mao, L. Zhang, R.-Y. Zhu
California Institute of Technology, USA

N70 Data Acquisition and Analysis Systems: Concepts and Tools

Friday, Oct. 24 13:30-15:30 Conf. 7&8
Session Chairs: **Yasushi Nagasaka**, Hiroshima Institute of Technol-
ogy, Japan
Guenter Eckerlin, DESY, Germany

- N70-1 In-Plane and Out-of-Plane Couplers for Optical Printed Circuit Boards and Optical Backplanes**
M. Schneider, T. Kühner, J. Mohr
Forschungszentrum Karlsruhe GmbH, Germany
- N70-2 Data Acquisition Systems for Future Calorimetry at the International Linear Collider**
M. Wing, *University College London, UK*
On behalf of the CALICE-UK DAQ groups: Cambridge, Imperial, Manchester, RHUL, UCL
- N70-3 CAPTAN: A Hardware Architecture for Integrated Data Acquisition, Control, and Analysis for Detector Development**
M. A. Turqueti, R. A. Rivera, A. Prosser, J. Andresen, J. Chramowicz,
S. Kwan
Fermilab, USA
- N70-4 A Compact Data Acquisition System for the PHENIX TEC/TRD Front End Electronics**
M. Leite, *University of Sao Paulo, Brazil*
On behalf of the The PHENIX TEC/TRD Group
- N70-5 Data Acquisition Architecture Studies for the KM3NeT Deep Sea Neutrino Telescope**
S. Anvar, *CEA - Ifnu, France*
On behalf of the KM3NeT Consortium
- N70-6 Integration of Embedded Single Board Computers into an Object-Oriented Software Bus DAQ Application**
M. A. Howe, M. G. Marino, J. F. Wilkerson
University of Washington, USA
- N70-7 The Current Performance and Upgrade Plans for the PHENIX Data Acquisition System**
M. L. Purschke, *Brookhaven National Lab, USA*
On behalf of the PHENIX Collaboration
- N70-8 The ATLAS Conditions Database Model for the Muon Spectrometer**
M. Verducci, *INFN Roma1, Italy*
On behalf of the ATLAS Muon Collaboration

MEDICAL IMAGING CONFERENCE (MIC)

Dear colleagues and friends,

it is a great pleasure to welcome you to the 2008 Medical Imaging Conference. Dresden is a superb place to have this conference and we are convinced that you will enjoy not only the culture and art, but also the surroundings of this beautiful city.

Based on the reviewer's comments, we selected the most innovative and technically challenging contributions from the large number of submissions. The decision was certainly not easy. We are indebted to the reviewers who did a tremendous job in reviewing up to 22 abstracts per person.

The accepted abstracts are distributed over 12 oral and 2 poster sessions. Topics include new detectors, reconstruction algorithms, system performance measurements, quantitative imaging, and multimodal imaging. Special theme of this year's conference is the use of imaging in modern radio-oncology. During two plenary sessions, three invited speakers will present the most recent and important developments in radio oncology and the use of molecular imaging in this field.

On Tuesday, there will be joint sessions between MIC, NSS, and RTSD. We believe this is an excellent opportunity for interdisciplinary contacts. An invited lecture will highlight the special problems of the transition from basic science to clinical reality.

We are also looking forward to meet you at the social events of this conference. During the MIC dinner we will learn more about fine watchmaking in the little town of Glashütte, 30 km from Dresden, one more theme which stands for the unique combination of tradition and modern technology in the Dresden region.

We hope you will enjoy a scientifically stimulating and successful meeting.



Wolfgang Enghardt
MIC Program Chair



Sibylle I. Ziegler
MIC Deputy Program Chair

MIC PLENARY TALKS

M01-1: Trends in Radiation Oncology: Integrating High Precision Treatment with Modern Biology

Michael Baumann

Technische Universität Dresden, Dresden, Germany

Wednesday, Oct. 22, 2008, 08:40 (1st lecture)

Biography

Professor Dr. Michael Baumann is a clinician scientist, Professor of Radiation Oncology of the Technische Universität Dresden, Director of the OncoRay Center for Radiation Research in Oncology, and Director of the University Cancer Center Dresden. He trained at the University of Hamburg and was a postdoctoral fellow at the Massachusetts General Hospital in Boston. In 1995, Dr. Baumann became a staff member of the Medical Faculty and University Hospital of the Technische Universität Dresden, where he leads the research program on experimental radiotherapy and radiobiology, including investigations into the role of cancer stem cells, molecular targeted drugs, biological imaging for radiotherapy, and functional prediction for radiotherapy. His research is funded by the Deutsche Forschungsgemeinschaft (DFG) the German Federal Ministry of Education and Research (BMBF), the European Union, and the Saxony State Ministry for Science and Arts. He has published more than 210 scholarly articles and book chapters. He supervised more than 25 MD or PhD and 3 Habilitation theses. He received thirteen academic awards including the Gerhard-Hess-Award, (DFG, 1997), Michael Fry Research Award, Radiation Research Society (2002), Breur Gold Medal, European Society for Therapeutic Radiology and Oncology (ESTRO, 2002), and the Membership of the German National Academy Leopoldina (2004). Dr. Baumann is immediate past president of the ESTRO and president elect of the European Cancer Organisation (ECCO).

Radiotherapy is a mainstay of cancer treatment. In developed countries, more than 50 % of patients with cancer receive radiotherapy at some point during the course of their illness. Radiotherapy has proven to be highly effective against primary tumors and also to prevent the development of metastatic disease, which is usually incurable. Of those patients who survive cancer, more than 40 % have been cured by radiotherapy either as the only method or as a main component of treatment. Radiotherapy is also a highly effective means of palliating symptoms. Enormous progress has been made in recent years to improve the conformality of radiotherapy treatment planning and delivery. Examples include today's routine use of computerized three-dimensional treatment planning, and the evolving clinical use of intensity-modulated radiotherapy (IMRT) and image-guided radiotherapy (IGRT). Further technological progress will derive from real-time in-room imaging, beam gating and tracking options, and by the utilization of proton and ion beams. In parallel, based on biological reasoning, clinicians and radiation biologists have established current evidence-based fractionation schedules and modern,



combined radiochemotherapy protocols. The new frontier in radiotherapy-related research is now to bring together advances in tumor and molecular biology with the full potential of high-precision radiation technology. Examples of these developments include combination of molecular targeted drugs with radiotherapy, high-dose hypofractionated radiotherapy, and individualization of treatment planning based on biological imaging.

M01-2: PET as a Platform Technology in Translational Research

Rodney J. Hicks

Peter MacCallum Cancer Centre, East Melbourne, Australia

Wednesday, Oct. 22, 2008, 09:20 (2nd lecture)

Biography

Professor Rodney Hicks, MB BS (Hons), MD, FRACP is director of the Centre for Molecular Imaging and Translational Oncology at the Peter MacCallum Cancer Centre, East Melbourne, Australia. He also holds a position as a professorial fellow at the Departments of Medicine and Radiology of the University of Melbourne and is co-chairman of the Translational Research Laboratory at Peter MacCallum Cancer Centre.



The Centre for Molecular Imaging at Peter Mac installed the first PET/CT outside Europe and North America in December 2001 and now has an experience of over 30,000 PET studies performed in the facility since it was established in 1996. Professor Hicks' group established the first small animal PET imaging facility in Australia in 2002 and now operates 2 small animal scanners with a strong focus on translational research and drug development. His group is also involved in a Commonwealth of Australia-funded Collaborative Research Centre as a core partner. Professor Hicks is the radiopharmaceutical stream leader. He holds numerous national and international research grants and has published over 160 peer-reviewed articles and more than 10 book chapters. A major focus of his research has been to assess the impact of PET on patient management and prognostic stratification. He is a Nuclear Medicine Section Editor of Cancer Imaging, and an editorial board member of the Journal of Nuclear Medicine, the European Journal of Nuclear Medicine and Molecular Imaging, and Lymphoma and Leukemia. He serves on the International Advisory Board of the Biomedical Imaging and Intervention Journal. He has served on expert panels for the International Atomic Energy Agency.

Pharmaceutical companies and academic institutions are increasingly using small animal imaging in translational research and drug development. Although lacking the sensitivity of optical imaging, or the spatial resolution of high frequency ultrasound or MRI, the ability to easily extrapolate from animals to human studies, while leveraging the high contrast resolution achievable with molecular imaging, makes small animal PET (SAP) a logical technique for pre-clinical testing of new therapeutic agents and for the validation of new tracers that might be

relevant to the evaluation of human diseases. It also allows for observations generated by human PET studies to be evaluated mechanistically in animal models. In this regard, there is a need for animal models that closely duplicate human diseases. Although xenograft models of cancer are widely used in cancer research, they have significant biological features that differ from those in human malignancy. For example, it is known that hypoxia is very prevalent in xenografts but only present in a proportion of human tumour sites. Accordingly, spontaneous tumours such as those that can occur in various transgenic mouse models, or orthotopic tumours that then spontaneously seed in a manner analogous to human malignancy, may be more appropriate to evaluate cancer therapeutics and new tracers than the traditional xenograft models. At a pragmatic level, it is important to have a short feedback loop between studies performed first in mice and then in man. Using SAP to inform imaging trial design in early phase human studies has the potential to improve research efficiency by allowing develop of parallel imaging and tissue biomarkers of therapeutic efficacy.

M07-1: Image Guided Precision Radiotherapy: the Technology

Eike Rietzel

Siemens Healthcare, Particle Therapy

Thursday, Oct. 23, 2008, 13:30

Biography:

Dr. Eike Rietzel is manager for particle therapy applications at Siemens Healthcare (Erlangen, Germany). He earned his diploma in physics from the University of Heidelberg with a thesis on neutron dosimetry at Deutsches Krebsforschungszentrum (Heidelberg, Germany), and his PhD at the Max-Planck-Institute for Medical Research (Heidelberg, Germany) in Biophysics. Dr. Rietzel had research positions at Gesellschaft für Schwerionenforschung (GSI, Darmstadt, Germany) focusing on carbon ion therapy and at Massachusetts General Hospital, Harvard Medical School (Boston, USA) focusing on image guided motion management in radiotherapy and proton therapy. He has contributed several patents as well as publications and was invited for several talks in the field of particle and image guided radiotherapy.



Modern radiotherapy systems allow for extreme conformation of dose distributions to target volumes. To fully exploit such capabilities, accurate target volume definition, precise patient positioning as well as adequate management of internal motion are essential. For patient positioning, the most relevant innovation was probably volumetric image acquisition of patients directly in treatment position by 1) kV cone-beam computed tomography (CBCT) with an imaging system mounted to the treatment machine, 2) MV CBCT acquired with the treatment beam and a flat panel imager, 3) helical MV computed tomography (CT) or 4) a conventional CT scanner on rails in the treatment room. Volumetric image data with soft tissue contrast can then be utilized to position the target within each treatment fraction or even adapt treatment delivery either directly online or afterwards offline for consecutive fractions.

Another emerging technique is based on detection of electromagnetic transponders that have been implanted in or near the target volume with the additional advantage of continuous position monitoring even during irradiations. For target definition, time resolved (4D) CT scanning reduces or even eliminates well known respiratory motion artifacts in conventional CT scanning and provides volumetric information at several respiratory states. To manage respiratory motion, daily differences in motion patterns have successfully been mitigated using 4D CBCT to determine the actual trajectory center. During treatment delivery, the impact of respiratory motion can be reduced by motion monitoring and either gating the treatment beam according to respiratory states or possibly in the future by tracking the target with the treatment beam. To date, motion monitoring has been performed with either camera systems or fluoroscopic cine imaging.

MIC Dinner Speaker: Fine Watchmaking in Glashütte/Saxony

Uwe Ahrendt

NOMOS Glashütte/SA Roland Schwertner KG, Glashütte, Germany

Friday, Oct. 24, 2008, 19:00

Biography

Uwe Ahrendt, Dipl.-Ing. (FH), Dipl.-Wirtsch.-Ing. (FH), has been general partner of NOMOS Glashütte/SA Roland Schwertner KG in Glashütte, Germany since 2003. He trained as tool maker at the Glashütter Uhrenbetrieb GmbH, Glashütte, Germany. From 1990 to 1993 he did a degree in Precision Engineering at the School of Engineering, Glashütte, Germany, furthermore, in 1995 and 1998 he received two diploma degrees in engineering and economics, respectively, from the University of Applied Sciences, Mittweida, Germany. His professional experience includes positions as tool maker at the Glashütter Uhrenbetrieb GmbH, as assistant for production planning and control at the IWC International Watch Co. in Schaffhausen, Switzerland, as production manager at Lange Uhren GmbH, Glashütte and as managing director of NOMOS Glashütte/SA Roland Schwertner KG. Furthermore, Uwe Ahrendt is the Second Deputy Mayor of the city of Glashütte since 2002 and Member of the Glashütte City Council since 1999.



Glashütte, a town not far from Dresden, is tiny. And yet Glashütte has been considered a kind of metropolis - a Mecca of fine watch making - for more than 150 years. Chronometers that are coveted by mechanical watch lovers all over the world are produced here: “The Swiss make the world’s best watches, the Glashütters, too,” was our competitors’ advertising slogan many years ago. Today there are experts who say that Glashütter watches are even better than those of Switzerland.

Be that all as it may: What is Glashütte? There are three manufacturers in the small town, all located on the same street, which the locals refer to as the “watch strip.” These companies are Lange und Söhne, Glashütte Original and NOMOS Glashütte.

NOMOS was the first brand able to offer a mechanical wrist watch with the “Glashütte” mark of origin after the break-down of the GDR. Not just anyone is allowed to do this: only watches with calibers, with more than 50% made on site (and not in Switzerland!), may be sold with this designation. Glashütte is in the same category as Parma Ham and Champagne.

We make manually wound watches, as well as ones with automatic calibers that we build ourselves. And our selection now also includes tourbillons: these are watches that a single watchmaker mills, screws and embellishes for up to six months. They are the epitome of our trade. The majority of our nearly eighty employees still work by hand, just as their predecessors did 150 years ago. High-tech techniques, such as laser and CNC, are used when they serve quality and precision.

Creating beautiful watches so well that it is not possible to make them better while still keeping them affordable: that is the spirit of NOMOS.

MIC Refresher Courses

Multi-modality Imaging – From a PET attached to a CT to a PET inside the MRT

Thursday, Oct. 23 7:30 – 8:15 Hall 2&3

Presenter: Thomas Beyer (thomas.beyer@philips.com)

Small Animal Imaging

Friday, Oct. 24 7:30 – 8:15 Hall 2&3

Presenter: Bernd Pichler (Bernd.Pichler@med.uni-tuebingen.de)

Statistical Image Reconstruction

Saturday, Oct. 25 7:30 – 8:15 Hall 2&3

Presenter: Johan Nuyts (johan.nuyts@uz.kuleuven.ac.be)

NMR NSS/MIC/RTSD Joint Session

Tuesday, Oct. 21 10:30-12:30 Hall 2&3

Session Chairs: **Alberto Del Guerra**, University Pisa, Italy
Ralph James, Brookhaven National Laboratory, United States

NMR-1 (invited) Lost in translation – from basic science to clinical reality
D. W. Townsend, *University of Tennessee, USA*

NMR-2 New Approaches Systems in Gamma-Ray Imaging Based on CdZnTe Detector
L. Verger, F. Mathy, O. Monnet, G. Montémont, V. Rebuffel
MINATEC, France

NMR-3 Towards Direct Conversion Detectors for Medical Imaging with X-Rays
M. Overdick, C. Bäumer, C. Herrmann, M. Simon, R. Steadman, G. Zeitler
Philips Research Europe, Germany

NMR-4 PICASSO: a Silicon Microstrip Detector for Mammography with Synchrotron Radiation
L. Rigon¹, F. Arfelli^{1,2}, A. Bergamaschi³, D. Dreossi^{1,4}, R. Longo^{1,2}, R. H. Menk^{1,4}, B. Schmitt³, E. Vallazza¹, E. Castelli^{1,2}
¹INFN, Italy; ²University of Trieste, Italy; ³Paul Scherrer Institut, Switzerland; ⁴Sincrotrone Trieste SCpA, Italy

NMR-5 About the Properties of Position and Energy Sensitive Semiconductor Pixel Detectors of Timepix Type and Their Possible Biomedical Applications
S. Pospisil, J. Jakubek, *Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic*; C. Leroy, *Montreal University, Canada*

NMR-6 Basic Characteristics of a Newly Developed Si/CdTe Compton Camera for Medical Imaging
N. Kawachi¹, S. Watanabe¹, T. Satoh¹, K. Arakawa^{1,2}, S. Takeda³, S. Ishikawa³, H. Aono³, S. Watanabe³, M. Yamaguchi^{3,2}, T. Takahashi³, H. Shimada², Y. Yoshida², Y. Suzuki², H. Sakurai², T. Nakano²
¹Japan Atomic Energy Agency, Japan; ²Gunma University, Japan; ³Japan Aerospace Exploration Agency, Japan

NM1 NSS/MIC Joint session I

Tuesday, Oct. 21 13:30-15:30 Hall 2&3

Session Chairs: **Patrick J. Le Du**, CEA, Saclay, France
Marek Moszynski, Soltan Institute for Nuclear Studies, Poland

NM1-1 (invited) Optimization of LSO for Time-of-Flight PET
W. W. Moses¹, M. Janecek¹, P. Szupryczynski^{2,3}, M. A. Spurrier², W.-S. Choong¹, C. L. Melcher², M. Andreaco³
¹Lawrence Berkeley National Laboratory, USA; ²University of Tennessee, USA; ³Siemens Medical Solutions, USA

NM1-2 A High Bandwidth Preamplifier for SiPM-Based TOF PET Scintillation Detectors
S. Seifert¹, D. R. Schaart¹, H. T. van Dam¹, J. Huizenga¹, R. Vinke², P. Dendooven², H. Löhner², F. J. Beekman¹
¹Delft University of Technology, The Netherlands; ²University of Groningen, The Netherlands

NM1-3 Silicon Photomultiplier as an Alternative for APD in PET Applications
A. Nassalski, M. Moszyński, A. Syntfeld-Kazuch, T. Szczęśniak, L. Świdorski, D. Wolski, T. Batsch, *Soltan Institute for Nuclear Studies, Poland*; J. Baszak, *Hamamatsu Photonics Deutschland GmbH, Polish Office, Poland*

NM1-4 Evaluation of a Linear Array of Silicon Photomultipliers for Beta Imaging
E. S. Heckathorne¹, L. A. Tiefer², F. Daghighian³, M. Dahlbom¹
¹UCLA School of Medicine, USA; ²Tiefertronix, USA; ³IntraMedical Imaging, USA

NM1-5 Potentials for Large Axial Field of View Positron Camera Systems
L. A. Eriksson^{1,2,3,4}, D. W. Townsend⁵, M. Conti¹, C. L. Melcher⁴, M. Eriksson², B. W. Jakoby^{1,5,6}, H. Rothfuss^{1,4}, M. E. Casey¹, B. Bendriem¹
¹Siemens Medical Solutions, Molecular Imaging, USA; ²Karolinska Institute, Sweden; ³University of Stockholm, Sweden; ⁴University of Tennessee, USA; ⁵University of Tennessee Medical Center, USA; ⁶University of Surrey, UK

NM1-6 A Scintillating Gas Detector for 2D Dose Imaging in Hadron Therapy
E. Seravalli¹, M. R. De Boer¹, F. Geurink¹, J. Huizenga¹, R. Kreuger¹, M. J. Schippers², C. W. E. Eijk¹
¹Delft University of Technology, The Netherlands; ²Paul Scherrer Institute, Switzerland

NM1-7 Design and Performance of a LXe Detector for a Micro-PET Detector
A. Muennich¹, P. Amaudruz¹, D. Bryman², L. Kurchaninov¹, P. Lu², C. Marshall¹, J. P. Martin³, F. Retiere¹, A. Sher¹
¹TRIUMF, Canada; ²The University of British Columbia, Canada; ³The University of Montreal, Canada

NM2 NSS/MIC Joint Session II

Tuesday, Oct. 21 16:00-18:00 Hall 2&3

Session Chairs: **William W. Moses**, Lawrence Berkeley National Laboratory, United States
Anatoly B. Rosenfeld, Centre for Medical Radiation Physics, University of Wollongong, Australia

NM2-1 (invited) NeuroSpin - an Accessible Resource for Ultra High Field MRI Research
C. Wiggins, *CEA Saclay, France*
On behalf of the NEUROSPIN group

NM2-2 New Structures for High Resolution THz-Imaging in Medical Applications
G. Staats, *Forschungszentrum Dresden-Rossendorf, Germany*; U. Schade, *Berliner Elektronenspeicherring - Gesellschaft für Synchrotronstrahlung m.b.H., Germany*

NM2-3 Edge-on Semiconductor X-Ray Detectors - Towards High-Rate Counting Computed Tomography

E. Roessl, J.-P. Schlomka, R. Proksa
Philips Research Europe - Hamburg, Germany

NM2-4 Radiation Detectors Based on Silicon Monolithic Telescope in Medical Applications

A. Fazzi, S. Agosteo, M. V. Introini, A. Pola, V. Varoli
Politecnico di Milano, Italy

NM2-5 3D Dosimetry of High Intensity Therapeutic Electron Beams

E. Lamanna^{1,2}, A. S. Fiorillo¹, A. Trapasso¹, R. Vena², A. Berdondini³, M. Bettuzzi³, R. Brancaccio³, F. Casali³, M. P. Morigi³, H. Bilokon⁴, G. Barca⁵, F. Castrovillari⁵, Y. F. T. Siaka⁶

¹Magna Graecia University Cz, Italy; ²INFN Gruppo Collegato Cs, Italy; ³University of Bologna & INFN Bologna, Italy; ⁴INFN Laboratori Nazionali di Frascati, Italy; ⁵Azienda Ospedaliera Cosenza, Italy; ⁶Centre for Atomic Molecular Physics and Quantum Optics, University of Douala,, Camerun

NM2-6 Design and Performance of a Light-Sharing Detector for 3D Gamma-Ray Imaging

S. Krishnamoorthy, Stony Brook University, USA; S. Stoll, M. Purschke, J.-F. Pratte, C. Woody, B. Yu, P. O'Connor, D. Schlyer, P. Vaska, Brookhaven National Laboratory, USA

NM2-7 High Spatial and Energy Resolution Gamma Imaging Based on LaBr3:Ce Continuous Crystals

R. Pani, R. Pellegrini, P. Bennati, M. N. Cinti, F. Vittorini, Sapienza University of Rome, Italy; R. Scafè, Casaccia Research Centre, Italy; S. Lo Meo, F. Navarra, University of Bologna, Italy; G. Moschini, University of Padova, Italy; V. Orsolini Cencelli, F. de Notaristefani, University of Rome III, Italy; P. Russo, University of Napoli, Italy

M01 MIC Plenary I, Opening

Wednesday, Oct. 22 08:30-10:00 Hall 2&3

Session Chairs: **Wolfgang Enghardt**, Technische Universität Dresden, Germany
Sibylle I. Ziegler, Nuklearmedizin Klinikum rechts der Isar der TU München, Germany

MIC Opening

W. Enghardt, Technische Universität Dresden, Germany

M01-1 (invited) Trends in Radiation Oncology: Integrating High Precision Treatment with Modern Biology

M. Baumann, Technische Universität Dresden, Germany

M01-2 (invited) PET as a Platform Technology in Translational Research

R. J. Hicks, Peter MacCallum Cancer Centre, Australia

M02 Detectors: PET

Wednesday, Oct. 22 10:30-12:30 Hall 2&3

Session Chair: **Paul Vaska**, Brookhaven National Lab, United States

M02-1 Evaluation of the First Silicon Photomultiplier Matrices for a Small Animal PET Scanner

G. Llosa¹, N. Belcari^{1,2}, M. G. Bisogni^{1,2}, G. Collazuol^{1,3}, A. Del Guerra^{1,2}, M. Melchiorri⁴, C. Piemonte⁴, A. Tarolli⁴, P. Barrillon⁵, S. Bondil-Blin⁵, C. de la Taille⁵, N. Dinu⁵

¹University of Pisa, Italy; ²INFN- Sezione di Pisa, Italy; ³Scuola Normale Superiore, Italy; ⁴FBK-irst, Italy; ⁵Laboratoire de l'Accélérateur Linéaire IN2P3-CNRS, France

M02-2 SiPM-Array Based PET Detectors with DOI Correction

D. R. Schaart¹, H. T. van Dam¹, S. Seifert¹, R. Vinke², P. Dendooven², H. Löhner², F. J. Beekman^{1,3}

¹Delft University of Technology, The Netherlands; ²University of Groningen, The Netherlands; ³University Medical Centre Utrecht, The Netherlands

M02-3 Multi-Pixel Photon Counters for TOF PET Detector and Its Challenges

C. L. Kim, G.-C. Wang, S. Dolinsky, GE Global Research, USA

M02-4 Performance Evaluation of SiPM Detectors for PET Imaging in the Presence of Magnetic Fields

S. España, L. M. Fraile, J. L. Herraiz, E. Vicente, J. M. Udias, Universidad Complutense de Madrid, Spain; M. Desco, J. J. Vaquero, Hospital General Universitario Gregorio Marañón, Spain

M02-5 PET Block Detector Readout Approaches Using G-APDs

A. Kolb¹, M. S. Judenhofer¹, E. Lorenz², D. Renker³, B. J. Pichler¹

¹Laboratory for Preclinical Imaging and Imaging Technology of Werner Siemens Foundation, Department of Radiology, University of Tuebingen, Germany; ²Max Plank Institute for Physics, Föhringer Ring 6, Germany; ³Paul Scherer Institute, Switzerland

M02-6 Initial Results from a Full-Ring PET Scanner for the Mouse Brain Using CZT Pixel Detectors

P. Vaska¹, J.-F. Pratte¹, A. Dragone¹, J. Fried¹, Y.-G. Cui¹, G. DeGeronimo¹, D. Kim¹, S. Krishnamoorthy², A. Bolotnikov¹, P. O'Connor¹, A. Dilmanian¹, R. B. James¹

¹Brookhaven National Laboratory, USA; ²Stony Brook University, USA

M02-7 Study of a High Resolution, 3-D Positioning Cross-Strip Cadmium Zinc Telluride Detector for PET

Y. Gu¹, J. L. Matteson², R. T. Skelton², A. A. Deal², E. A. Stephan², F. Duttweiler², T. M. Gasaway², C. S. Levin¹

¹Stanford University, USA; ²University of California, San Diego, USA

M02-8 Performance characterization of a new ultra-high resolution, 3-D positioning PET scintillator detector

A. Vandenbroucke, A. M. K. Foudray, F. W. Y. Lau, C. S. Levin, P. D. Olcott, P. D. Reynolds
Stanford University, USA

M03 Image Reconstruction: PET I

Wednesday, Oct. 22 13:30-15:30 Hall 2&3

Session Chair: **Andrew J. Reader**, McGill University, Canada

M03-1 Fourier Rebinnings from Time-of-Flight PET Data to Non Time-of-Flight Data

S. Cho, S. Ahn, Q. Li, R. M. Leahy
University of Southern California, USA

M03-2 A Novel Iterative Image Reconstruction Method for High-Resolution PET Imaging with a Monte Carlo Based Positron Range Model

L. Fu, J. Qi, *University of California, USA*

M03-3 On the Optimum Strategy for Subsets Based Reconstruction of In-Beam PET Data

G. Shakirin¹, P. Crespo², W. Enghardt^{1,3}
¹Forschungszentrum Dresden-Rossendorf, Germany; ²University of Coimbra, Portugal; ³Technische Universität Dresden, Germany

M03-4 Fusion of Image Reconstruction and Lesion Detection Using a Bayesian Framework for PET/SPECT

T. Kobayashi, H. Kudo, *University of Tsukuba, Japan*

M03-5 On-Line Sliding-Window List-Mode PET Image Reconstruction for a Surgical PET Imaging Probe

S. S. Huh, W. L. Rogers, N. H. Clinthorne
University of Michigan, USA

M03-6 Visualization of Raw 3D List-mode PET and TOF-PET Data Without Tomographic Reconstruction Using Virtual Space

A. Sitek
Brigham and Women's Hospital and Harvard Medical School, USA

M03-7 Region-of-Interest Reconstruction from Truncated Projection Data under Blind Object Support

E. A. Rashed, H. Kudo, *University of Tsukuba, Japan*

M03-8 Spatially Variant Positron Range Modeling Derived from CT for PET Image Reconstruction

A. M. Alessio, L. R. MacDonald
University of Washington, USA

M04 Compensation Techniques

Wednesday, Oct. 22 16:00-18:00 Hall 2&3

Session Chair: **Irène Buvat**, INSERM, France

M04-1 Correlating Motion of Internal Organs with the Displacements of Fiducial Markers During Respiration

R. Bouchko, B. W. Reutter, G. T. Gullberg, *Lawrence Berkeley National Lab, USA*; D. Saloner, *University of California, USA*

M04-2 Rubidium-82 Cardiac PET Imaging with Resolution Modeling

A. Rahmim¹, J. Tang¹, M. A. Lodge¹, S. Lashkari², M. R. Ay², R. Lautamaki¹, B. M. W. Tsui¹, F. Bengel¹
¹Johns Hopkins University, USA; ²Medical Sciences University of Tehran, Iran

M04-3 Statistical Shape Modeling of the Diaphragm for Application to 82-Rb Cardiac PET-CT Studies

S. J. McQuaid, T. Lambrou, B. F. Hutton
University College London, UK

M04-4 Estimation and Correction of Irregular Respiratory Motion of the Heart in SPECT in Presence of Partial Angle Effects Due to Amplitude Binning in SPECT

J. Dey¹, W. P. Segars², P. H. Pretorius¹, M. A. King¹
¹University of Massachusetts Medical School, USA; ²Duke University, USA

M04-5 Effectiveness of Three Alternative Strategies in Reducing the Degrading Impact of Respiratory Motion on the Detection of Small Pulmonary Nodules in SPECT Imaging

M. S. Smczynski¹, H. C. Gifford¹, A. Lehovich¹, J. E. McNamara¹, W. P. Segars², J. Dey¹, M. A. King¹
¹University of Massachusetts Medical School, USA; ²Duke Advanced Imaging Laboratories, Duke University Medical School, USA

M04-6 Motion Correction on Dual ECG and Respiratory Gated 3D Cardiac PET/CT Data

M. Dawood^{1,2,3}, T. Kösters², M. Fieseler^{1,2}, F. Büther^{1,3}, X. Jiang², K. P. Schäfers^{1,3}
¹European Institute of Molecular Imaging, Germany; ²University of Münster, Germany; ³University Hospital Münster, Germany

M04-7 Quantitative Study of Rigid-Body and Respiratory Motion of Patients Undergoing Stress and Rest Cardiac SPECT Imaging

J. Mitra, K. L. Johnson, J. E. McNamara, J. Dey, M. A. King
University of Massachusetts Medical School, USA

M04-8 Effects of and Compensation Strategies for Partial Volume Effects Due to Cardiac Motion in Cardiac ECT

Y. Du, E. C. Frey, *Johns Hopkins Medical Institutions, USA*

M05 Multimodality Imaging

Thursday, Oct. 23 08:30-10:00 Hall 2&3

Session Chair: **David W. Townsend**, Department of Medicine, University of Tennessee, Knoxville, United States

M05-1 Combined microPET®/MR System: Performance Assessment of the Full PET Ring and Split Gradients

R. C. Hawkes¹, T. D. Fryer¹, A. J. Lucas¹, S. B. Siegel², J. C. Clark¹, T. A. Carpenter¹
¹University of Cambridge, UK; ²Siemens Molecular Imaging Preclinical Solutions, USA

M05-2 In Vivo PET/MR Imaging in a with a Combined PET/MRI System

M. S. Judenhofer, H. F. Wehrl, G. Reischl, H.-J. Machulla, B. J. Pichler
University of Tübingen, Germany

M05-3 An MR compatible PET scanner based on RatCAP for small animal imaging in 9.4T

S. H. Maramraju¹, S. S. Junnarkar², B. Ravindranath¹, S. S. Southekal¹, S. P. Stoll², D. S. Smith², W. Lenz², J.-F. Pratte², M. L. Purschke², S. Krishnamoorthy¹, P. Vaska², C. L. Woody², D. J. Schlyer²
¹Stony Brook University, USA; ²Brookhaven National Laboratory, USA

M05-4 Evaluation of the First Clinical MR/PET-System – Initial Results

A. Kolb¹, H. F. Wehrl¹, M. S. Judenhofer¹, M. P. Lichi², M. J. Schmand³, J. Breuer⁴, C. D. Claussen², B. J. Pichler¹
¹Laboratory for Preclinical Imaging and Imaging Technology of Werner Siemens Foundation, Department of Radiology, University of Tübingen, Germany; ²Department of Radiology, University of Tübingen, Germany; ³Siemens Medical Solutions, Germany; ⁴Max Planck Institute for Physics, Germany

M05-5 Dual-Modality Prostate Imaging with PET and Transrectal Ultrasound

J. S. Huber, W. W. Moses, Q. Peng, R. H. Huesman, B. W. Reutter, D. S. Wilson, *Lawrence Berkeley National Lab, USA*; J. Pouliot, I.-C. Hsu, *University of California, San Francisco, USA*

M05-6 Integrating a High-Resolution Charged-Particle Imaging System with a Fluorescence Imaging Modality for in Vivo Applications

L. Chen¹, N. Kirkpatrick², R. A. Gatenby^{1,3}, N. G. Knowles¹, L. S. Gobar¹, H. H. Barrett¹

¹University of Arizona, USA; ²Massachusetts General Hospital and Harvard Medical School, USA; ³H. Lee Moffitt Cancer Center and Research Institute, USA

M06 MIC Poster I

Thursday, Oct. 23 10:30-12:30 Hall 4&5 (Poster)

Session Chair: **Magnus Dahlbom**, David Geffen School of Medicine at UCLA, United States

M06-1 Direct Quantitative Comparison of HRRT and HR+ Scanners: an Interscanner [11C]Flumazenil Test-Retest Study

E. H. P. van Velden, R. W. Kloet, B. N. M. van Berckel, F. L. Buijs, G. J. Luurtsema, A. A. Lammertsma, R. Boellaard
VU University Medical Centre, The Netherlands

M06-3 High Sensitivity Converging Collimators for Brain SPECT

R. Ter-Antonyan¹, J. E. Bowsher¹, K. L. Greer¹, S. D. Metzler², R. J. Jaszczyk^{1,3}

¹Duke University Medical Center, USA; ²University of Pennsylvania, USA; ³Duke University, USA

M06-5 Low Noise Multi-Channel Readout Front-End in 0.35 µm CMOS Process for APD-Based PET Detectors

X. Fang, C. Yu-guo, N. Ollivier-henry, M. Ndeye-awa, D. Brasse, Y. Yu
iphe in2p3 cnrs, France

M06-7 Simulation Study on Sensitivity and Count Rate Characteristics of “OpenPET” Geometries

E. Yoshida, T. Yamaya, K. Shibuya, F. Nishikido, N. Inadama, H. Murayama
National Institute of Radiological Sciences, Japan

M06-9 Quantitative Accuracy in Cardiac Studies with the Discovery RX PET/CT Scanner

T. J. Spinks, J. E. Bastin, *Imanet, GE Healthcare, UK*

M06-11 Acquisition and Processing Methods for a Bedside Cardiac SPECT Imaging System

M. T. Studenski¹, D. R. Gilland^{1,2}

¹University of Florida, USA; ²University of Florida, USA

M06-13 Regularised B-Spline Deformable Registration for Respiratory Motion Correction in PET Images

W. Bai, M. Brady, *University of Oxford, UK*

M06-15 Performance and First Clinical Application of a Prototype 3D PET Scanner Using Semiconductor Detectors and Depth of Interaction Information

Y. Morimoto, W. Takeuchi, K. Matsuzaki, S. Kojima, A. Suzuki, K. Kobashi, Y. Ueno, K. Umegaki, *Central Research Laboratory, Japan*; N. Kubo, C. Katoh, K. Hirata, R. Usui, T. Shiga, N. Tamaki, *School of Medicine, Japan*

M06-17 Prototype of TlBr Detector Array for Ultra High Resolution PET

K. Ishii¹, K. Hitomi^{1,2}, Y. Kikuchi¹, M. Fujiwara¹, M. Nakhostin¹, H. Yamazaki¹, S. Matsuyama¹, A. Terakawa¹

¹Tohoku University, Japan; ²Tohoku Institute of Technology, Japan

M06-19 Correcting Spatial Distortion and Non-Uniformity in Planar Images from γ-Camera Systems

D. Thanasis¹, D. Maintas², A. Karabarounis¹, E. Georgiou¹, N. Giokaris¹, C. Papanicolas¹, E. Stiliaris¹

¹University of Athens, Greece; ²Institute of Isotopic Studies, Greece

M06-21 Imaging Studies for Evaluating Impact of Improved Position Sampling in PET Scanners

S. Surti, M. E. Werner, J. S. Karp
University of Pennsylvania, USA

M06-23 Impact of the Attenuation Coefficient of Scintillation Crystals (LYSO and LSO) on Depth of Interaction Resolution

A. Ros-Garcia¹, C. W. Lerche², F. Sanchez¹, J. Segura-Ruiz³, A. Cantarero³, A. Sebastia², J. M. Benlloch¹

¹Instituto de Fisica Corpuscular (CSIC-UV), Apdo. 22085, 46071, Valencia, Spain, Spain; ²Instituto de Aplicaciones de las Tecnologías de la Información y de las Comunicaciones Avanzadas (ITACA) (UPV), Spain; ³Material Science Institute (UV), Spain

M06-25 Iterative Algorithms for Variance Reduction on Compressed Sinogram Random Coincidences in PET

V. Y. Panin, *Siemens Medical Solutions, USA*

M06-27 Image Derived Arterial Input Function Using Nonnegative Matrix Factorization for PET Quantitative Analysis

E. M. Fadaili, A. Souloumias, R. Maroy, R. Trebossen, R. Boisgard, B. Tavittian
CEA, LIST, Stochastic Process and Spectra Laboratory, CEA Saclay, France

M06-29 Performance Evaluation of the Siemens Inveon Small Animal PET Scanner

J. G. Mannheim¹, M. S. Judenhofer¹, K. Lankes¹, D. F. Newport², B. J. Pichler¹

¹Laboratory for Preclinical Imaging and Imaging Technology of the Werner Siemens-Foundation, Department of Radiology, University of Tuebingen, Germany; ²Out of the Box Engineering, USA

M06-31 Optimisation and Assessment of Quantitative I-123 SPECT for Radioiodine Therapy Dosimetry

R. A. Gregory¹, M. J. Osborne², M. Holstenson¹, S. Sassi¹, M. Partridge¹, G. D. Flux¹

¹Institute of Cancer Research and Royal Marsden NHS Foundation Trust, UK; ²Brighton and Hove University Hospitals, UK

M06-33 Online Self Adaptive Calibration Front-End Electric Design for a High Resolution MicroPET

X. Kang, Y. Liu, Z. Zhang, S. Wang, X. Sun, Z. Wu, Y. Jin
Tsinghua university, China

M06-35 Evaluation of the Impact of Resolution-Sensitivity Tradeoffs on Detection Performance for SPECT Imaging

E. Asma, R. M. Manjeshwar
General Electric Global Research, USA

M06-37 Motion-Compensated Spatio-Temporal Filtering of Cardiac Gated SPECT Images

T. Marin, M. N. Wernick, Y. Yang, J. G. Brankov
Illinois Institute of Technology, USA

M06-39 Performance Investigation of a Time-of-Flight PET/CT Scanner

B. W. Jakoby^{1,2,3}, Y. Bercier³, M. Conti³, M. E. Casey³, T. Gremillion³, C. Hayden³, B. Bendriem³, D. W. Townsend¹

¹University of Tennessee Medical Center, USA; ²University of Surrey, UK;

³Siemens Molecular Imaging, USA

M06-41 PET System Sensitivity and Lesion Detectability

C.-M. Kao¹, Y. Dong², C.-T. Chen¹

¹The University of Chicago, USA; ²Illinois Institute of Technology, USA

M06-43 Reconstructed Image Resolution in Multiple Coincidences Compton Camera

A. Andreyev, A. Celler, University of British Columbia, Canada; A. Sitek, Harvard Medical School, USA

M06-45 Characterization of LSO/PMT scintillation Pulses

N. Guo^{1,2}, Q. Xie^{1,2}, B. Zhang¹, X. Wang^{1,2}, Z. Zhang¹

¹Huazhong University of Science and Technology, China; ²Wuhan

National Laboratory for Optoelectronics, China

M06-47 Real-Time MRI for Assessment of PET/CT Attenuation Correction Protocols

J. Hamill¹, A. Kino², D. Li³, P. Weale¹, R. Jerecic¹, G. Platsch³, C. Hayden¹, D. Burckhardt¹, J. Carr²

¹Siemens Medical Solutions, USA; ²Northwestern University, USA;

³Siemens Medical Solutions, Germany

M06-49 Optimizing MRI-PET Inserts for Uniform Spatial Resolution and Enhanced Efficiency

C. J. Thompson, Montreal Neurological Institute, Canada

M06-51 Basic design and some preliminary results from an integrated PET/MRI system for small animals

S. Yamamoto, Kobe City College of Technology, Japan; J. Hatazawa, Osaka University Medical school, Japan; M. Aoki, E. Sugiyama, M. Kawakami, Hitachi Metal, Meomax Company, Japan

M06-53 First Hybrid 3D PET/US Scan of the Human Heart

N. Lang¹, S. Hold², S. Mundakapadam², J. Stypmann¹, G. Schmitz², K. Schäfers¹

¹University Hospital Münster, Germany; ²Ruhr-University Bochum, Germany

M06-55 PET Artifacts from off-Plane Sources in High Magnetic Fields

D. Burdette¹, D. Albani¹, E. Chesi², N. Clinthorne³, E. Cochran¹, K. Honscheid¹, S. Huh³, H. Kagan¹, M. Knopp¹, C. Lacasta⁴, M. Mikuz⁵, P. Schmalbrock¹, A. Studen⁵, P. Weilhammer^{2,6}

¹The Ohio State University, USA; ²CERN, Switzerland; ³University of Michigan, USA; ⁴IFIC/CSIC-UVEG, Spain; ⁵University of Ljubljana, Slovenia; ⁶Universita degli Studi di Perugia, Italy

M06-57 Reduction of CT Artifacts Due to Respiratory Motion in a Slowly Rotating SPECT/CT

K. Erlandsson¹, M. Núñez^{1,2}, B. F. Hutton¹

¹University College London, UK; ²University of the Republic, Uruguay

M06-59 Geometric Co-Calibration of a Small Animal SPECT-CT System with Fully Superimposed Fields-of-View

L. Cao, T. Kriesche, J. Peter

German Cancer Research Center, Germany

M06-61 Performance Evaluation of 4 × 4 Array of Large Size Silicon Photomultiplier for MR Compatible PET Photosensor

K. J. Hong, Y. Choi, J. H. Jung, W. Hu, J. H. Kang, B. J. Min, Sungkyunkwan University, Samsung Medical Center, South Korea; Y. H. Chung, Yonsei University College of Health Science, South Korea; D. Herbert, J. C. Jackson, SensL, Ireland

M06-63 Template Based Attenuation Correction for PET in MR-PET Scanners

E. Rota Kops, H. Herzog, Forschungszentrum Juelich, Germany

M06-65 A Prototype MRI-Compatible Ultra-High Resolution SPECT for in Vivo Mice Brain Imaging

J.-W. Tan, L.-J. Meng

University of Illinois at Urbana Champaign, USA

M06-67 Preclinical PET/CT System for Imaging Non-Human Primates

J. P. J. Carney¹, J. L. Flynn¹, K. S. Cole¹, D. Fisher¹, D. Schimel², L. E. Via², M. Cordell³, C. P. D. Longford³, R. Nutt³, C. Landry⁴, A. P. Tybirkowski⁴, E. M. Bailey⁴, L. J. Frye¹, C. M. Laymon¹, B. J. Lopresti¹

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³Siemens Molecular Imaging, USA; ⁴Neurologica Corp., USA

M06-69 Impact of Attenuation Correction in Normal and Infarcted Rat Myocardium Using Small Animal PET and Clinical CT Scanner

S. K. Woo¹, K. M. Kim¹, T. S. Lee¹, J. H. Jung¹, K. S. Woo¹, J. G. Kim¹, J. S. Kim¹, L. Uyen², J. J. Min², M. S. Kim³, G. J. Cheon¹

¹Korea Institute of Radiological and Medical Science, Korea; ²Chonnam National University Medical School, Korea; ³Korea Cancer Center Hospital, Korea

M06-71 Phased Attenuation Correction for Respiration Correlated PET in Phantoms and Patients with Non-Small Cell Lung Cancer (NSCLC)

M. C. Oellers, T. Rosario, G. Bosmans, P. Lambin, A. Dekker Maastricht Clinic, The Netherlands

M06-73 High Resolution ¹²⁵I Pinhole SPECT Imaging of the Mouse Thyroid with the MediSPECT Scanner

G. Mettivier, M. C. Montesi, A. Lauria, R. Paolo INFN and Univ. of Napoli, Italy

M06-75 Development of a High Packing Fraction Detector Module with DOI Measurement Capability for High Resolution PET

F. G. Almeida^{1,2}, S. Augusto¹, R. Bugalho³, B. Carriço³, C. S. Ferreira³, M. Ferreira³, R. Moura³, P. Parkhurst⁴, C. Ortigão³, J. F. Pinheiro³, P. Rodrigues³, D. N. Sá¹, J. C. Silva³, A. Trindade³, J. Varela^{3,5,6}

¹INEGI, Portugal; ²FEUP, Portugal; ³LIP, Portugal; ⁴Proteus, Inc, USA; ⁵IST, Portugal; ⁶CERN, Switzerland

M06-77 Performances' Evaluation of a Pinhole Small Animal SPECT System

Z. El Bitar, B. Leh, V. Bekaert, D. Huss, D. Brasse IPHC-DRS, France

M06-79 Three layers GSO block detectors for small animal PET system

S. Yamamoto, Kobe City College of Technology, Japan

M06-81 A Cross-Stack Quasi-Monolithic Detector with DOI Capability for a Small Animal PET

S.-J. Lee¹, C.-H. Baek^{1,2}, Y. H. Chung^{1,2}, Y. Choi³

¹College of Health Science, Yonsei university, Korea; ²Yonsei university, Korea; ³Samsung Medical Center, Sungkyunkwan University School of Medicine, Korea

M06-83 Development of a prototype system of a small bore DOI-PET scanner

E. Nishikido¹, E. Yoshida¹, T. Yamaya¹, N. Inadama¹, K. Shibuya¹, T. Tsuda², H. Tonami², K. Kitamura², H. Murayama¹

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M06-85 Fast Reconstruction for Synchrotron-Radiation-Based Micro-CT

M. Kachelrieß, M. Knaup

Institute of Medical Physics (IMP), Germany

M06-87 Design and Feasibility Study of a High Resolution Dual Energy MicroCT for Image Guided Small Animal Irradiation

E. W. Izaguirre, X. Diao, J. Birch, D. A. Low
Washington University in Saint Louis, USA

M06-89 Simulation of Spatial Resolution and Sensitivity for Tapered PET Detectors for Small Animal Imaging

S. St. James, Y. Yang, S. L. Bowen, J. Qi, S. R. Cherry
University of California, Davis, USA

M06-91 Effects of Photon Multiple Interactions in a High Resolution PET System That Uses 3-D Positioning Detectors

Y. Gu, C. S. Levin, Stanford University, USA

M06-93 DEI-CT Based Images of a Small Brain Phantom with Contrast Agents, Rat Kidney and Rat Brain Using 20, 30 and 40 keV Synchrotron X-Rays.

R. V. Donepudi, Sir.C.R.R. (A) College, India; Z. Zhong, Brookhaven National laboratory, USA; R. Cesaro, A. Brunetti, Università di Sassari, Italy; T. Akatsuka, T. Yuasa, Yamagata University, Japan; T. Takeda, University of Tsukuba, Japan; G. Tromba, Elettra, Italy; G. E. Gigante, Università di Roma, Italy

M06-95 High-Resolution Angiographic Imaging in Rat and Mouse Using Synchrotron Radiation

K. Umetani, Japan Synchrotron Radiation Research Institute, Japan; T. Sakurai, T. Kondoh, Kobe University, Japan

M06-97 Long Term Cell Tracking in Small Animals Phase Using Phase Contrast Based Micro CT and Synchrotron Radiation

R. H. Menk¹, E. Schultke², F. Arfelli³, L. Rigon⁴, D. Dreossi¹, A. Round⁵, N. Sodini¹, C. Hall⁶, B. H. J. Juurlink²

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M06-99 Positioning Accuracy and Precision of a Three Degrees of Freedom Manipulator Guided by Tilting-Collimator Scintillation Camera

N. M. Uzunov¹, M. Bello^{1,2}, G. Moschini^{1,2}, D. Bollini¹, G. Baldazzi^{3,1}

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M06-101 A Novel Parallel Hole Collimator for High Resolution SPET Imaging with a Compact LaBr₃:Ce Gamma Camera

R. Pani¹, R. Pellegrini¹, P. Bennati¹, M. N. Cinti¹, S. Ridolfi¹, R. Scafè², G. De Vincentis¹, S. Lo Meo³, N. Lanconelli³, F. Navarra³, G. Moschini⁴, A. Fabbri⁵, E. D'Abramo⁵, D. Sacco⁶, V. Orsolini Cencelli⁵, F. de Notaristefani⁵

¹Sapienza University of Rome, Italy; ²Casaccia Research Centre, Italy; ³University of Bologna, Italy; ⁴University of Padova, Italy; ⁵University of Roma III, Italy; ⁶D.I.P.L.A. U.F.E.X., Italy

M06-103 Influence of Respiratory Motion on Cardiac Mouse Images Using High-Resolution Small Animal PET

T. Budumlu¹, K. Büscher¹, T. Kösters², K. P. Schäfers¹

¹European Institute of Molecular Imaging, Germany; ²Institute of Computational and Applied Mathematics, Germany

M06-105 Design Simulations of a LSO Crystal Block Detector Module for Dual PET/SPECT Systems

P. Aguiar, A. Iglesias

Universidade de Santiago de Compostela, Spain, Spain

M06-107 PET/CT Alignment for Small Animal Scanners Based on Capillary Detection

A. Rodríguez-Ruano¹, J. Pascual¹, J. Chamorro¹, A. Sisniega¹, V. García-Vázquez¹, Á. Udias², J. J. Vaquero¹, M. Desco¹

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M06-109 Image Quality Assessment of a Flat-Panel Based microCT Scanner

A. Martínez-Davalos, O. E. Soberanis, M. Rodríguez-Villafuerte, O. O. Galvan, A. Jimenez, U. Moya, T. Murrieta, M. E. Brandan, C. Ruiz

Instituto de Física, UNAM, Mexico

M06-111 Comparative Study of Two Flat-Panel X-Ray Detectors Applied to Small-Animal Imaging Cone-Beam Micro-CT

A. Sisniega¹, J. J. Vaquero¹, E. Lage¹, Á. de Carlos¹, J. Villena¹, M. Abella¹, I. Vidal¹, G. Tapias¹, J. C. Antoranz², M. Desco¹

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M06-113 Imaging Performance of the LabPET APD-based Digital PET Scanner

M. Bergeron¹, J. Cadorette^{1,2}, J.-F. Beaudoin¹, M.-A. Tétrault¹, N. Viscogliosi¹, V. Selivanov², M. D. Lepage², G. Robert², J. P. Norenberg³, R. Fontaine¹, R. Lecomte¹

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M06-115 Dynamic Imaging of Arthritic Vasculature in Mouse-Models Using HiSPECT and In-111 Labelled Cyclic RGD Peptide

A. Wirtzwar¹, D. Buchholz¹, O. Gottschalk², F. W. Schwaiger³, S. S. Viehoveer¹, N. U. Schramm⁴, H.-W. Mueller¹, M. Funk²

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M06-117 Experimental scanner setup from miniPET-II detector modules

I. Valastyan^{1,2}, J. Imrek¹, G. Hegyesi¹, G. Kalinka¹, J. Molnar¹, D. Novak¹, A. Sipos¹, I. Bagamery³, L. Balkay⁴, A. Kerek²

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M06-119 Physical Performance and Quantitative Brain Imaging Studies Using the RatCAP Tomograph

P. Vaska¹, C. L. Woody¹, D. J. Schlyer¹, S. Junnarkar¹, S. Southekal², D. Schulz¹, J.-F. Pratte¹, S. Stoll¹, M. Purschke¹, J. Fried¹, W. Schiffer¹, S. H. Maramraju², B. Ravindranath², S. Krishnamoorthy², V. Radeka¹, P. O'Connor¹, R. Lecomte³, R. Fontaine³

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M06-121 Characterization of the Compton Scattering in Clinical PET/CT with a High Resolution Half Ring PET Insert Device

S. A. Komarov, H. Wu, D. B. Keesing, D. Pal, T. Y. Song, J. A. O'Sullivan, Y.-C. Tai

Washington University in St. Louis, USA

M06-123 Quantitative image-quality evaluation for a high-sensitivity small-animal PET system

C.-M. Kao¹, Y. Dong², C.-T. Chen¹

¹The University of Chicago, USA; ²Illinois Institute of Technology, USA

M06-125 Design Study of Gamma-Cube - a High Resolution and High Sensitivity SPECT System for in Vivo Mouse Brain Studies

G. Fu, L.-J. Meng, University of Illinois at Urbana-Champaign, USA; C.-T. Chen, University of Chicago, USA

M06-127 Development of Quasi-Monochromatic Compact Hard X-Ray Source via Laser Compton Scattering for Biological and Medical Imaging

R. Kuroda, H. Toyokawa, M. Yasumoto, H. Ikeura-sekiguchi, M. Koike, K. Yamada, National Institute of Advanced Industrial Science and Technology (AIST), Japan; F. Sakai, Sumitomo Heavy Industries, Ltd (SHI), Japan; K. Mori, Ibaraki Prefectural University of Health Sciences, Japan

M06-129 Monolithic Scintillator Blocks in PET and SPECT

C. W. E. Van Eijk, J. Van der Laan, D. R. Schaart
Delft University of Technology, The Netherlands

M06-131 A Hybrid Approach for Accurate Estimation of the Scatter Component in X-ray CT: Combining Experimental Measurements and Monte Carlo Simulations

A. Akbarzadeh¹, M. R. Ay¹, H. Ghadiri Heravani^{1,2}, S. Sarkar¹, H. Zaidi³

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M06-133 An Iodine-Calcium Separation Analysis and Virtually Non-Contrasted Image Generation Obtained with Single Source Dual Energy MDCT

L. Goshen¹, J. Sosna², R. Carmi¹, G. Kafri¹, I. Iancu¹, A. Altman¹

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M06-135 Front-end Electronics for a 1mm³ Resolution LSO-PSAPD-based PET System with Multiplexing

F. W. Y. Lau, A. Vandenbroucke, P. D. Reynolds, P. D. Olcott, M. A. Horowitz, C. S. Levin
Stanford University, USA

M06-137 X-Ray Diffraction Studies with Active Pixel Sensors for Breast Biopsy Analysis

S. E. Bohndiek¹, M. J. Farquharson², G. J. Royle¹, R. D. Speller¹

¹University College London, UK; ²City University, UK

M06-139 99mTc Direct Labeling of a New anti-MUC1 Monoclonal Antibody, PR81, as a Potential Agent for Imaging of Human Breast Cancer in Nuclear Medicine

M. Salouti¹, H. Rajabi², H. Babaei³, M. J. Rasaei²

¹Islamic Azad University, Zanjan Branch, Iran; ²Tarbiat Modares University, Iran; ³Atomic Energy Organization of Iran, Iran

M06-141 An Imaging β -Probe for Radioguided Surgery

S. C. Thacker¹, B. C. Stack², V. J. Lowe³, V. B. Gaysinskiya¹, S. L. Cool¹, B. Singh¹, G. Entine¹, V. V. Nagarkar¹

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M06-143 Deformable Force Feedback Model Constructed from Magnetic Resonance Images for Haptic Interaction

Z. Yang, V. Vegh, Q. M. Tieng, D. Wang
University of Queensland, Australia

M06-145 Repeated Imaging of Lung Cancer Development Using PIXSCAN, a Low Dose Micro-CT Scanner Based on XPAD Hybrid Pixel Detectors

F. Debarbieux^{1,2}, A. Bonissent², P. Breugnot², F. Cassol-Brunner², P. Delpierre², C. Hemmer², J.-C. Clémens², B. Dinkespiller², J. Luchino¹, F. Mann¹, C. Meessen², E. Vigeolas², G. Rougon¹, C. Morel²

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M06-147 Implementation of a High Level Hands-on-Training at an Experimental PET Scanner

T. Würschig¹, W. Enghardt^{2,1}, T. Kluge²

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M06-149 Demonstration of the Superiority of Digital Breast Tomosynthesis over Digital Mammography Through a Series of Sophisticated Computational Breast Phantoms

A. K. Ma¹, S. Gunn², E. Bullard², D. G. Darambara¹

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M06-151 Interactive Intraoperative Imaging and Guidance with a Pre-Registered CT Volume

V. I. Naik, J. W. Stayman, Xoran Technologies, USA

M06-153 Beta Detection and Imaging Probe Based on Optimized CMOS Monolithic Active Pixel Sensors for Open Surgical and Endoscopic Cancer Resection Applications

W. Dulinski, J. Baudot, C. Santos, M. Winter, IPHC/IN2P3/CNRS, France; N. Clinthorne, M. Piert, University of Michigan, USA; H. Kagan, Ohio State University, USA

M06-155 Differential Phase-Contrast Tomosynthetic Experimental System with Weakly Coherent Hard X-Rays
K. Kang¹, Z. Wang^{1,2}, Z. Huang^{1,2}, L. Zhang^{1,2}, Z. Chen^{1,2}, F. Ding^{1,2}, Q. Fang^{1,2}

¹Tsinghua University, China; ²Ministry of Education, China

M06-157 A Gamma-Localization System Using Stereotactic Imaging
B. L. Welch, D. Banks, T. St. Saviour
 Dilon Technologies, USA

M06-159 CZT Gamma Camera with Pinhole Collimator: Detector Efficiency

I. M. Bleviss¹, L. Volokh¹, L. Tsukerman¹, J. W. Hugg², F. P. Jansen², J. P. Bohnik¹

¹General Electric Healthcare, Israel; ²General Electric Healthcare, USA

M06-161 Development of a Fillable, Tapered PET/CT Phantom
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M06-163 An Experimental Study of Multi-Source Inverse Geometry CT

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M06-165 Measurements and Simulations of the 3D Dose Deposition of a Medical Ion Beam and the Study of the Secondary Nuclear Fragments Contribution

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M06-167 Optimization of the Patient Dose During Positioning at the Proton Radiotherapy Facility at IFJ PAN, Krakow, Poland

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M06-169 Fast Simulation of Yttrium-90 Bremsstrahlung with Reduced Variance

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M06-171 Experimental Evaluation of Image-Based Spectral Analysis Method for Multi Energy Window Photon Counting X-Ray CT

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M06-173 Advanced Compton Camera System for Nuclear Medicine: Prototype System Study

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M06-175 Timing Characteristics of the Inorganic Scintillators Coupled with SiPMs for the PET Application

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M06-177 Pin Photodiode Arrays for High Resolution Imaging Applications

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M06-179 Improving Light Extraction from Heavy Inorganic Scintillators by Photonic Crystals

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M06-181 Differential Multi-Channel Readout for Solid-State Photomultiplier Array

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M06-183 A Cone Beam CT Scanner Without Moving Parts

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M06-185 Luminescence and Crystalline Structure of Vacuum Deposited CsI(Tl), ZnSe(Te) and Ca_{0.65}RE_{0.35}F_{2.35} (RE: Eu, Ce) Layers.

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M06-187 Four-Layer DOI-PET Detector with a Silicon Photomultiplier Array

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M06-189 Advantage of the Four-Layer DOI Information in the Time Resolution for a TOF-PET Detector

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M06-191 Computed Tomography with X-Ray Energy Weighting
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M06-193 Evaluation of Polycrystalline Films of Mercuric Halides Intended for Direct Lymphoscintigraphy

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M06-195 A Continuous Crystal Detector for TOF PET

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M06-197 TRIOP : an Intra-Operative Beta Probe Dedicated to Glioma Radioguided Surgery

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M06-199 Simultaneous Imaging of Multi Nuclides Using the Electron Tracking Compton Gamma-Ray Camera Based on Small Animal and Phantom Experiments

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M06-201 A DOI PET Detector With Scintillation Crystals Cut in Triangular Prism

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M06-203 Crystal identification performance of the jPET detector depending on refractive index of optical cement between scintillators

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M06-205 Evaluation of the Luminescence Efficiency of YAG:Ce Powder Scintillating Screens for Use in Digital Mammography Detectors

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M06-207 Optimizing Time Resolution for TOF PET Detectors Based on Monolithic Scintillation Crystals Using Fast Photosensor Arrays

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M06-209 HICAM: Development of a High-Resolution Anger Camera for Nuclear Medicine

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M06-211 Development of a Small Animal PET Detector Ring for Simultaneous PET/MRI Imaging Enabling Whole Body Mouse or Multi-Bed Rat Scans

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M06-213 Simultaneous Acquisition of K-Edge Subtraction Images Using a pnCCD and Multilayer Mirror

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M06-215 Experimental Determination of Optical Scattering and Absorption in LaBr₃:Ce³⁺

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M06-217 Enhancing X-Ray Source Characteristics via Ultra-Intense Laser Irradiation of Micro-Conical Targets

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M06-219 Parametrization of SiPM Dynamic Range Contribution to Energy Resolution of Scintillation Light Readout

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M06-221 Feasibility Study for Photon Counting Detector for High Resolution Pre Clinical SPECT

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M06-223 Performance of a LYSO-SSPM PET Detector for Combined PET/MRI Applications

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M06-225 Optimization of Silicon Detector Layout and Associated Front-End Electronics for Timing Performance of a Silicon PET Through Simulation

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M06-227 Energy Weighting on the 2D-MHSP X-Ray Single Photon Detector

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M06-229 First Experiments with LaBr₃:Ce Crystals Coupled Directly to Silicon Photomultipliers for PET Applications

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M06-231 First Studies of a Novel PET Detector Module Based on Individual Readout of 1 x 1 mm² LYSO Crystals by Monolithic Arrays of SiPMs

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M06-233 Monte Carlo Based Performance Assessment of Four Commercial GE Discovery PET/CT Scanners Using GATE

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M06-235 Monte Carlo Simulation of Multi-Head Si/CdTe Compton Camera for Medical Imaging

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M06-237 Development and Validation of a GATE Simulation Model for the LabPET Scanner

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M06-239 Simulation and Preliminary Experimental Evaluation of Performances of a Versatile CdZnTe Small Field of View Imager

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M06-241 LuCaS: Efficient Monte Carlo Simulations of Highly Realistic PET Tumor Images

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M06-243 Optimization of Photon Tracking in GATE

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M06-245 Quantifying the Limitations of Small Animal High-Purity Germanium PET Based on Geant4 Simulations

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M06-247 Sensitivity of Photon-Counting K-Edge Imaging:

Dependence on Atomic Number and Object Size

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M06-249 Evaluation of Different Multi-Pinhole Geometries for SPECT Imaging of Parkinsonian Disorders

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M06-251 Modelling of the Light Response Function in Segmented BGO Crystal Using Geant4

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M06-253 Computer Evaluation of a Novel Multipinhole SPECT System For

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M06-255 Minimum Stored Energy (MSE) Compact Superconducting Magnets

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M06-257 Simulations and Measurements of the Modulation Transfer Function of Scintillator Arrays

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M06-259 Look-up Table-Based Simulation of Scintillation Detectors in Computed Tomography

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M06-261 Geometrical Calibration of Multi-Source CT Systems Using a Wire Phantom

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M06-263 Verification of a Fast EGSnrc Based Application for Positron Emission Tomography Simulations

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M06-265 Fundamental Limits of the Timing Resolution of Scintillation-Detector Systems: a Monte Carlo Analysis

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M06-267 Slat Collimated Multipinhole Human Brain SPECT

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M06-269 Theoretical Analysis of Multi-Pinhole Brain SPECT

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M06-271 Parallel Adaptive Finite Element Simulation for Optical Molecular Imaging with Simplified Spherical Harmonics Approximation

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M06-273 Effect of Detector Energy Response on Image Quality of Myocardial Perfusion SPECT

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M06-275 An Analytic Model of the Cardiac Cycle

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M06-277 Monte Carlo Simulations of Respiratory Gated 18F-FDG PET for the Assessment of Volume Measurement Methods

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M06-279 Uniform Cramer-Rao Bounds SPECT System Design

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M06-281 Experimental Validation and Performance Analysis of the Clear-PEM Data Acquisition Electronics

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M06-283 Convex Optimization of Coincidence Time Resolution for High Resolution PET systems

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M06-285 Data Acquisition System for Multi Channel Silicon Drift Diode-Based Detector

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M06-287 Test and Optimisation of Timing Algorithms for PET Detectors with Digital Sampling Front-End

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M06-289 Motion Estimation for Functional Medical Imaging Studies Using a Stereo Video Head Pose Tracking System

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M06-291 An Adaptive Algorithm for Multimodal Focus Functions in Automated Fluorescence Microscopy

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M06-293 Data-Processing Strategies for Crossed-Strip Gamma-Ray Detectors

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M06-295 Transducer Frequency Response and Impact on Thermoacoustic Tomography Signal

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M06-297 Analysis of Time Resolution in Monolithic Crystals PET Detectors Using Different Digital Time Extraction Algorithms

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M06-299 An Investigation of Waveform Sampling for Improved Signal Processing in TOF PET

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M06-301 Computer Assisted Scan Protocol and Reconstruction (CASPAR) - Reduction of Image Noise and Patient Dose

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M06-303 A Multi-Resolution, Region-of-Interest Resolution Compensation Reconstruction Approach for X-Ray CT

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M06-305 Towards Quantitative SPECT: Error Estimation of SPECT OSEM with 3D Resolution Recovery, Attenuation Correction and Scatter Correction

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M06-307 Very High Resolution 3D List-Mode PET Reconstruction Using Polar Voxels

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M06-309 Fast, Accurate and Shift-Varying Line Projections for Iterative Reconstruction Using the GPU

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M06-311 Reconstruction of a Uniform Star Object from Interior X-Ray Data

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M06-313 Image Based Resolution Modeling for the HRRT OSEM Reconstruction Software

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M06-315 Enhancement of Spatial Resolution of Roentgenographic Methods

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M06-317 Efficient Projection Model for Blobs in Motion-Compensated Iterative Cone-Beam CT

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M06-319 Fan-Beam Tomography Iterative Algorithm Based on Fourier Transform

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M06-321 Prediction Correction Tractography Through Statistical Tracking

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M06-323 PET Reconstruction Software Toolkit - PRESTO - a Novel, Universal C++ Library for Fast, Iterative, Fully 3D PET Image Reconstruction Using Highly Compressed, Memory-Resident System Matrices

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M06-325 Cone-Beam Artifact Reduction Using Second Pass Radon Space Filling

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M06-327 BPF Reconstruction for Helical CT Using All Data

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M06-329 An Accelerated Convergent Ordered Subsets Algorithm for Emission Tomography

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M06-331 Reducing Blur Artifacts in Digital Tomosynthesis: Iterative Self-Layer Subtraction

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M06-333 Vector Field Interpolation for Cardiac Motion

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M06-335 Reduced Parallel Imaging Motion Artifacts Using SMACKER Relative Sensitivity Profiles

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M06-337 A Method for OSEM PET Reconstruction on Parallel Architectures Using STIR

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M06-339 Comparison of Noise Performance for Penalized-Likelihood Image Reconstruction Methods with Uniform Resolution Estimators

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M06-341 MAP-EM Reconstruction Using Uniform Background Template for Limited-Angle PEM

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M06-343 Metal Artifact Reduction in CT Images by Sinogram TV Inpainting

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M06-345 Region-of-Interest Reconstruction from Truncated Data by Combined Classical Filtered Backprojection and Virtual Fanbeam Reconstruction

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M06-347 A Dedicated Storage Scheme for the System Matrix to the Model Based Tomographic X-Ray Perfusion Imaging

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M06-349 Metals in PET/CT: Causes and Reduction of Artifacts in PET Images

C. Lemmens, J. Nuyts, *KULeuven, Belgium*

M06-351 3D Reconstruction Algorithm for Cone-Beam Differential Phase Contrast Computed Tomography

L. Zhang, Q. Fang, Z. Huang, *Tsinghua Univ., China*

M06-353 A Rebinned Backprojection-Filtration Algorithm for Saddle Trajectories

J. Bian, D. Xia, E. Y. Sidky, X. Pan

The university of Chicago, USA

M06-355 Ultra Fast 3D Cone Beam CT Reconstruction

I. Hong, *Korea Polytechnic University, Korea; Z. Burbar, S. Yan,*

S. Gleason, Siemens Molecular Imaging, USA

M06-357 A Statistical Stopping Rule for MLEM Reconstructions in PET

N. Bissantz, *Ruhr-University of Bochum, Germany; B. Mair, University of Florida, USA; A. Munk, University of Göttingen, Germany*

M06-359 Enhanced Micro-Calcification Imaging for Digital Breast Tomosynthesis

E. Y. Sidky, I. S. Reiser, R. M. Nishikawa, X. Pan

University of Chicago, USA

M06-361 Iterative CT Reconstruction Using LabPET™ Detector Modules

C. Thibaudau, P. Bérard, J.-D. Leroux, R. Fontaine, R. Lecomte

Université de Sherbrooke, Canada

M06-363 Artifact Suppression and Quantitative Accuracy of Damped MLEM Algorithm for SPECT Imaging

S. Shcherbinin, A. Celler

The University of British Columbia, Canada

M06-365 Parameter Estimation for Resolution Recovery Modelling in PET Image Reconstruction

H. Zhao, *CEAS, University of Manchester, UK*

M06-367 Towards Reproducibility of Freehand 3D Tomographic Nuclear Imaging

T. Lasser¹, T. Wendler¹, S. I. Ziegler², N. Navab¹

¹CAMP, Technische Universität München, Germany; ²Klinikum rechts der Isar, Technische Universität München, Germany

M06-369 Accelerated Monte Carlo Based Dynamic SPECT Image Reconstruction

S. Liu, *McMaster University, Canada; T. H. Farncombe, Hamilton Health Sciences, Canada*

M06-371 Parameter Estimation in Multiple-Image Radiography

K. Majidi, J. G. Brankov, M. N. Wernick

Illinois Institute of Technology, USA

M06-373 System Modeling of a DOI-Capable Half-Ring PET Insert Device for Breast Cancer Imaging

D. B. Keesing, D. Pal, J. A. O'Sullivan, S. Komarov, Y.-C. Tai

Washington University in St. Louis, USA

M06-375 Three-Dimensional Edge-Preserving Regularization for Compton Camera Reconstruction

M. N. Lee, S.-J. Lee, V.-G. Nguyen, *Paichai University,*

Korea; S. M. Kim, J. S. Lee, Seoul National University, Korea

M06-377 A Novel Approach to Reconstruct Cone-Beam Data Acquired on Less than a Full Scan

J. D. Pack, J. J. Manak, *GE Global Research Center, USA*

M06-379 Fully 4D Cardiac Gated SPECT Reconstruction with Simultaneous Compensation in KL Domain

Y. Fan^{1,2}, C. Jiao¹, H. Lu¹, Z. Liang²

¹Fourth Military Medical University, China; ²State University of New York, Stony Brook, USA

M06-381 Toward Region-of-Interest (ROI)-Based 4D Perfusion Using Angiography System

K. Taguchi, J.-F. H. Geschwind

Johns Hopkins University, USA

M06-383 Quantitation of D2 Receptor Binding with Dedicated Small Animal PET, Small Animal SPECT and HiSPECT – the Impact of the Reference Region on the Binding Potential

S. Nikolaus¹, A. Wirtwar¹, S. Viehöver¹, A. Azmoudeh¹, R. Larisch², M. Beu¹, C. Antke¹, N. Schramm³, H.-W. Müller¹

¹University Hospital Düsseldorf, Germany; ²Clinic of Lüdenscheid, Germany; ³Research Center Jülich, Germany

M06-385 ROI Based Input Function Estimation with Deconvolution Based Partial Volume Correction for Small Animal PET Dataset: a Simulation Study

Y. Su, K. I. Shoghi

Washington University School of Medicine, USA

M06-387 Simulation-Based and Experimental Evaluation of HiSens, a New CdZnTe Gamma-Camera Architecture

C. Robert¹, V. Rebuffel¹, G. Montemont¹, L. Verger¹, I. Buvat², T. Borden¹

¹CEA Grenoble, France; ²UMR 8165 CNRS, France

M06-389 A Normalization Scheme for LOR-Based Motion Correction in PET

V. W. Zhou¹, A. Z. Kyme¹, S. R. Meikle², R. R. Fulton^{1,3}

¹Sydney University, Australia; ²University of Sydney, Australia; ³Westmead Hospital, Australia

M06-391 Clinical Usability of a Compact High Resolution Detector for High Resolution and Quantitative SPECT Imaging in a Selected Small ROI

T. Zeniya^{1,2}, H. Watabe², H. Kudo³, Y. Hirano², K. Minato¹, H. Iida²

¹Nara Institute of Science Technology, Japan; ²National Cardiovascular Center Research Institute, Japan; ³University of Tsukuba, Japan

M06-393 Residual Contrast Dependency of the Background Corrected Threshold in PET Target Volume Delineation

S. Dittich¹, C. Pötzsch¹, F. Hofheinz², L. Oehme³, B. Beuthien-Baumann³, J. Langner¹, H. Mölle¹, E. Will¹, J. van den Hoff¹

¹Forschungszentrum Dresden-Rossendorf, Germany; ²ABX advanced biochemical compounds, Germany; ³Universitätsklinikum Carl Gustav Carus, Germany

M06-395 Pixel-Based Partial Volume Correction of Small Animal PET Images Using Point Spread Function System Characterization: Evaluation of Effects on Cardiac Output, Perfusion and Metabolic Rate Using Parametric Images

A. E. Spinelli, D. D'Ambrosio, G. Fiacchi, R. Franchi, S. Boschi, M. Marengo

Policlinico S. Orsola-Malpighi, Italy

M06-397 A New Dynamic SPECT Quantification Method for Conventional Rotating Camera Systems with a Step-and-Shot Protocol

Y.-J. Tsai¹, I.-T. Hsiao^{1,2}, K.-J. Lin^{1,2}, C.-H. Hsu³

¹Chang Gung University, Taiwan; ²Chang Gung Memorial Hospital, Taiwan; ³National Tsing Hua University, Taiwan

M06-399 Use of IBASPM Atlas-Based Automatic Segmentation Toolbox in Pathological Brains: Effect of Template Selection.

V. García-Vázquez¹, S. Reig¹, J. Janssen¹, J. Pascau¹, A. Rodríguez-Ruano¹, Á. Udías², J. Chamorro¹, J. J. Vaquero¹, M. Desco¹

¹Hospital General Universitario Gregorio Marañón, Spain; ²Universidad Rey Juan Carlos, Spain

M06-401 Multi-Slice SPECT Attenuation and Scatter Correction Using Monte Carlo Simulated System Matrices

A. C. Sauve, B. W. Reutter, R. Boutchko, W.-S. Choong, G. T. Gullberg

Lawrence Berkeley Laboratory, USA

M06-403 Registration of Planar and SPECT Images with Independent Rigid Organ Motion and Its Effect on Organ Activity Estimates in Quantitative Planar Processing

N. Song, B. He, E. C. Frey

Johns Hopkins Medical Institution, U.S.

M06-405 Estimating Random Coincidences from Singles Count Rates for Improved RatCAP Image Accuracy

S. Southekal^{1,2}, P. Vaska¹

¹Brookhaven National Laboratory, USA; ²Stony Brook University, USA

M06-407 Motion-Compensated Iterative Sparse Data Reconstruction for Interventional 3D Coronary Artery Imaging

E. Hansis^{1,2}, O. Dössel², M. Graß¹

¹Philips Research Europe - Hamburg, Germany; ²University of Karlsruhe, Germany

M06-409 Sinogram Domain Material Decomposition using Penalized Likelihood Method in Photon Counting X-ray Detector (PCXD) with Pulse Pileup Correction

M. Zhang, E. C. Frey, J. Xu, K. Taguchi

Johns Hopkins University, USA

M06-411 A MAP Super-Resolution Algorithm for Respiratory Motion Correction in PET

D. Wallach¹, F. Lamare², J. Rubio³, M. Ledesma³, A. Santos³, G. Kontaxakis³, P. Maréchal⁴, C. Roux^{1,5}, D. Visvikis¹

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M06-413 Improvement of Cardiac PET/CT Using Respiratory Gating: Comparison to Stand-Alone PET

F. Büther, M. Dawood, O. Schöber, K. P. Schäfers

University Hospital of Münster, Germany

M06-415 Revisiting the Singles Rate Method for Estimating Accidental Coincidences in PET

J. F. Oliver, M. Rafecas

CSIC/Universitat de València, Spain

M06-417 Accuracy Analysis of Image Registration Based Respiratory Motion Compensation in Respiratory-Gated FDG Oncological PET Reconstruction

S. Chen, B. M. W. Tsui

Johns Hopkins Medical Institutions, U.S.

M06-419 Energy-Based Scatter Correction for Semiconductor PET Scanner

W. Takeuchi, Y. Morimoto, A. Suzuki, I. Takahashi, K. Tsuchiya,

K. Kobashi, Hitachi Ltd., Japan; N. Kubo, C. Katoh, T. Shiga, N. Tamaki, Hokkaido University, Japan

M06-421 Adaptive up-Sampling with Shift Method for Windmill Artifact Correction in Multi-Slice Helical CT

A. A. Zamyatin, *Toshiba Medical Research Institute USA, USA*

M06-423 Frequency Selective Signal Extrapolation for Compensation of Missing Data in Sinograms

J. L. Herraiz¹, S. España¹, E. Vicente¹, E. Herranz¹, M. Desco², J. J. Vaquero², J. M. Udias¹

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M06-425 Validation of a Retrospective Respiratory Gating Method for Small-Animal CT Scanners

C. Chavarrias, J. J. Vaquero, A. Sisniega, A. Rodríguez-Ruano, M. L. Soto-Montegro, M. Desco

Hospital General Universitario Gregorio Marañón, Spain

M06-427 MRI Based Assessment of the Extent to Which Stereo-Tracking of Markers on the Chest Can Predict Motion of the Heart.

M. A. King¹, J. Dey¹, J. E. McNamara¹, J. Mitra¹, K. Johnson¹, A. Lehovitch¹, S. Gu², J. C. Ford¹

¹Univ of Mass Med School, USA; ²Worcester Polytechnic Institute, USA

M06-429 Phase-Specific Alignment of Single-Phase CT for Respiratory-Motion Correction in Cardiac PET/CT

R. G. Wells, *University of Ottawa Heart Institute, Canada*

M06-431 Quantitative Accuracy of SPECT Reconstructions with a Voxelized CT-Based Partial Volume Effect Correction

S. Shcherbinin, A. Celler

The University of British Columbia, Canada

M06-433 Correction of Motion-Induced Artifacts in Clinical Cardiac SPECT Studies Using a Stereo-Motion-Tracking System

J. E. McNamara¹, K. Johnson¹, J. Mitra¹, S. Gu², M. A. Gennert², M. A. King¹, P. H. Pretorius¹

¹University of Massachusetts Medical School, USA; ²Worcester Polytechnic Institute, USA

M06-435 Quantitative Evaluation of Image Quality of Medical Imaging Systems Based on Information-Entropy Measure

E. Matsuyama, D.-Y. Tsai, Y. Lee, *Niigata University, Japan*

M06-437 Implementation of Cluster Analysis in 3D Dosimetry for Targeted Radionuclide Therapy

A. Divoli, S. Buckley, G. D. Flux, *Institute of Cancer Research, UK*; M. Bardiés, *INSERM U892, France*

M06-439 New Approaches to Parameter Estimation from Noisy Image Data

M. K. Whitaker, H. H. Barrett, E. Clarkson

University of Arizona, USA

M06-441 Automatic Contrast Enhancement in Digital Radiography

I. Frosio¹, M. Lucchese^{1,2}, F. Lissandrello², N. A. Borghese¹

¹University of Milan, Italy; ²Atalab, Italy

M06-443 PET Functional Volume Segmentation: a Robustness Study

M. Hatt¹, P. Bailly², A. Turzo¹, C. Roux^{1,3}, D. Visvikis¹

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M06-445 Human Observer Efficiency for Signal Detection and Localization in Emission Tomographic Images

B. Liu, L. Zhou, S. Kulkarni, G. R. Gindi

SUNY at Stony Brook, USA

M06-447 Automatic Localization of the Hippocampal Region in MR Images to Assess Early Diagnosis of Alzheimer's Disease in MCI Patients

G. Gemme, *Istituto Nazionale di Fisica Nucleare, Italy*

On behalf of the Magic-5 Collaboration

M06-449 Evaluation of Genetic Algorithm-Generated Multivariate Color Tables for the Visualization of Multimodal Medical Fused Data Sets

K. G. Baum¹, M. Helguera¹, E. Schmidt², K. Rafferty¹, A. Krol³

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M06-451 Hessian Based Orientation Analysis of the Canal Network in Cortical Bone Micro-CT Images

Z. Peter^{1,2}, B. Perrenot¹, A. Larrue^{1,2}, F. Peyrin^{1,2}

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M06-453 A Method to Reduce the FP/imm Number Through CC and MLO Views Comparison in Mammographic Images

G. Raso^{1,2}, D. Cascio^{1,2}, F. Fauci^{1,2}, L. Lo Presti¹, R. Magro^{1,2},

R. Ienzi^{1,2}, M. Glorioso¹, M. Iacomì^{1,3}, M. Vasile²

¹Palermo University, Italy; ²Medicad S.r.l., Italy; ³Bucharest University, Romania

M06-455 Volume-of-Interest Segmentation of Cortical Regions for Multimodal Brain Analysis

G. Wagenknecht, S. Winter, *Research Center Juelich, Germany*

M06-457 High-Definition Positron Emission Tomography Using Restored Sinograms

H. Li, Y. Zhang, H. Baghaei, S. Liu, R. Ramirez, C. Wang, S. An, W.-H. Wong

University of Texas, M.D. Anderson Cancer Center, USA

M06-459 Measurements and Evaluation of the Image Noise Power Spectrum for Computed Radiography

H.-S. Park, H.-J. Kim, H.-M. Cho, J. Jung, C.-L. Lee

Yonsei university, Korea

M06-461 Interactive Point-of-Interest Volume Rendering Visualization of PET/CT Data

J. Kim¹, A. Kumar¹, S. Eberl^{1,2}, M. Fulham^{1,2}, D. Feng^{1,3}

¹University of Sydney, Australia; ²Royal Prince Alfred Hospital, Australia; ³Hong Kong Polytechnic University, China

M06-463 A Fourier-Based Algorithm for Microcalcifications Enhancement in Mammographic Images

F. Fauci^{1,2}, D. Cascio^{1,2}, M. Iacomì^{1,3}, A. La Manna¹, R. Magro^{1,2},

G. Raso^{1,2}, M. Vasile³

¹Palermo University, Italy; ²Medicad S.r.l., Italy; ³Bucharest University, Romania

M06-465 Automatic Computer Aided Diagnosis Tool Using Component-Based SVM

J. M. Górriz, *University of Granada, Spain*

M06-467 A Comparison of Nonlinear Least-Square Optimization Methods in Affine Registration of SPECT Images

D. Salas-Gonzalez, J. M. Górriz, J. Ramírez, A. Lassl,

C. G. Puntonet, *University of Granada, Spain.*; E. W. Lang, *University of Regensburg, Germany.*; M. Gómez, *Hospital Universitario Virgen de las Nieves, Spain.*

M06-469 Cardiac PET Image Segmentation by a Deformable Model with Force Field Driven Speed Term

R. Dedic¹, M. Allili², R. Lecomte¹, A. Benchakroun¹

¹Université de Sherbrooke, Canada; ²Bishop's University, Canada

M06-471 Histomorphometric Analysis of Complex Structures Using Synchrotron Radiation Computer Microtomography (SR-μCT)

C. J. G. Pinheiro¹, R. C. R. Barroso², L. F. Oliveira², G. Tromba³, D. Dreossi³, J. Correia¹, D. Braz¹

¹Federal University of Rio de Janeiro/ COPP, Brazil; ²State University of Rio de Janeiro, Brazil; ³Sincrotrone Elettra, Italy

M06-473 Theoretical Studies on Plaque Burden Estimation in Alzheimer's Mouse Model Using SiliSPECT

S. Shokouhi¹, M. A. Kupinski², D. W. Wilson², T. E. Peterson¹

¹Vanderbilt University Institute of Imaging Science, USA; ²Center for Gamma-Ray Imaging, University of Arizona, USA

M06-475 A Results Recapitulation of Image Registration Techniques in Digital Subtraction Angiography

Y. Bentoutou, Centre for Space Technology, Algeria; N. Taleb, Djillali Liabes University, Algeria

M06-477 Integrated Models for the Analysis of Two-Dimensional Electrophoresis Gel Images

G. De Nunzio^{1,2}, S. Maglio^{1,2}, A. Agrusti^{1,2}, R. Cataldo^{1,2}, I. De Mitri^{1,2}, M. Favetta^{1,2}, A. Massafra¹, G. Marsella^{1,2}, M. Quarta^{1,2}, G. Mercurio³

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M06-479 Effects of Background Complexity on LROC Analysis of SPECT

B. Liu, L. Zhou, S. Kulkarni, G. R. Gindi
SUNY at Stony Brook, USA

M06-481 Material Separation in CT Reconstruction Based on Data-Domain Dual Energy Decomposition

A. M. Natarajan, A. A. Zamyatin, Y. Zou
Toshiba Medical Research Institute USA, USA

M06-483 Effect of Data Processing on the Accuracy of Biologically Relevant Measures in High Resolution PET Brain Imaging Using the HRRT

V. Sossi¹, K. Dinelle¹, S. Blinder², S. Lidstone¹

¹University of British Columbia, Canada; ²Pacific Parkinson's Research Centre, Canada

M06-485 Diffusion Tensor Magnetic Resonance Imaging: a Semi-Automated Algorithm to Identify Damaged Brain Areas from Fractional Anisotropy Maps

G. De Nunzio^{1,2}, C. Ciraci¹, M. Donativi¹, A. Castellano³, S. Quarta⁴

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M06-487 Lung Conformal Flattening for Juxta-Pleural Nodule Detection

A. Massafra, Università del Salento, Italy
On behalf of the Magic-5 Collaboration

M06-489 A Noise Mechanism for Model Observers

N. F. Pereira^{1,2}, H. C. Gifford², M. A. King²

¹University of Massachusetts, USA; ²University of Massachusetts medical school, USA

M06-491 Quantitative Analysis of MR Brain Images Using Fuzzy Estimation

R. Parveen, A. Todd-pokropek, University College London, UK

M06-493 Feature Selection for Learning-Machine Numerical Observer

J. G. Brankov, Illinois Institute of Technology, USA; P. H. Pretorius,

University of Massachusetts Medical School, USA

M06-495 Accuracy of Channelized Hotelling Observer Performance Measures Estimated from Repeated CT Scans

A. Wunderlich, F. Noo, University of Utah, USA

M06-497 Temporal Wavelet Denoising of PET Sinograms and Images

F. C. Sureau^{1,2}, J.-C. Pesquet³, C. Chau³, N. Pustelnik³,

A. J. Reader⁴, C. Comtat¹, R. Trébossen¹

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M06-499 Direct Reconstruction of Kinetic Parameter Images from the Dynamic PET Sinograms Using Ordered Subsets

M. C. Gadiya, I. S. Yetik, IIT, Chicago, USA

M06-501 Shortened Dynamic FDG-PET Protocol to Determine Glucose Metabolic Rate in Non-Small Cell Lung Carcinoma

E. P. Visser, L. B. E. Kienhorst, L. F. de Geus-Oei, W. J. G. Oyen
Radboud University Nijmegen Medical Centre, the Netherlands

M06-503 In How Many Kinetic Classes Can [¹¹C]-(R)-PK11195 Brain PET Data Be Segmented?

R. Hinz, University of Manchester, UK; R. Boellaard, VU University Medical Centre, The Netherlands; F. E. Turkheimer, Imperial College London, UK

M06-505 Maximizing Model Parameter Precision by Optimizing Dose in 3D [O-15]H₂O PET Scans

M. D. Walker¹, J. C. Matthews¹, M.-C. Asselin¹, C. C. Watson², A. Saleem¹, N. Charnley¹, P. J. Julian¹, P. Price¹, T. Jones¹

¹University of Manchester, UK; ²Siemens Medical Solutions, USA

M06-507 A Nonlinear Variational Method for Improved Quantification of Myocardial Blood Flow Using Dynamic H2150 PET

M. Benning¹, T. Kösters¹, F. Wübbeling¹, K. Schäfers², M. Burger¹

¹Westfälische Wilhelms-University, Germany; ²University Hospital of Münster, Germany

M06-509 Maximum a Posteriori Estimation of PET Kinetic Parameter Images

B. Bai¹, J. J. Mann^{1,2}, R. V. Parsey^{1,2}

¹Columbia University, USA; ²New York State Psychiatric Institute, USA

M06-511 Dynamic Pinhole SPECT Imaging and Compartmental Modeling of Fatty Acid Metabolism in the Rat Heart

B. W. Reutter, R. Bouchko, R. H. Huesman, S. M. Hanrahan, K. M. Brennan, A. C. Sauve, G. T. Gullberg
Lawrence Berkeley National Laboratory, USA

M06-513 Maximum Likelihood Deconvolution of Dynamic Contrast MRI Data via Weighted Nonlinear Least Squares.

N. Fitzgerald, F. O'Sullivan, University College Cork, Ireland; G. Newman, Albert Einstein Medical Center, USA; D. O'Mahony, Cork University Hospital,

Ireland; N. O'Donovan, South Infirmary Victoria Hospital, Ireland

M06-515 Photoacoustic Image Reconstruction in an Attenuating Medium Using Singular Value Decomposition
D. Modgil, P. J. La Riviere, *The University of Chicago, USA*

M07 MIC Plenary II, Awards

Thursday, Oct. 23 13:30-15:30 Hall 2&3
Session Chairs: **Sibylle I. Ziegler**, Nuklearmedizin Klinikum rechts der Isar der TU München, Germany
Wolfgang Enghardt, Technische Universität Dresden, Germany

M07-1 (invited) Image Guided Precision Radiotherapy: The Technology
E. Rietzel, *Siemens Healthcare, Germany*

M07-2 (invited) Stimulating Quality in Research by the EU “Marie Curie” Actions on Training and Networking
M. M. Ioannides, *European Commission, Belgium*

M07-3 (invited) MIC Awards Presentation
P. E. Kinahan, *University of Washington, USA*

M07-4 (invited) In Memoriam: Bruce Hasegawa
Y. Seo, *UCSF, USA*

M08 Application Specific Imaging, Imaging for Radiotherapy

Thursday, Oct. 23 16:00-18:00 Hall 2&3
Session Chair: **Madjid Boutemeur**, Universite de Savoie, Annecy, France

M08-1 Imaging Characteristics of a Commercial Positron Emission Mammography System: PEM Flex Solo II
L. MacDonald¹, J. Edwards^{1,2}, J. Rogers^{1,2}, D. Haseley², P. Kinahan¹, T. Lewellen¹
¹*University of Washington, USA*; ²*Swedish Cancer Institute, USA*

M08-2 Conclusions from an Experimental 3D Ultrasound Computer Tomograph
N. V. Ruiter, G. F. Schwarzenberg, M. Zapf, H. Gemmeke
Forschungszentrum Karlsruhe, Germany

M08-3 Čerenkov Radiation Imaging as a Method for Quantitative Measurements of Beta Particles in a Microfluidic Chip
J. S. Cho, A. Douraghy, S. Olma, K. Liu, Y. C. Chen, C. K. Shen, R. W. Silverman, R. M. Van Dam, A. F. Chatziioannou
UCLA, USA

M08-4 A Novel Approach for Predicting the Positron Emitter Distributions Produced During Therapeutic Ion Irradiation
M. Priegnitz¹, D. Möckel¹, K. Parodi², F. Sommerer³, F. Fiedler¹, W. Enghardt^{1,4}
¹*Forschungszentrum Dresden-Rossendorf, Germany*; ²*Heidelberg Ion Therapy Center, Germany*; ³*CERN, Switzerland*; ⁴*TU Dresden, OncoRay, Germany*

M08-5 First 4D In-Beam PET Measurement for Beam Tracking of a Moving Phantom with a Scanned Carbon Ion Beam
K. Parodi¹, N. Saito², C. Richter^{3,4}, N. Chaudhri², W. Enghardt^{3,4}, E. Rietzel⁵, C. Bert²
¹*Heidelberger Ionenstrahl-Therapiezentrum, Germany*; ²*Gesellschaft für Schwerionenforschung Darmstadt, Germany*; ³*OncoRay - Radiation Research in Oncology, Germany*; ⁴*Forschungszentrum Dresden-Rossendorf, Germany*; ⁵*Siemens Medical Solutions, Germany*

M08-6 Singular Value Analysis for Magnetic Particle Imaging
T. Knopp, S. Biederer, T. Sattel, T. M. Buzug
Institute of Medical Engineering, University of Luebeck, Germany
M08-7 Pulse Width Modulation: A Novel Readout Scheme For High Energy Photon Detection
P. D. Olcott, C. S. Levin, *Stanford University, USA*
M08-8 Segmenting the Degenerated Lumbar Intervertebral Disc from MR Images
S. Michopoulou¹, L. Costaridou², R. Speller¹, E. Panagiotopoulos², A. Todd-Pokropek¹
¹*University College London, UK*; ²*University of Patras, Greece*

M09 Detectors: SPECT, CT

Friday, Oct. 24 08:30-10:00 Hall 2&3
Session Chair: **Marc Kachelriess**, Institute of Medical Physics (IMP), Universität Erlangen-Nürnberg, Germany

M09-1 Application Scenarios for Spectral CT Based on Energy-Binning Photon-Counting Detectors
J.-P. Schlomka, E. Roessl, G. Martens, T. Istel, R. Proksa
Philips Research Europe - Hamburg, Germany

M09-2 The Imaging Performance of the Simultaneously Counting and Integrating CIX Detector
J. Fink, E. Kraft, M. Koch, H. Krüger, N. Wermes, *University of Bonn, Germany*; I. Peric, *University of Heidelberg, Germany*; C. Herrmann, M. Overdick, W. Rütten, *Philips Research Laboratories, Germany*

M09-3 A 54mm by 54mm 1.8 Megapixel CMOS Image Sensor for Medical Imaging
A. T. Clark, N. Guerrini, J. Crooks, R. Turchetta
Science and Technology Facilities Council, U.K.

M09-4 MARS: a 3D Spectroscopic X-Ray Imaging Device Based on Medipix
J. S. Butzer^{1,2}, A. P. Butler^{1,3,4}, N. J. Cook⁵, P. H. Butler^{1,3}, F. Ross¹, N. Schleich¹, J. Selkirk¹, R. Watts¹, J. Meyer¹, N. Scott⁴, P. J. Bones¹, D. van Leeuwen¹, S. Hemmingsen¹, T. P. Melzer¹, N. Anderson⁵
¹*Canterbury University, New Zealand*; ²*Karlsruhe Institute of Technology, Germany*; ³*European Organisation for Nuclear Research, Switzerland*; ⁴*Canterbury District Health Board, New Zealand*; ⁵*Christchurch Medical School, New Zealand*

M09-5 Development of a Solid-State Avalanching Amorphous Selenium Detector
M. M. Wronski¹, A. Reznik¹, W. Zhao², J. A. Rowlands¹
¹*Sunnybrook Health Sciences Centre / University of Toronto, Canada*; ²*State University of New York at Stony Brook, USA*

M09-6 Multi-Scale Algorithm for Improved Scintillation Detection in CCD-Based Gamma Cameras
M. A. N. Korevaar^{1,2}, J. W. T. Heemskerk^{1,2}, F. J. Beekman^{1,2,3}
¹*Image sciences institute, The Netherlands*; ²*Radiation Detection and Matter, The Netherlands*; ³*Molecular Imaging Labs (MILABS), The Netherlands*

M10 MIC Poster II

Friday, Oct. 24 10:30-12:30 Hall 4&5 (Poster)

Session Chair: **Anna M. Celler**, Department of Radiology, University of British Columbia, Canada

M10-2 A Multiplex "OpenPET" Geometry to Extend Axial FOV Without Increasing the Number of Detectors

T. Yamaya, E. Yoshida, N. Inadama, F. Nishikido, K. Shibuya, H. Murayama

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M10-4 Performance Evaluation of a Highly Integrated APD/ASIC Double-Readout Supermodule with 768 Channels for Clear-PEM

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M10-6 Performance Comparison and System Modeling of a Compton Medical Imaging System and a Collimated Anger Camera

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M10-8 Performance Assessment of a Variable Field of View and Geometry PET Animal Scanner Based on CdTe Strip Detector Blocks

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M10-10 Comparing Crystal Identification Algorithms for PET Block Detectors

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M10-12 PET-CT Co-Registration for In-Beam PET

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M10-14 TOF-PET Scanner Using Position-Sensitive Detectors

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M10-16 Demonstrator of an Axial PET Camera

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M10-18 Influence of Camera Defects on Gated Tc-99m Cardiac Perfusion SPECT

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M10-20 Thick, Continuous Detector Design for PET

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M10-22 A Handy Timing Alignment Probe for PET Scanners

M. Bergeron, C. M. Pepin, M.-A. Tétrault, N. Viscogliosi, J.-D. Leroux, R. Fontaine, R. Lecomte
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M10-24 Optimizability of LogLikelihoods for the Estimation of Detector Efficiencies and Singles Rates in PET

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M10-26 A Comparison of Breast Lesion Imaging Capability of a Whole-Body PET Camera and a Brain/Breast PET Camera

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M10-28 Comparison of 3D SPECT Imaging with a Rotating Slat Collimator and a Parallel Hole Collimator

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M10-30 Improved Reconstructed Image Quality in a SPECT System with Slit-Slat Collimation by Combination of Multiplexed and Non-Multiplexed Data

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M10-32 Fully 4D Reconstruction of Dynamic SPECT Images Based on the Estimation of Spatiotemporal Basis Coefficients Directly from Projection Measurements

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M10-34 Evaluation of Local PMT Triggering Electronics for a TOF-PET Scanner

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M10-36 Quantitative I-123 SPECT Imaging Using Current Collimators and Optimized I-123 Collimator Design

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M10-38 A Lower-Cost High-Resolution LYSO Detector Development for Positron Emission Mammography (PEM)

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M10-40 Performance of Electronically Collimated SPECT Imaging System in the Energy Range from 140 keV to 511 keV

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M10-42 Monte Carlo Simulation Study on the Time Resolution of a PMT-Quadrant-Sharing LSO Detector Block for Time-of-Flight PET

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M10-44 Optimization of Rb-82 PET Acquisition and Reconstruction Protocol for Myocardial Perfusion Defect Detection

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M10-46 Myocardial Perfusion Imaging with the Ultra-Fast Cardiac SPECT Camera – a Phantom Study

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M10-48 Novel Electro-Optically Coupled MR Compatible PET Detectors

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M10-50 MR Compatible Motor for Multi-Modality Imaging

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M10-52 A Comparison of CT-Based Attenuation Correction Strategies for PET Data of Moving Structures

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M10-54 A Study on the Effect of Nuclear Collimators on MR Images

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M10-56 A Simultaneous PET/MRI Breast Scanner Based on the RatCAP

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M10-58 MR-Based Attenuation Correction for PET Using an Ultrashort Echo Time (UTE) Sequence

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M10-60 Performance Evaluation and MR Compatibility Assessment of an Optical Fibre Based Pre-Clinical MR-Compatible PET Scanner

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M10-62 Study of Compatibility of a SDD-Based Gamma Camera with a MRI System

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M10-64 VrPET/CT: Development and Initial Results of a Rotating PET/CT Scanner for Rodents Imaging

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M10-66 Test of Geiger-Mode SSPM PET Modules for the Simultaneous PET and MRI Acquisition

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M10-68 Can Large-Area Avalanche Photodiodes Be Used for a Clinical PET/MRI Block Detector?

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M10-70 An Image Based Method to Correct for Respiratory Motion Artifacts in Cardiac PET/CT Images

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M10-72 Preclinical Dual-Energy X-ray Computed Tomography Through Differential Filtration

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M10-74 Spatial Resolution and Sensitivity of the Siemens Inveon™ Small-Animal PET Scanner

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M10-76 Optimization of Crystal Length to Improve the Depth of Interaction Spatial Resolution in PET Imaging

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M10-78 Design of a High Resolution, Monolithic Crystal, PET/MRI Detector with DOI Positioning Capability

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M10-80 High-Resolution Cardiac Rat SPECT: Effect of Dose and Acquisition Time

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M10-82 Development of a High Spatial Resolution Whole-Body DOI PET System consisting of LGSO/GSO Crystals

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M10-84 Measured Imaging Performance of Photon Counting Hybrid-Pixel X-Ray Detectors

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M10-86 Pulse Train Multiplexing Method for Pixelated Gamma Detectors

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M10-88 Real-time awake animal motion tracking system for SPECT imaging

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M10-90 Transmission Measurements Using Iterative Conebeam Reconstruction on the Inveon DPET

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M10-92 First Tomographic Results from the microPET System of the SIBI Project

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M10-94 First Test Results of a Commercially-Available Clinical PET Scanner Using the NEMA NU 4–2008 Small Animal PET Standard

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M10-96 Analytic Calculation of Multi-Pinhole Collimator Sensitivity with Tilted Pinholes

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M10-98 Coincidence Identification in PET Using Neural Networks

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M10-100 Image Quality, Accuracy of Attenuation and Scatter Corrections of the microPET Focus 120 Using the NEMA NU4-2008 Phantom.

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M10-102 Comparison of Coincidence Identification Techniques for High Resolution PET

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M10-104 A New Position Reconstruction Method for Position Sensitive Photomultipliers

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M10-106 Optimized Multipinhole Design for Mouse Imaging

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M10-108 Statistical Three-Dimensional Positioning Algorithm for High-Resolution dMiCE PET Detector

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M10-110 A Super-Resolution Feasibility Study in Small Animal SPECT Imaging

J. L. Villena, E. Lage, A. De Carlos, G. Tapias, A. Sisniega, J. J. Vaquero, M. Desco

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M10-112 Real-Time X-Ray Micro-Imaging of Living Animals and Plants with Medipix2/TimePix Pixel Detectors

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M10-114 Implementation of Physiological Gating on the High Resolution Research Tomograph

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M10-116 Automated CT-Based Attenuation Correction for Preclinical Multimodality PET/CT

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M10-118 Performance Comparison of Two Commercial Small Animal PET Scanners: ClearPET™ and rPET-1™

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M10-120 Verification of a FPGA-Based Coincidence Detection Module for a 3-Layer Animal PET

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M10-122 Optimizing Crystal Length of Each Layer for Four-Layer Animal PET System with a Relative Offset Configuration
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M10-124 Pinhole Aperture Optimization for Quantitation of Lesion Activity in Micro-SPECT Imaging

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M10-126 Whole Body Animal SPECT Imaging on an Animal PET Scanner

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M10-128 Imaging Performance of a Four-Head Single Photon Emission Microscope System

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M10-130 Small Animal Imaging Using Reflective X-Ray and Gamma-Ray Optics

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M10-132 A Unique Noncathartic CT Colonography Approach by Using Two-Layer Dual-Energy MDCT and a Special Algorithmic Colon Cleansing Method

R. Carmi, G. Kafri, A. Steinberg, S. Amin-Spector, A. Altman, Philips Healthcare, Israel; J. Sosna, Hadassah Medical Center, Israel

M10-134 1D Gamma Counting Approach to Study Radiopharmaceutical Kinetics

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M10-136 Dynamic Laser-Guided Contouring for Dedicated Emission Mammotomography

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M10-138 The System Design, Engineering Architecture and Preliminary Results of a Lower-cost High-Sensitivity High Resolution Positron Emission Mammography Camera

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M10-140 Characterization of Biological Tissues Using X-Ray Attenuation Data

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M10-142 X-Ray Cone-Beam Breast Computed Tomography: Phantom Studies

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M10-144 The Effect of Energy on Scintillation Camera Intrinsic Spatial Resolution

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M10-146 Real-Time Viewer for Positron Emission Mammography Image Guided Intervention

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M10-148 Prostate-Bladder Phantom for Radionuclide Imaging Research

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M10-150 A Dedicated ASIC Front-End Readout for the Monolithic Detector Blocks of the BrainPET Prototype

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M10-152 Comparison of Dual-kVp and Dual-Layer CT in Simulations and Real CT System Measurements

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M10-154 Spirometry Based Respiratory Gating Method for Cardiac PET and MRI Imaging

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M10-156 A New Algorithm for the Continuous Quantitative Monitoring of Leakage During Chemotherapeutic Limb Perfusion

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M10-158 Banding Artifact Reduction for Cardiac CT

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M10-160 Multimodality High Resolution Wrist Imaging for Monitoring Response to Therapy in Rheumatoid Arthritis: Instrumentation and Techniques

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M10-162 Tracking System Enhanced Ultrasound-Guided Biopsy and Visualization

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M10-164 Dual Modality Planar PET/optical Scanner for Imaging of Surgical Margins in Extracted Tissue Samples

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M10-166 Comparison of CT contrast blood pool agents for in-vivo 3D Angiography using

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On behalf of the Christian Wietholt

M10-168 Adaptation of megavoltage cone beam CT for treatment planning

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M10-170 New Methods of X-Ray Medical Imaging and Radiation Therapy Based on Nanocrystalline Scintillators

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M10-172 In-Beam PET Simulations with the FLUKA Code

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M10-174 First Experimental Results from a Prototype Rotating Slit-Slat Collimator

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M10-176 Light Output Analyzes of Scintillator Crystal Pins and Array for PET Detector Moduls

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M10-178 Preliminary Evaluation of a Silicon Drift Diode Based Gamma Detector

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M10-180 Properties of an LSO:Ce-LSO:Ce,Ca Phoswich Detector

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M10-182 DOI-Block Detectors Using LGSOs with Different Decay Times

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M10-184 Comparison of Spectral and Scintillation Properties of LuAP:Ce and LuAP:Ce,Sc Single Crystals

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M10-186 Active Pixel Sensors in Nuclear Medicine Imaging

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M10-188 A Comparative Investigation of Ce3+ Doped Single Crystal Scintillators Covering Radiotherapy and PET/CT Imaging Conditions

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M10-190 Development of a Back-Contact, Scalable Silicon Photomultiplier Array for Positron Emission Tomography

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M10-192 YAlO₃:Ce Detector Array for Gamma Cameras

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M10-194 Obtaining and Parameters of the Scintillators on the Base of ZnSe(O) and ZnSe(Al,O) Crystals for Medical Computer Tomography

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M10-196 Performance Evaluation of Diffraction Enhanced Imaging Based on Polycapillary X-Ray Optics

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M10-198 Uniformity Correction in Photon-counting X-ray Detector Based on Basis Material Decomposition

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M10-200 CZT Pixel Scaling for Improved Spatial Resolution in Medical Imaging

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M10-202 Solid State Photomultiplier Electrical Model

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M10-204 Study of Scintillation Crystal Array Parameters for an Advanced PET Scanner Dedicated to Breast Cancer Imaging

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M10-206 Evaluation of Monolithic Scintillator Block Detectors Using Silicon PMTs

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M10-208 Precision Synchrotron Radiation Imaging - a Novel Tool for Cardiovascular Research

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M10-210 Fundamental Study of Two-Dimensional Position Sensitive CdTe Detector for PET Camera

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M10-212 Optimization of a Monolithic Detector Block Design for a Prototype Human Brain PET Scanner

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M10-214 Sophistication of Semiconductor Compton Camera for Multiple Molecular Imaging—Fast and Accurate Image-Reconstruction Method for Three-Dimensional Imaging

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M10-216 Silicon Photomultipliers for PET/MR

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M10-218 Implementation of Multifocal Layer Algorithm to a Panoramic X-ray Imaging System Based upon a Flat Panel CMOS Imager

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M10-220 First Tests of the PPC X-Ray Imaging System

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M10-222 Detection of Prompt Gamma Rays to Monitor Hadrontherapy

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M10-224 CZT Gamma Camera with Pinhole Collimator: Spectral Measurements

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M10-226 Time of Flight in PET Using Fast Timing and Leading Edge Fit Optimization

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M10-228 Sub-Millimeter Resolution PET Detector Module Using Multi-Pixel Photon Counter Array

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M10-230 Characteristics of Lu1.8Gd0.2SiO5:Ce (LGSO) for APD-Based PET Detector

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M10-232 Effects of the Super Bialkali Photocathode on the Performance Characteristics of a Position-Sensitive Depth-of-Interaction PET Detector Module

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M10-234 Respiratory Motion Modeling in Small Animal PET Using GATE

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M10-236 Impact of X-Ray Spectrum on Dose and Image Quality

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M10-238 Registered Collimation for Pixelated SPECT Detectors

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M10-240 Development of a Database of Realistic Simulated Whole Body [18F]FDG PET Images for Lymphoma

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M10-242 Geant4 Simulation for Modelling the Optics of LaBr3(Ce) Scintillation Imagers

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M10-244 Angular Response Function Parameterization for Collimator/detector in SPECT Simulations Within the GATE Toolkit

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M10-246 Detection of Iron Overload with the ORNL Spallation Neutron Source: an MCNPX Simulation Study

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M10-248 An Additive Bias Field Model for Unified Partial-Volume Segmentation and Inhomogeneity Correction in Brain MR Images

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M10-250 Statistical Validation of Geometric Model of Single Scatter in PET

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M10-252 quadHIDAC Simulations - an Approach Towards Quantitative PET

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M10-254 Improved Dose and Fluence Calculations by Using Tabulated Cross Section in PHITS

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M10-256 Nuclear Processes in Hadrontherapy, a Parameterization of the Low Energy Nucleus-Nucleus Cross Sections.

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M10-258 Evaluation of Different X-Ray Tube Concepts with the Simulation Package ROSI

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M10-260 Monte-Carlo-Simulation of Pixelated Photon Counting X-Ray Detectors like the Medipix2 and the Medipix3 Using High-Z Sensor Materials

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M10-262 A Comparison of Geant4 and DETECT2000 for the Simulation of Light Transport in Scintillation Detectors

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M10-264 Comparison of a Block Detector Simulation with Experimental Measurements

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M10-266 A Simulation Study of a Long Axial Field of View Whole Body PET Scanner Using Cylindrical and Anthropomorphic Phantoms

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M10-268 Object Orientation in RF Field Determines Thermoacoustic Contrast

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M10-270 Simulation of Mechanical Misalignments in a Cone-Beam Micro-CT System

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M10-272 A Monte-Carlo Study of Scattering and Attenuation of 511 keV Gamma Rays in a Pinhole

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M10-274 SPECT Imaging Simulation with a Deterministic Particle Transport Method

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M10-276 Monte Carlo Based Estimation of Detector Response in a Large Solid Angle Preclinical PET Imaging System

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M10-278 Quantitative Analysis of Gamma Ray Interactions in Detector Materials TlBr, CdTe, and LSO for a Simulated High-Resolution Small Animal PET Scanner

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M10-280 A Simulation Study of the Counting-Rate Performance of Clinical PET Systems Applying a Methodology for Optimizing the Injected Dose

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M10-282 Theoretical Bounds and Optimal Configurations for Multi-Pinhole SPECT

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M10-284 Design of a Second Generation Firewire Based Data Acquisition System for Small Animal PET Scanners

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M10-286 Development of Radiation Pulse Generator

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M10-288 IMOTEPD: a Low-Jitter 16 Channels Time to Digital Converter Based on Delay Locked Loop for Small Animal PET Imaging Applications

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M10-290 Design of an FPGA Based Algorithm for Real-Time Solutions of Statistics-Based Positioning

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M10-292 A Digital Architecture for Routinely Storing and Buffering the Entire 64-Bit Event Stream at Maximum Bandwidth for Every Acquisition in Clinical Real-Time 3-D PET: Embedding a 400 Mbyte/sec SATA RAID 0 Using a Set of Four Solid-State Drives

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M10-294 A 40-Channel Readout ASIC for ToF-PET

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M10-296 A Graphics Processor Approach to Real-Time ML Positioning of Scintillation Events in Continuous Small Field-of-View Scintillation Cameras

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M10-298 Spatial Distortion Correction and Crystal Identification for Position-Sensitive Avalanche Photodiode-Based PET Scanners

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M10-300 A Multi-Threshold Method for the TOF-PET Signal Processing

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M10-302 Accuracy of 3D-SP-OSEM and 3D-OSWLS Reconstruction Algorithms for the High Resolution Research Tomograph

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M10-304 Modeling of the Point-Spread-Function by Geometric Calculations in Multi-Pinhole SPECT Reconstruction

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M10-306 A Practical, Semi-Experimental System Matrix for 2-D PET Image Reconstruction: Comparison with a Geometrical Model

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M10-308 Combining a Novel Scatter Calibration Technique with a Practical Scatter and Random Approximation Technique for Dynamic Brain Imaging in High Resolution PET

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M10-310 Optimum Voxel Size for Reconstruction of In-Beam PET Data

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M10-312 Faster Maximum-Likelihood Reconstruction via Explicit Conjugation of Search Directions

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M10-314 Data Estimation for the ECAT HRRT Sinograms by Utilizing the DCT Domain

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M10-316 Automated Geometric Calibration and Reconstruction in Circular Cone-Beam Tomography

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M10-318 A Weighted FBP Reconstruction for Plasmasphere CT Imaging

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M10-320 Non-Linear Regularization of Iterative Weighted Filtered Backprojection for Helical Cone-Beam CT

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M10-322 Efficient Methodology for 3D Statistical Reconstruction of High Resolution Coplanar PET/CT Scanner

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M10-324 Monte-Carlo Based Reconstruction for PET: a Gaussian Rotator Approach

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M10-326 Voxel-Based Reconstruction Combined with Motion Detection for Slowly Rotating 4D FPD CBCT

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M10-328 C-Arm CT: Reconstruction of Dynamic High Contrast Objects Applied to the Coronary Sinus

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M10-330 Quantitative Accuracy of HRRT List-Mode Reconstructions: Effect of Low Statistics

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M10-332 On the Convergence of Iterative Ordered-Subset Algorithms in Small Animal PET

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M10-334 Accelerated Algebraic Reconstruction Using GPU Hardware with Bilinear Warping Method

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M10-336 Correction for Geometrical Misalignment Without Calibration Measurements in Cone-Beam CT and Other Modalities

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M10-338 Comparison of Different Approaches to Calculate the System Matrix for Small Animal PET with Respect to Parallax Recovery

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M10-340 Random Correction Using Singles Count Rates for DOI Positron Emission Mammography

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M10-342 Accurate EM-TV Algorithm in PET with Low SNR

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M10-344 Towards a Stopping Rule for the OSEM Algorithm for Iterative Image Reconstruction in PET

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M10-346 3D Region-of-Interest (ROI) Reconstruction from Truncated Data in Circular Cone-Beam CT

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M10-348 Iterative Reconstruction of Small Animal PET Images Using Spatially Variant System Point Spread Function and MAP with Anatomical Priors

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M10-350 Few-View Mouse Imaging with Micro-CT Using a Carbon Nanotube X-Ray Source

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M10-352 Region-Based Maximum Likelihood Reconstruction in Positron Emission Tomography for Quantitative Oncological Analysis

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M10-354 GPU-Based Parallel-Beam and Cone-Beam Forward- and Backprojection Using CUDA

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M10-356 Accurate Helical CT Reconstruction with Redundant Data Using Nutating Slices

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M10-358 In-Depth Analysis of Cone-Beam CT Image Reconstruction by Ideal Observer Performance on a Detection Task

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M10-360 Penalized-Likelihood Sinogram Decomposition for Dual-Energy Computed Tomography

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M10-362 Generation of Hybrid SPECT Bone Scans and Reconstruction Using CT-Derived Anatomical Priors

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M10-364 Theoretical Investigation of the Effects of Timing Calibration Errors on Time-of-Flight PET Image Quality

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M10-366 Adaptive TOF-PET Image Reconstruction

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M10-368 Theoretical and Numerical Study of an MLEM Reconstruction Algorithm for Motion Correction (MC-MLEM) in Emission Tomography

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M10-370 High-Speed Reconstruction of Low-Dose CT Using GP-GPU

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M10-372 Towards Confident 3D Tomographic Reconstruction for Asymmetric, Sparse Detector Geometries

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M10-374 Component Based System Matrix Determination for HRRT Reconstruction

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M10-376 Rapidly Converging Image Covariance Estimation for FBP Reconstruction Methods

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M10-378 A Finite Element Based Fluorescence-Enhanced Optical Tomography Reconstruction Algorithm

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M10-380 Scatter Enhanced Breast CT Using a Mono-Energetic First Generation Scanner: Feasibility Study

J. E. Alpuche Aviles^{1,2}, S. Pistorius^{1,2}

¹*University of Manitoba, Canada*; ²*CancerCare Manitoba, Canada*

M10-382 Model Based Factor-Analysis Improves Quantification of Cardiac Function with PET

R. Klein^{1,2}, A. Adler³, R. S. Beanlands¹, R. A. deKemp^{1,2}

¹*University of Ottawa Heart Institute, Canada*; ²*University of Ottawa, Canada*; ³*Carleton University, Canada*

M10-384 Partial Scan Artifact Reduction (PSAR) for the Assessment of Cardiac Perfusion in Dynamic Phase-Related CT

P. Stenner, B. Schmidt, H. Bruder, R. Raupach, T. Flohr, *Siemens Healthcare, Germany*; M. Kachelrieß, *Institute of Medical Physics, Germany*

M10-386 In Vivo Saturation Binding Analysis Using Small Animal PET – the Impact of the Reference Tissue on the Binding Potential of [18F]N-Methyl-Benperidol

S. Nikolaus¹, A. Wirtzwar¹, M. Beu¹, R. Larisch², H.-W. Müller¹

¹University Hospital Düsseldorf, Germany; ²Clinic of Lüdenscheid, Germany

M10-388 Low Radiation Dose Measurements of Contrast Medium Distribution with Synchrotron Radiation

A. H. Walenta, W. Schenk, University of Siegen, Germany; K. L. H. Walenta, Saarland University, Germany; J. Mielebacher, Mielebacher Informatik Systeme, Germany

M10-390 3D Listmode Cardiac PET for Simultaneous Quantification of Myocardial Blood Flow and Ventricular Function

R. deKemp, R. Klein, J. Renaud, A. Alghamdi, M. Lortie, J. DaSilva, R. Beanlands

University of Ottawa Heart Institute, Canada

M10-392 An Investigation of Partial Volume Effect and Partial Volume Correction in Small Animal Positron Emission Tomography (PET) of the Rat Brain

W. Lehnert¹, X. Hu¹, M.-C. Gregoire², S. R. Meikle¹

¹University of Sydney, Australia; ²ANSTO, Australia

M10-394 Image Normalization Strategies for Organ Specific Models of Functional Uptake in FDG-PET /CT

V. Poresil¹, G. Platsch², D. Slosman³, T. Kadir²

¹University of Oxford, UK; ²Siemens Molecular Imaging Ltd., UK;

³Clinique Generale Beaulieu, Switzerland

M10-396 Combination of a High Resolution Detector with Small FOV and a Low Resolution Detector with Large FOV for High Resolution and Quantitative SPECT

T. Zeniya^{1,2}, H. Watabe², H. Kudo³, Y. Hirano², K. Minato¹, H. Iida²

¹Nara Institute of Science Technology, Japan; ²National Cardiovascular Center Research Institute, Japan; ³University of Tsukuba, Japan

M10-398 Performing Longitudinal Measurements in Rodents Using Small Animal PET Imaging

H.-M. Wu, R. W. Silverman, N. G. Harris, R. L. Sutton

David Geffen School of Medicine, University of California, Los Angeles, USA

M10-400 Impact of Attenuation and Scatter Correction in Estimating Tumor Hypoxia-related Kinetic Parameters for FMISO Dynamic Animal-PET Imaging

W. Wang¹, M. Chen², C. Sean¹, C. Oehler¹, P. Zanzonico¹, J. Humm¹

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M10-402 Study of Variance-Reduction Normalization Method for Compton Camera System

S. M. Kim, J. S. Lee, J. H. Kim

Seoul National University College of Medicine, South Korea

M10-404 Cascade Calculation and Removal for Dirty PET Nuclides

R. Laforest, X. Liu

Washington University, School of Medicine, USA

M10-406 Feasibility Study of New Scatter Correction Method

J. Y. Suk¹, E. Vandervroot^{1,2}, S. Blinder¹, V. Sossi¹

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M10-408 Compensating for Head Motion in Slowly-Rotating Cone Beam CT Systems with Optimization Transfer Based Motion Estimation

M. W. Jacobson, J. W. Stayman

Xoran Technologies, Inc., USA

M10-410 Feasibility of Implementing Amplitude Gating in PET Imaging Using a Commercial Respiratory Gating Device

G. Chang¹, T. Pan², J. W. Clark¹, O. R. Mawlawi²

¹RICE University, USA; ²MD Anderson Cancer Center, USA

M10-412 Event-by-Event Attenuation Measurement for ACS2-Based PET Systems

J. Langner, H. Mölle, S. Ditttrich, E. Will, J. van den Hoff

Institute of Radiopharmacy, Forschungszentrum Dresden-Rossendorf, Germany

M10-414 A Novel Method to Use Multiple-Interaction Information in 3-D Photon Positioning Detectors to Reject Random Coincidences and Retain Multiple Coincidences for PET

G. Chinn, C. S. Levin, Stanford School of Medicine, USA

M10-416 Implementing Analytical Geometric and Penetration Response Correction for Keel-Edge Pinhole SPECT Image Reconstruction

X. Zhang, Q. Dai, Y. Qi

Shanghai Institute of Applied Physics, Chinese Academy of Sciences, China

M10-418 Iterative Deconvolution of Simultaneous Dual Radionuclide Projections for CdZnTe Based Cardiac SPECT

K. Kacperski, K. Erlandsson, S. Ben-Haim, D. Van Gramberg, B. F. Hutton

University College London Hospital, UK

M10-420 Evaluation of Deconvolution-Based Methods for the Correction of Partial Volume Effect in PET

F. Momey¹, N. Boussion², D. Visvikis², J. Nuyts³, N. Costes⁴, J. Tohka⁵, A. Reilhac¹

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M10-422 Correction of Respiratory Motion in Dual Gated Cardiac Imaging in PET/CT

F. Lamare¹, M. Teras², T. Kokki², H. Fayad³, O. Rimoldi¹,

P. G. Camici¹, J. Knuuti², D. Visvikis³

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M10-424 Analysis of Ray-Sampling for Non-Circular Trajectories in Fan Beam Geometry

A. A. Zamyatin, Toshiba Medical Research Institute USA, USA

M10-426 An Evaluation of Missing Data Compensation Methods for a PET Camera by Comparing to No-Gap Data

H. Baghaei, H. Li, Y. Zhang, R. Ramirez, S. Liu, C. Wang, S. An, W.-H. Wong

University of Texas M. D. Anderson Cancer Center, USA

M10-428 Respiratory Motion Correction Using Robust Registration Techniques

R. B. Abeygunasekera, K. Wells, E. Lewis, University of Surrey, UK; M. Guy, Royal Surrey County Hospital, UK

M10-430 List-Mode Detector Scatter Estimation Method with Potential for Real-Time Implementation in High Resolution PET Imaging

L. Ortega Maynez^{1,2}, T. Kösters³, V. Uhlendorf⁴, F. Wübbeling³, K. Schäfers³, A. J. Reader⁵

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³University of Münster, Germany; ⁴Institute for Pharmaceutical Sciences, Switzerland; ⁵McGill University, Canada

M10-432 Pattern Independent Deformation Estimation Illustrated by MRI

S. Gu¹, J. E. McNamara², K. Johnson², H. Gifford², A. V. Sklyar¹, M. A. Gennert¹, M. A. King²

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M10-434 Image-Based Correction for Mismatched Attenuation in PET Images

K. Thielemans¹, E. Asma², R. M. Manjeshwar², A. Ganin³,

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M10-436 Fast Motion Correction Using the Characteristic of Motion in Rigid Body

K. Lee¹, D. Keator¹, S. Potkin¹, I. Hong²

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M10-438 A 3D Multi Resolution Local Analysis Approach for Correction of Partial Volume Effects in Emission Tomography

A. Le Pogam¹, N. Boussion², M. Hatt², G. Fahd², C. Prunier-aesch¹,

D. Guilleateau¹, J.-L. Baulieu¹, D. Visvikis²

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M10-440 Discontinuity Preserving Regularization for Modeling Sliding Effects in Medical Image Registration

D. Ruan, J. A. Fessler, S. Esedoglu

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M10-442 Discontinuity Preserving Regularization to Account for Sliding Effects in Medical Image Registration

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M10-444 Modeling and Parameterization of down-Scatter Photons Distribution in Myocardial Perfusion SPECT

F. Kalantari, H. Rajabi, Tarbiat Modarres University, Iran

M10-446 Artificial Neural Networks Applied to Bone Recognition in X-Ray Computer Microtomography Imaging for Histomorphometric Analysis

A. A. M. Meneses¹, C. J. G. Pinheiro¹, R. Schirru¹, R. C. Barroso², D. Braz¹, L. F. Oliveira²

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M10-448 Retinal Vessel Segmentation Based on Matched Filters Guided by Locally Dominant Gradient Features

S. Raptis, National Technical University of Athens (NTUA), Biomedical Engineering Laboratory, Greece

M10-450 Automatic Detection of Active Nodules in 3D PET Oncology Imaging Using the Hotelling Observer and the Support Vector Machines: a Comparison Study

S. Tomei, S. Marache-Francisco, C. Odet, C. Lartizien

CREATIS-LRMN Lyon, France

M10-452 A General Method for the Identification and Repair of Concavities in Segmented Medical Images

W. F. Sensakovic, A. Starkey, S. G. Armato

The University of Chicago, USA

M10-454 Extraction of Temporal Lobe Region with Balloon Snakes and the Active Appearance Model for Imaging Diagnosis of Alzheimer-Type Dementia

M. Ito, Graduate School of Engineering & Resource Science, Akita

University, Japan; M. Nishida, I. Namura, Akita University, Japan

M10-456 Jitter-Improved Sampling in Micro-CT

R. Grimmer, M. Knaup, M. Kachelrieß

Institute of Medical Physics, University of Erlangen-Nürnberg, Germany

M10-458 Bias in ROI Signal Activity Estimators and an Unbiased Solution

M. K. Whiraker, H. H. Barrett, E. Clarkson

University of Arizona, USA

M10-460 Analytic Noise Propagation for Anisotropic Denoising of CT-Images

A. Borsdorf¹, S. Kappler², R. Raupach², J. Hornegger¹

¹Friedrich-Alexander-University Erlangen-Nuremberg, Germany;

²Siemens AG, Germany

M10-462 Using Intelligent Scissor to Improve the Performance of Active Shape Model

C.-C. Chang, J.-C. Chen, National Yang-Ming University,

Taiwan; H.-M. Liu, National Taiwan University Hospital, Taiwan

M10-464 Automatic Reorientation of Cardiac PET Perfusion Images Using Intensity and Contrast Invariant Structure Information

X.-B. Pan¹, S. Bond¹, G. Platsch¹, R. Eisner², J. Declerck¹

¹Siemens Molecular Imaging, UK; ²Emory Crawford Long, USA

M10-466 Multiscale Noise Reduction on Low-Dose CT Sinogram by Stationary Wavelet Transform

D. Wang, H. Lu, C. Jiao, Z. Zhang, Fourth Military Medical

University, China; Z. J. Liang, State University of New York, USA

M10-468 Clustering Approach for the Classification of SPECT Images

A. Lassl¹, J. M. Górriz¹, J. Ramírez¹, E. W. Lang², C. G. Puntonet¹,

D. Salas-Gonzalez¹, M. Gómez³

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M10-470 Lung Segmentation and Tumor Detection from CT Thorax Volumes of PET/CT Scans by Template Registration and Incorporation of Functional Information

C. Ballangan¹, X. Wang¹, D. D. Feng^{1,2}, S. Eberl^{1,3}, M. Fulham^{1,3}

¹University of Sydney, Australia; ²Hong Kong Polytechnic University,

China; ³Royal Prince Alfred Hospital (RPAH), Australia

M10-472 Diffusion Filtering of Functional Images Using the Structural Information Available in Hybrid Imaging Modalities

O. Demirkaya

King Faisal Specialist Hospital and Research Center, Saudi Arabia

M10-474 Denoising of Synchrotron Radiation Micro-Ct Images of Trabecular Bone for the Extraction of 3d Quantitative Data on Micro-Cracks

A. Larrue^{1,2}, Z. Peter¹, A. Rattner³, L. Vico³, F. Peyrin^{1,2}

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M10-476 Virtual MRI-Derived SPECT for the Visual Analysis of the Early Stage of Parkinson's Disease

S. Chauvie¹, M. M. Obertino², A. Papaleo¹, M. Ruspa², A. Solano³, G. Perno¹, A. Biggi¹

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M10-478 An Innovative Lung Segmentation Algorithm in Computed-Tomography Images with Accurate Delimitation of the Hilus Pulmonis

G. De Nunzio, *Università del Salento, Italy*

On behalf of the MAGIC 5 Collaboration

M10-480 A Method for Stable Computation of the Hilbert Kernel and Its Resolution and Noise Properties

A. A. Zamyatin, *Toshiba Medical Research Institute USA, USA*

M10-482 Quantitative Evaluation of Reconstruction Algorithms for Motion Compensated PET

N. C. Detorie, M. Dahlbom

University of California, Los Angeles, USA

M10-484 Image Synthesis of a Mini Gamma Camera and Stereo Optical Cameras

H. Haneishi, H. Shimura, H. Hayashi

Chiba University, Japan

M10-486 Development of a Database Driven Statistical Quality Control Framework

X. Ding¹, H. Vija¹, J. Zeintl², A. Kriplani¹

¹*Siemens Medical Solutions USA, Inc, USA;* ²*University of Erlangen-Nuremberg, Germany*

M10-488 A Dual Threshold Method to Independently Control Spatial Resolution and Sensitivity in β Imaging

J. Cabello¹, A. Bailey¹, I. Kitchen¹, R. Turchetta², K. Wells¹

¹*University of Surrey, UK;* ²*Science and Technology Facilities Council, UK*

M10-490 Use of Resampling Techniques in Assessment of Robustness of Complex Image Analysis: an Example in FDG-PET of Patients with Alzheimer's Disease

P. J. Markiewicz¹, J. C. Matthews¹, J. Declercq², K. Herholz¹

¹*University of Manchester, UK;* ²*Siemens Molecular Imaging, UK*

M10-492 A Wavelet-Based Hidden Markov Model and Multi-Resolution Approach for Conditional Partial Volume Correction in Emission Tomography

A. Le Pogam¹, M. Hatt², N. Boussion², F. Turkheimer³, C. Prunier-aesch¹, D. Guilloteau¹, J.-L. Baulieu¹, D. Visvikis²

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M10-494 How Many Reconstruction Methods Are Needed for Numerical Observer Design?

J. G. Brankov, *Illinois Institute of Technology, USA;* P. H. Pretorius, *University of Massachusetts Medical School, USA*

M10-496 Nonlinear Effect of Pile-up in the Calibration Curve of a Small Animal PET Scanner

E. Vicente, S. España, J. L. Herraiz, E. Herranz, J. M. Udias, *Universidad Complutense de Madrid, Spain;* M. Desco, J. J. Vaquero, *Hospital General Universitario Gregorio Marañón, Spain*

M10-498 Automatic Skeletonization for 3D Hepatic Portal Vein in CT Angiography

J. Liu^{1,2}, Z. Zhang^{1,2}, P. Song^{1,2}, E. Song², D. Hu², Q. Xie^{1,2}

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M10-500 Partial Quantification of PET Neurotransmitter Model Using Nonlinear System Identification

C. Deng¹, P. Shi^{1,2}

¹*Hong Kong University of Science and Technology, China;* ²*Rochester Institute of Technology, USA*

M10-502 Simultaneous Dual Tracer PET Using Generalized Factor Analysis of Dynamic Sequences (GFADS)

G. El Fakhri¹, C. M. Trotter¹, B. Guérin¹, A. Sitek², A. A. Bonab¹, A. J. Fischman¹

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M10-504 Performance of a Modified Supervised Cluster Algorithm for Extracting Reference Tissue Input Functions from (R)-[11C]PK11195 PET Studies

R. Boellaard¹, F. Turkheimer², R. Hinz³, A. Schuitemaker¹, P. Scheltens¹, B. van Berckel¹, A. Lammertsma¹

¹*VU University Medical Centre, The Netherlands;* ²*Imperial College London, UK;* ³*University of Manchester, UK*

M10-506 Comparison of Kinetic Modelling Algorithms for Reversible Dopaminergic Tracers with Small Animal PET

G. J. Topping¹, K. Dinelle¹, J. E. Holden², V. Sossi¹

¹*University of British Columbia, Canada;* ²*University of Wisconsin, USA*

M10-508 Estimating TI-201 Redistribution in the Heart at Rest Using Stress Perfusion SPECT Imaging

P. H. Pretorius, M. A. King, *University of Massachusetts Medical School, USA;* M. N. Wernick, J. G. Brankov, *Illinois Institute of Technology, USA*

M10-510 Nonparametric Residue Analysis of Dynamic PET Data with Application to Cerebral FDG Studies in Normals.

F. O'Sullivan^{1,2}, M. Muzi², A. M. Spence², D. A. Mankoff², J. N. O'Sullivan¹, N. Fitzgerald¹, K. A. Krohn²

¹*University College Cork, Ireland;* ²*University of Washington, USA*

M10-512 PET Kinetic Modeling of Rat Tumors Simultaneously Treated with Photodynamic Therapy: a Reference Tissue Model

P. Boubacar, M. Bentourkia, O. Sarrhini, J. van Lier, R. Lecomte *Université de Sherbrooke, Canada*

M10-514 Design and Development of a Co-Planar Fluorescence and X-Ray Tomograph

J. Aguirre¹, A. Sisiniega¹, J. Ripoll², M. Desco¹, J. J. Vaquero¹

¹*hospital General Universitario Gregorio Marañón, Spain;* ²*Foundation For Research and Technology Hellas (FORTH), Greece*

M10-516 Parallel Finite Element Reconstruction for Spectrally Solved Bioluminescence Tomography

Y. Lu, A. F. Chatzioannou, *UCLA Crump Institute, USA*

M11 Image Reconstruction: CT, SPECT

Friday, Oct. 24 13:30-15:30 Hall 2&3
Session Chair: **Michel Defrise**, Vrije Universiteit Brussel, Belgium

M11-1 CT Reconstruction with Extended z-Range

R. Grimmer¹, M. Oelhafen², U. Elstroem³, M. Kachelrieß¹
¹University of Erlangen-Nürnberg, Germany; ²Varian Medical Systems, Switzerland; ³Aarhus University Hospital, Denmark

M11-2 Investigation of Coverage Requirements for Exact

Reconstruction with General Circle+curve Trajectory
A. A. Zamyatin, Toshiba Medical Research Institute USA, USA; A. Katsevich, University of Central Florida, USA

M11-3 Hyperfast Gnereal-Purpose Cone-Beam Spiral Backprojection with Voxel-Specific Weighting

S. Steckmann, M. Knaup, M. Kachelrieß
Institute of Medical Physics, Germany

M11-4 Backprojection-Filtration Reconstruction Without Invoking a Spatially Varying Weighting Factor

D. Xia, S. Cho, X. Pan, The University of Chicago, USA

M11-5 Noise Properties of the Discrete Finite Hilbert Transform

X. Han, D. Xia, E. Y. Sidky, X. Pan
The University of Chicago, USA

M11-6 Breathing-Motion Correction for Helical CT

U. V. Stevendaal¹, T. Klinder^{1,2}, C. Lorenz¹, T. Köhler¹
¹Philips Research Europe - Hamburg, Germany; ²Institut für Informationsverarbeitung, Leibniz University Hannover, Germany

M11-7 Regularized Image Reconstruction Using a Dual-Tracer/modality Prior

X. He, E. Frey, Johns Hopkins University, USA

M11-8 Reconstructing Uniformly Attenuated Rotating Slant-Hole SPECT Projection Data Using the DBH Method

Q. Huang¹, J. Xu², B. M. W. Tsui², G. T. Gullberg¹
¹Lawrence Berkeley National Lab, USA; ²Johns Hopkins University, USA

M12 Systems and High-Resolution Imaging: PET

Friday, Oct. 24 16:00-18:00 Hall 2&3
Session Chair: **Joel S. Karp**, University of Pennsylvania, United States

M12-1 A High Resolution PET Insert System for Clinical PET/CT Scanners

H. Wu, T. Y. Song, D. Pal, D. B. Keesing, S. Komarov, J. A. O'Sullivan, Y.-C. Tai
Washington University in St. Louis, USA

M12-2 A New PET Scanner for Functional Brain Imaging Based on 2-mm Straw Detectors

A. Athanasiades, L. Sun, C. S. Martin, T. Lyons, R. Nguyen, G. Vazquez, J. L. Lacy
Proportional Technologies, Inc, USA

M12-3 Tapered LSO Arrays for Small Animal PET

Y. Yang¹, S. S. James¹, Y. Wu¹, H. Du¹, J. Qi¹, R. Farrell², P. A. Dokhale², K. S. Shah², K. Vaigneur³, S. R. Cherry¹
¹University of California at Davis, USA; ²Radiation Monitoring Devices Inc., USA; ³Agile Engineering, USA

M12-4 Preliminary Construction of a DOI PET System with LGSO Crystals and Flood Map Non-Uniformity Correction

J. S. Lee¹, S. I. Kwon¹, M. Ito², H. S. Yoon¹, G. S. Lee¹, K.-S. Sim², J. T. Rhee³, K. S. Park¹, S. J. Hong¹
¹Seoul National University College of Medicine, Korea; ²Korea University, Korea; ³Konkuk University, Korea

M12-5 Correction for Continuous Motion in Small Animal PET

Y. W. Zhou¹, A. Z. Kyme¹, S. R. Meikle¹, W. Lehnert¹, R. R. Fulton^{1,2}
¹University of Sydney, Australia; ²Westmead Hospital, Australia

M12-6 LabPET II, a Novel 64-Channel APD-Based PET Detector Module with Individual Pixel Readout Achieving Submillimetric Spatial Resolution

P. Bérard¹, M. Bergeron¹, C. M. Pepin¹, J. Cadorette¹, M.-A. Tétrault¹, N. Viscogliosi¹, H. Dauter², M. Davies², P. Deschamps², R. Fontaine¹, R. Lecomte¹
¹Université de Sherbrooke, Canada; ²PerkinElmer Optoelectronics, Canada

M12-7 PCA-Based Algorithm for Building Crystal Look-Up Table for PET Block Detector

J. Breuer, K. Wienhard
Max-Planck-Institut fuer neurologische Forschung, Cologne, Germany, Germany

M12-8 Imaging Performance of a LaBr₃-Based TOF-PET Scanner

M. E. Daube-Witherspoon¹, S. Surti¹, A. E. Perkins², C. C. M. Kyba¹, M. E. Werner¹, J. S. Karp¹
¹University of Pennsylvania, USA; ²Philips Research, USA

M13 Image Reconstruction: PET II

Saturday, Oct. 25 08:30-10:00 Hall 2&3
Session Chair: **Arman Rahmim**, Johns Hopkins University, United States

M13-1 Accelerate Direct Reconstruction of Linear Parametric Images Using Nested Algorithms

G. Wang, J. Qi, University of California, Davis, USA

M13-2 Direct 4D Reconstruction of Parametric Images Incorporating Anato-Functional Joint Entropy

J. Tang, H. Kuwabara, D. F. Wong, A. Rahmim
Johns Hopkins University, USA

M13-3 Ultra Fast 4D PET Image Reconstruction with User-Definable Temporal Basis Functions

I. Hong, Korea Polytechnic University, Korea; A. J. Reader, McGill University, Canada

M13-4 Direct 4D List Mode Parametric Reconstruction for PET with a Novel EM Algorithm

J. Yan, B. P. Wilson, R. E. Carson, Yale University, USA

M13-5 Combined Motion Compensation and Reconstruction for PET

M. Blume^{1,2}, M. Rafecas¹, S. Ziegler², N. Navab²
¹Universidad de Valencia / CSIC, Spain; ²Technische Universität München, Germany

M13-6 Respiratory Synchronized CT Image Generation from 4D PET Acquisitions

H. Fayad¹, F. Lamare², V. Bettinardi³, C. Roux^{1,4}, D. Visvikis¹
¹INSERM U650, LaTIM, France; ²MRC Clinical Sciences Centre, UK;
³Scientific Institute H. San Raffaele, Italy; ⁴Institut Telecom - Telecom Bretagne, France

M14 Quantitative Imaging

Saturday, Oct. 25 10:30-12:30 Hall 2&3
Session Chair: **Paul E. Kinahan**, University of Washington, United States

M14-1 Scatter/Trues Detection Efficiency Compensation in Scatter Correction of PET Emission Data

C. C. Watson, L. Byars, C. Michel, H. Rothfuss
Siemens Medical Solutions Molecular Imaging, USA

M14-2 Fast and Accurate PET Preclinical Data Analysis: Segmentation and Partial Volume Effect Correction with No Anatomical Priors

R. Maroy¹, C. Comtat¹, T. Viel^{1,2}, R. Boisgard^{1,2}, R. Trébossen¹, B. Tavitian^{1,2}
¹CEA, France; ²INSERM, France

M14-3 High Definition PET for Cardiac Imaging: Preliminary Results

L. Le Meunier¹, P. J. Slomka^{2,3}, J. Fermin², D. Dey^{2,3}, S. W. Hayes^{2,3}, J. D. Friedman^{2,3}, G. Germano^{2,3}, D. S. Berman^{2,3}
¹Siemens Medical Solutions, USA; ²Cedars-Sinai Medical Center, USA; ³David Geffen School of Medicine at UCLA, USA

M14-4 MR-Based PET Attenuation Correction – Initial Results for Whole Body

M. Hofmann^{1,2,3}, F. Steinke², P. Aschoff², M. Lichy¹, M. Brady³, B. Schoelkopf², B. J. Pichler¹
¹Laboratory for Preclinical Imaging and Imaging Technology of the Werner Siemens-Foundation, Germany; ²Max Planck Institute for Biological Cybernetics, Germany; ³Wolfson Medical Vision Laboratory, UK

M14-5 Ultra Low Dose CT for Attenuation Correction in PET/CT

J. G. Colsher, J. Hsieh, J.-B. Thiubault, A. H. Lonn, *GE Healthcare, USA*; T. Pan, *MD Anderson Cancer Center, USA*; S. J. Lokitz, T. G. Turkington, *Duke University Medical Center, USA*
M14-6 Automatic Registration of Cardiac PET-CT for Attenuation Correction
S. L. Bond¹, T. Kadir¹, J. Hamill², M. Casey², G. Platsch¹, D. Burckhardt², R. Eisner³, N. Kausthubh⁴
¹Siemens Molecular Imaging, UK; ²Siemens Molecular Imaging, USA; ³Emory Crawford Long, USA; ⁴Siemens Information Systems Ltd., India

M14-7 Analysis of Attenuation-Correction Efficacy for Tumor Detection in SPECT

H. C. Gifford¹, R. G. Wells², M. A. King¹
¹Univ Mass Medical School, USA; ²Univ Ottawa Heart Institute, Canada

M14-8 Iterative Algorithms for Crystal Efficiencies Estimations from TOF Compressed Normalization Data

V. Y. Panin, *Siemens Medical Solutions, USA*

M15 Image Processing

Saturday, Oct. 25 13:30-15:30 Hall 2&3
Session Chair: **Ronald J. Jaszczyk**, Duke University Medical Center, United States

M15-1 Comparison Between Parallel Hole and Rotating Slat Collimation: Planar Image Quality Evaluation by Fisher Information-Based Method

L. Zhou, K. Vunckx, J. Nuyts
Nuclear Medicine K.U.Leuven, Belgium

M15-2 Collimator Optimization in SPECT Based on an LROC Ideal Observer

L. Zhou, G. R. Gindi, *SUNY at Stony Brook, USA*

M15-3 Adaptive SPECT for Tumor Necrosis Detection

L. Caucci¹, M. A. Kupinski¹, M. Freed², L. R. Furenlid¹, D. W. Wilson¹, H. H. Barrett¹
¹University of Arizona, USA; ²US Food and Drug Administration, USA

M15-4 ROC Analysis of Digital Selenium Radiography and Storage Phosphor Radiography at Various Tube Voltages for Simulated Chest Lesions

H.-M. Cho, H.-J. Kim, C.-L. Lee, J. Jung, H.-S. Park
Yonsei university, Korea

M15-5 3-D Discrete Ridgelet Transform for Emission Tomography Denoising

A. Le Pogam¹, N. Boussion², M. Hatt², C. Prunier-aesch¹, D. Guilloteau¹, J.-L. Baulieu¹, D. Visvikis²
¹INSERM U930, France; ²INSERM U650, France

M15-6 Assessment of Spatial Resolution Micro-CT

R. Grimmer¹, J. Krause¹, M. Karolczak¹, R. Lapp², M. Kachelrieß¹
¹University of Erlangen-Nürnberg, Germany; ²VAMP GmbH, Germany

M15-7 Accurate Functional Volume Definition in PET for Radiotherapy Treatment Planning

M. Hatt¹, A. Dekker², D. De Ruyscher², M. Oellers², P. Lambin², C. Roux^{1,3}, D. Visvikis¹
¹INSERM, France; ²Maastricht University Medical Centre, The Netherlands; ³Institut Telecom, France

M15-8 Modeling Approach to Predict [¹⁸F]FDG Blood Sample Measurements in Mice by Use of Urinary Bladder Time-Activity Data

K.-P. Wong, S.-C. Huang
David Geffen School of Medicine at UCLA, USA

M16 High Resolution Imaging: SPECT, CT

Saturday, Oct. 25 16:00-18:00 Hall 2&3
Session Chair: **Freek J. Beekman**, University Medical Center, The Netherlands

M16-1 Revolving Multipinhole SPECT for Small Animal Imaging

G. Bal¹, P. D. Acton^{2,3}, F. Jansen¹, B. H. Hasegawa⁴
¹GE Global Research, USA; ²Thomas Jefferson University, USA; ³Johnson & Johnson Pharmaceutical Research and Development, USA; ⁴UCSF, USA

M16-2 Characterization of a High Sensitivity Small Animal Single Photon Emission Imaging System

G. S. Mitchell, S. R. Cherry, *UC Davis, USA*

M16-3 Instrumentation Design for Adaptive SPECT/CT

J. W. Moore, L. R. Furenliid, H. H. Barrett
University of Arizona, USA

M16-4 A Low-Energy SPECT System Based on Silicon Strip Detectors

T. E. Peterson¹, B. S. McDonald¹, S. Shokouhi¹, D. W. Wilson²
¹*Vanderbilt University, USA*; ²*University of Arizona, USA*

M16-5 Awake Animal SPECT: Overview and Initial Results

A. G. Weisenberger, B. Kross, S. Majewski, J. McKisson, V. Popov, J. Proffitt, A. Stolin, *Thomas Jefferson National Accelerator Facility, USA*; J. S. Baba, J. S. Goddard, S. J. Lee, *Oak Ridge National Laboratory, USA*; M. F. Smith, *University of Maryland, USA*; M. Pomper, *Johns Hopkins University, USA*

M16-6 Image Reconstruction for Awake Animal SPECT Imaging

A. V. Stolin, J. McKisson, A. G. Weisenberger, *Thomas Jefferson National Accelerator Facility, USA*; J. S. Baba, J. M. Goddard, S. J. Lee, *Oak Ridge National Laboratory, USA*; M. F. Smith, *University of Maryland, USA*

M16-7 High-Sensitivity Three-Dimensional Compton Imaging

S. Mattafirri¹, K. Vetter^{1,2}, L. Mihailescu², S. Prussin¹
¹*UC Berkeley, USA*; ²*LBNL, USA*

M16-8 Electron Beam CT – A Potential Tool for Small Animal Imaging ?

F. Fischer, U. Hampel, R. Bergmann
FZ Dresden-Rossendorf, Germany

16TH INTERNATIONAL WORKSHOP ON ROOM-TEMPERATURE SEMICONDUCTOR X- AND GAMMA-RAY DETECTORS (RTSD)

It is our great pleasure to welcome you at the 16th International Workshop on Room-Temperature Semiconductor X-Ray and Gamma-Ray Detectors. This conference represents the principal forum for scientists and engineers working to develop new solid-state radiation detectors and imaging arrays. From all appearances this workshop will be largest ever.

For those of you who have attended the past workshops, welcome back! As Chairs of the workshop, we are particularly delighted to make the acquaintance of new contributors, as there are many challenges that lie ahead, some of which will be solved by those who are relatively new to the subject area.

It is our sincere hope that this conference will facilitate cross-fertilization of research and spawn creative ideas, and that these ideas will be incarnated into knowledge, leading to new directions and thrusts. We urge you to take time at this meeting to build on the commonality of your work with colleagues within the RTSD, NSS and MIC conferences, and to share your data, energy and experience, and explore ways to enhance cooperation and collaboration with others.

We have chosen to hold this meeting in conjunction with the IEEE NSS and MIC meetings for the purpose of encouraging information exchange between a much larger body of scientists and engineers who have an in-depth knowledge of detectors, instrumentation, nuclear science and technology, and medical imaging.

For the first time a triple joint session between RTSD, NSS and MIC is scheduled to help bring people together with common interests and offer the right environment for the creation of new and fruitful associations. This joint session is scheduled for 21 October from 10.30 - 12.30.

This year the RTSD luncheon will be held on October 23rd at the Westin Bellevue, Dresden. You are encouraged to purchase your ticket(s) when you pre-register as seating is limited.

We would like to thank the speakers and attendees for their contributions, the workshop sponsors for their kind support, and express our gratitude to the session chairs and members of the Workshop Program Committee, who have offered their time to enlist the involvement of most researchers in the field.



Michael Fiederle



Ralph B. James

RTSD Program Co-Chairs

RTSD PROGRAM

R01 CdZnTe

Monday, Oct. 20 14:00-16:05 Hall 1
Session Chair: **Aleksey E. Bolotnikov**, Brookhaven National Laboratory, United States

R01-1 (14:00, invited) Challenges of CdZnTe Semiconductor Detectors for Spectroscopic X-Ray Imaging
C. Szeles, S. A. Soldner, M. Prokesch, D. S. Bale
eV PRODUCTS Incorporated, USA

R01-2 (14:20, invited) Thickness Scalability of Large Volume Cadmium Zinc Telluride High Resolution Radiation Detectors
H. Chen, J. MacKenzie, S. A. Awadalla, R. Redden, G. Bindley, *Redlen Technologies, Canada*; Z. He, *University of Michigan, USA*; M. Groza, A. Burger, *Fisk University, USA*; D. R. Mayo, C. L. Sullivan, *Los Alamos National Laboratory, USA*; A. E. Bolotnikov, G. S. Camarda, R. B. James, *Brookhaven National Laboratory, USA*

R01-3 (14:40, invited) Simulation, Modeling, and Crystal Growth of CdTe and Cd_{1-x}Zn_xTe (0.1≤x≤0.2) for Radiation Detectors and Medical Imaging Applications
K. C. Mandal, A. Mertiri, G. Pabst, R. Roy, S. H. Kang, M. Choi, A. Smirnov, R. D. Rauh
EIC Laboratories, Inc., USA

R01-4 (15:00, invited) Influence of thermal enviroments in the growth of large bulk CZT Crystals
V. Carcelén¹, J. Rodríguez-Fernández^{1,2}, P. Hidalgo³, J. Piqueras³, N. V. Sochinski², J. M. Perez⁴, E. Diéguez¹
¹*Universidad Autónoma de Madrid, Spain*; ²*Instituto de Microelectrónica de Madrid, Spain*; ³*Universidad Complutense de Madrid, Spain*; ⁴*Centro de investigaciones Energéticas, Medioambientales, Tecnológicas, Spain*

R01-5 (15:20) Carrier Dynamics in CdZnTe under High-Flux X-Ray Irradiation -- Application to Device Polarization and Temporal Response
D. S. Bale, M. Prokesch, C. Szeles
eV PRODUCTS, a division of II-VI Incorporated, USA

R01-6 (15:35) Investigation of the Internal Electric Field Distribution on CdZnTe Samples under in-Situ X-Ray Irradiation by Means of the Pockel's Effect.
G. Prekas, P. Veeramani, A. W. Davies, A. Lohstroh, M. E. Özsan, M. C. Veale, P. J. Sellin
University of Surrey, UK

R01-7 (15:50) Mapping CZT Charge Transport Parameters with Collimated X-Ray and Gamma-Ray Beams
R. T. Skelton, J. L. Matteson, A. A. Deal, E. A. Stephan, *University of California, San Diego, USA*; B. Cardoso, *Aguila Technologies, USA*

R02 Defects 1

Monday, Oct. 20 16:30-18:30 Hall 1
Session Chair: **Anna Cavallini**, Department of Physics University of Bologna, Italy

R02-1 (16:30, invited) Research and Development in DND0
A. Janos, *Department of Homeland Security, USA*

R02-2 (16:50, invited) The Influence of Space Charge and Trapping on Charge Transport in CdZnTe
P. Sellin, H. Al Barakaty, A. Davies, S. Gkoumas, A. Lohstroh, E. Özsan, J. Parkin, G. Prekas, M. Veale, P. Veeramani, Y. Xu
University of Surrey, UK

R02-3 (17:10, invited) Effects of Extended Defects on the Internal Electric Field and Charge Trapping in CdZnTe Detectors
G. S. Camarda, A. E. Bolotnikov, G. Yang, Y. Cui, A. Hossain, R. B. James
Brookhaven National Lab, USA

R02-4 (17:30) Inclusion and Precipitate Free Semi-Insulating CdTe
E. Belas, M. Bugár, R. Grill, J. Franc, P. Hlídék, J. Procházka, P. Höschl
Institute of Physics, Czech Republic

R02-5 (17:45) Temporal Response of CdZnTe Detectors under High-Flux X-Ray Exposure
M. Prokesch, D. Bale, C. Szeles
eV PRODUCTS a division of II-VI Incorporated, USA

R02-6 (18:00) INFLUENCE of COOLING RATE on the Cd_{1-x}Zn_xTe POINT DEFECT STRUCTURE
P. Fochuk, Y. Verzhak, O. Panchuk
Chernivtsi National University, Ukraine

R02-7 (18:15) Study on Positron Annihilation in Cd_{0.9}Zn_{0.1}Te Single Crystal
T. Wang, W. Jie, L. Fu, W. Liu, Y. Xu, D. Zeng, G. Zha
Northwestern Polytechnical University, China

R03 Imaging System 1

Tuesday, Oct. 21 08:00-09:25 Hall 1
Session Chair: **Zhong He**, The University of Michigan, United States

R03-1 (08:00, invited) Spatial and Spectral Resolution of Semiconductor Detectors in Medical X-Ray and Gamma Ray Imaging
B. J. Heismann^{1,2}, D. Henseler¹, P. Hackenschmied¹, M. Strassburg¹, D. Niederlöhner¹, S. Janssen¹, S. Wirth¹
¹*Siemens Healthcare, Germany*; ²*University of Erlangen-Nuremberg, Germany*

R03-2 (08:20, invited) Use of CZT Pixel Detectors for Improved SPECT Imaging
G. Montémont, T. Bordy, V. Rebuffel, C. Robert, L. Verger
CEA-LETI MINATEC, France

R03-3 (08:40) Challenges of Photon Counting CdZnTe Based X-Ray Imaging Systems
D. S. Rundle, *eV PRODUCTS, USA*

R03-4 (08:55) Polarimetry with Laue Lens and CZT Pixel Detector
E. Caroli¹, R. M. Curado da Silva², J. B. Stephen¹, A. Pisa³, N. Auricchio³, S. del Sordo⁴, A. Donati¹, F. Schiavone¹, G. Landini¹, V. Honkimaki⁵, F. Frontera³
¹*INAF/IASF-Bologna, Italy*; ²*University of Coimbra, Portugal*; ³*University of Ferrara, Italy*; ⁴*INAF/IASF-Palermo, Italy*; ⁵*ESRF, France*

R03-5 (09:10) High Voltage Optimization in CZT Detectors
K. Iniewski, S. Awadallah, F. Harris, H. Chen, G. Bindley, *Redlen Technologies, Canada*; P. Luke, *Lawrence Berkeley National Laboratory, USA*

NMR NSS/MIC/RTSD Joint Session

Tuesday, Oct. 21 10:30-12:30 Hall 2&3

Session Chairs: **Alberto Del Guerra**, University Pisa, Italy
Ralph James, Brookhaven National Laboratory,
 United States

NMR-1 (invited) Lost in Translation – from Basic Science to Clinical Reality

D. W. Townsend, *University of Tennessee, USA*

NMR-2 New Approaches Systems in Gamma-Ray Imaging Based on CdZnTe Detector

L. Verger, F. Mathy, O. Monnet, G. Montémont, V. Rebuffel
MINATEC, France

NMR-3 Towards Direct Conversion Detectors for Medical Imaging with X-Rays

M. Overdick, C. Bäumer, C. Herrmann, M. Simon, R. Steadman,
 G. Zeitler
Philips Research Europe, Germany

NMR-4 PICASSO: a Silicon Microstrip Detector for Mammography with Synchrotron Radiation

L. Rigon¹, F. Arfelli^{1,2}, A. Bergamaschi³, D. Dreossi^{1,4}, R. Longo^{1,2},
 R. H. Menk^{1,4}, B. Schmitt³, E. Vallazza¹, E. Castelli^{1,2}
¹INFN, Italy; ²University of Trieste, Italy; ³Paul Scherrer Institut,
 Switzerland; ⁴Sincrotrone Trieste SCpA, Italy

NMR-5 About the Properties of Position and Energy Sensitive Semiconductor Pixel Detectors of Timepix Type and Their Possible Biomedical Applications

S. Pospisil, J. Jakubek, *Institute of Experimental and Applied Physics,
 Czech Technical University in Prague, Czech Republic*; C. Leroy,
Montreal University, Canada

NMR-6 Basic Characteristics of a Newly Developed Si/CdTe Compton Camera for Medical Imaging

N. Kawachi¹, S. Watanabe¹, T. Satoh¹, K. Arakawa^{1,2}, S. Takeda³,
 S. Ishikawa³, H. Aono³, S. Watanabe³, M. Yamaguchi^{3,2},
 T. Takahashi³, H. Shimada², Y. Yoshida², Y. Suzuki², H. Sakurai²,
 T. Nakano²
¹Japan Atomic Energy Agency, Japan; ²Gunma University, Japan; ³Japan
 Aerospace Exploration Agency, Japan

R04 Imaging Systems 2

Tuesday, Oct. 21 13:30-15:10 Hall 1

Session Chair: **Csaba Szeles**, eV PRODUCTS a division of II-VI
 Incorporated, United States

R04-1 (13:30, invited) Photon Counting X-Ray CT by CdTe Detector Array

T. Aoki, W. Zou, Y. Onishi, H. Morii, T. Nakashima, V. A. Gnatyuk,
 Y. Neo, H. Mimura, *Shizuoka University, Japan*; Y. Tomita,
Hamamatsu Photonics K.K., Japan

R04-2 (13:50, invited) Application of CdTe and CZT Detectors in Ultra Fast Electron Beam X-Ray Tomography

U. Hampel, F. Fischer, *FZ Dresden-Rossendorf, Germany*

R04-3 (14:10) Micro Hard X-Ray Camera: from Caliste 64 to Caliste 256

A. Meuris, O. Limousin, F. Lugiez, O. Gevin, I. Le Mer, *CEA
 SACLAY, France*; M.-C. Vassal, R. Bocage, F. Soufflet, *3D PLUS,
 France*

R04-4 (14:25) Imaging with Pixellated CdZnTe Detectors for Use in a Portable Gamma-Ray Spectrometer (PorGamRayS)

M. R. Dimmock¹, R. J. Cooper¹, A. J. Boston¹, D. Cullen²,
 I. Lazarus³, P. J. Nolan¹, V. Pucknell¹, S. V. Rigby¹, P. Seller³,
 J. Simpson⁴

¹University of Liverpool, UK; ²University of Manchester, UK; ³STFC
 Rutherford Appleton Laboratory, UK; ⁴STFC Daresbury Laboratory, UK

R04-5 (14:40) Characterization of CZT Detectors for the ASIM Mission

C. Budtz-Jørgensen, I. Kuvvetli
National Space Institute Technical University of Denmark, Denmark

R04-6 (14:55) The Hard X-Ray Polarimeter Mission XPOL

H. S. Krawczynski, A. I. Garson, Q. Li, M. Beilicke, *Washington
 University in St. Louis, USA*; E. Wulf, J. Kurfess, E. Novikova, *Naval
 Research Laboratory, USA*; G. D. Geronimo, *Brookhaven National
 Laboratory, USA*; M. Baring, *Rice University, USA*; A. Harding,
NASA Goddard Space Flight Center, USA; J. Grindlay, J. S. Hong,
Harvard-Smithsonian Center for Astrophysics, USA

R05 Crystal Growth 1

Tuesday, Oct. 21 16:00-17:50 Hall 1

Session Chair: **Andrzej Mycielski**, Institute of Physics, Polish Acad-
 emy of Sciences, Warsaw, Poland

R05-1 (16:00, invited) Boron Oxide Encapsulated Vertical Bridgman Grown CdZnTe Crystals as X-Ray Detector Material

A. Zappettini¹, M. Zha¹, L. Marchini¹, D. Calestani¹, R. Mosca¹,
 E. Gombia¹, M. Zanichelli^{1,2}, M. Pavesi^{1,2}, N. Auricchio^{3,4}, E. Caroli^{3,4}
¹IMEM-CNR, Italy; ²University of Parma, Italy; ³INAF/IASF-Bo, Italy;
⁴University of Ferrara, Italy

R05-2 (16:20, invited) Vertical Bridgman Growth and Characterization of CdZnTe Grown for Radiation Detectors

K. G. Lynn, K. A. Jones, S. Swain, R. Soundararajan
Washington State University, USA

R05-3 (16:40, invited) How Can Crystal Growth Modeling Improve the Performance of CZT Radiation Detectors?

J. J. Derby, D. Gasperino, N. Zhang, A. Yeckel
University of Minnesota, USA

R05-4 (17:00, invited) Growth, Nanostructures, and Heat Treatment of High Resistivity Cd_{1-x}Zn_xTe Crystals

G. Li, S.-J. Shih, *University of Oxford, UK*

R05-5 (17:20) Dewetting During Crystal Growth of (Cd,Zn)Te:In under Microgravity

L. Sylla, A. Fauler, M. Fiederle, *Freiburger Materialforschungszentrum
 FMF - Albert-Ludwigs-Universität Freiburg, Germany*; T. Duffar,
Sciences et Ingénierie des Matériaux et Procédés, France; E. Dieguez,
Universidad Autonoma de Madrid, Spain; L. Zannotti, A. Zapettini,
Consiglio Nazionale delle Ricerche, Italy; G. Roosen, *Centre National
 de la Recherche Scientifique, France*

R05-6 (17:35) High Z Semiconductor Nanostructures: Potential for Detector Applications and Fabrication Approaches
M. Sochynskyi
Instituto de Microelectrónica de Madrid, Spain

R06 Defects 2

Wednesday, Oct. 22 08:00-09:45 Hall 1
Session Chair: **Pavel Hoschl**, Institute of Physics, Charles University in Prague, Czech Republic

R06-1 (08:00, invited) Electrical Activity of Deep Traps in High Resistivity CdTe
B. Fraboni, D. Cavalcoli, A. Cavallini, *University of Bologna, Italy*; P. Fochuck, *Chernivtsi National University, Ukraine*

R06-2 (08:20, invited) Studies of the Extended Defects in CdZnTe Radiation Detectors
A. E. Bolotnikov¹, S. Awadalla², S. Babalola¹, G. S. Camarda¹, H. Chen², Y. Cui¹, A. Hossain¹, H. Jackson¹, J. James¹, J. MacKenzie², G. Yang¹, R. B. James¹
¹Brookhaven National Laboratory, USA; ²Redlen Technologies Inc, Canada

R06-3 (08:40, invited) Investigation of Trapping in Semiinsulating CdTe by Photoelectric and Optical Methods
J. Franc, R. Grill, J. Kubát, H. Elhadidy, E. Belas, P. Hoschl, R. Fesh *Charles University in Prague, Faculty of Mathematics and Physics, Czech Republic*

R06-4 (09:00) Low Temperature Studies of Single Crystal Cd_{0.9}Zn_{0.1}Te
M. C. Veale, P. J. Sellin, A. Lohstroh, A. W. Davies, J. Parkin, P. Veeramani, G. Prekas, *University of Surrey, UK*; P. Seller, M. D. Wilson, *STFC, UK*

R06-5 (09:15) Multi-Component Diffusion in CdTe
R. Grill¹, P. Fochuk², E. Belas¹, J. Franc¹, P. Höschl¹, Y. Obedzynska², Y. Verzhak², A. E. Bolotnikov³, B. Nahlovsky¹, P. Moravec¹, O. Panchuk², R. B. James³
¹Charles University in Prague, Czech Republic; ²Chernivtsi National University, Ukraine; ³Brookhaven National Laboratory, USA

R06-6 (09:30) Compensation and Photosensitivity in CdTe Doped with Indium
V. Babentsov, *Institute of Semiconductor Physics, National Academy of Sciences of Ukraine, Ukraine*; J. Franc, *Faculty of Mathematics and Physics, Charles University, Czech Republic*; R. B. James, *Brookhaven National Laboratory, USA*

R07 Crystal Growth 2

Wednesday, Oct. 22 10:30-12:10 Hall 1
Session Chair: **Jeffrey J. Derby**, University of Minnesota, United States

R07-1 (10:30, invited) THM Growth and Characterization of 100 mm diameter CdTe Single Crystals
H. Shiraki¹, M. Funaki¹, Y. Ando¹, A. Tachibana¹, S. Kominami², R. Ohno¹
¹ACRORAD CO., LTD., Japan; ²Hitachi, Ltd., Japan

R07-2 (10:50, invited) Electrical Properties of Halogen-Doped CdTe Epitaxial Films on Si Substrates Grown by MOVPE
M. Niraula, K. Yasuda, A. Watanabe, Y. Kai, H. Ichihashi, W. Yamada, H. Oka, K. Matsumoto, T. Yoneyama, T. Nakanishi, D. Katoh, H. Nakashima, Y. Agata
Nagoya Institute of Technology, Japan

R07-3 (11:10) Investigation of Growth Conditions of CdTe Thick Films on Properties and Demands for X-Ray Detector Applications
R. Sorgenfrei, D. Greiffenberg, M. Fiederle
Albert-Ludwigs-Universität, Germany

R07-4 (11:25) Epitaxial Growth of Thick CdTe Films on Ge and Ge/Si Substrates by a Modified Close-Spaced Sublimation Method
Q. Jiang, A. W. Brinkman, B. K. Tanner, *Durham University, UK*; B. J. Cantwell, J. T. Mullins, A. Basu, *Durham Scientific Crystals Ltd, UK*

R07-5 (11:40) In-Situ Monitoring During Vapour Phase Growth of Bulk Crystals of Cadmium Zinc
J. T. Mullins, B. J. Cantwell, F. Dierre, A. Pym, A. Basu, *Durham Scientific Crystals Ltd., U.K.*; A. W. Brinkman, *University of Durham, U.K.*

R07-6 (11:55) Growth of High Crystalline Quality CdTe Layers on 100 Mm Diameter Ge Substrates for Room Temperature Radiation Detection
B. J. Cantwell, F. Dierre, M. Ayoub, J. T. Mullins, A. T. G. Pym, P. D. Scott, I. Radley, A. Basu, *Durham Scientific Crystals Ltd., U.K.*; Q. Jiang, A. W. Brinkman, *University of Durham, U.K.*

R08 Electrical Contacts

Wednesday, Oct. 22 13:30-15:35 Hall 1
Session Chair: **Paul J. Sellin**, University of Surrey, United Kingdom

R08-1 (13:30, invited) Origins of Bulk Leakage Current in CdZnTe Detectors
P. N. Luke, M. Amman
Lawrence Berkeley National Laboratory, USA

R08-2 (13:50) Signal Production in Compound Semiconductor Radiation Detectors Equipped with Rectifying and Non-Rectifying Electrodes
S. M. Midgley, *Monash University, Australia*
On behalf of the Instrumentation Group, Monash Centre for Synchrotron Science

R08-3 (14:05) Test of Novel Readout Contact Geometries for X-Ray and Gamma-Ray Spectroscopy and 3-D Localization
A. B. Garson III¹, M. Groza², Q. Li¹, V. Buliga², A. Burger², H. Krawczynski¹
¹Washington University in St. Louis, USA; ²Fisk University, USA

R08-4 (14:20) Surface Passivation Effects on CdZnTe Pixellated Array Device
P. Veeramani, M. E. Özsan, A. W. Davies, A. Lohstroh, J. Parkin, G. Prekas, P. J. Sellin, M. Veale, Y. Xu, *University of Surrey, UK*; M. Wilson, P. Seller, *Rutherford Appleton Laboratory, STFC Council, UK*

R08-5 (14:35) Measurements of Dark Current in CZT with Variable Flux
I. M. Blevis, J. P. Bouhnik
General Electric Healthcare, Israel

R08-6 (14:50) Long-Term Stability of CdTe P-I-N Detectors
A. K. Khusainov, T. A. Antonova, A. G. Ilves, V. V. Lysenko,
E. V. Fedorov
Petersburg Nuclear Physics Institute, Russian Federation

R08-7 (15:05) Study on Instability Phenomena in CdTe Diode-like Detectors
I. Farella^{1,2}, G. Montagna¹, A. M. Mancini², A. Cola¹
¹*Institute for Microelectronics and Microsystems (IMM/CNR), Italy;*
²*University of Salento, Italy*

R08-8 (15:20) A Novel Quasi-Ohmic Electrode of Semi-Insulating GaAs-Based Radiation Detector
F. Dubecký¹, P. Hubík², E. Gombia³, B. Zatlík¹, P. Boháček¹,
J. Huran¹
¹*Inst. of Electrical Engineering, Slovak Academy of Sciences, Slovakia;*
²*Inst. of Physics, Academy of Sciences of Czech Republic, Czech Republic;*
³*IMEM-CNR, Italy*

R09 Detector, ASIC and Electronics

Wednesday, Oct. 22 16:00-18:15 Hall 1
Session Chair: **Jose M. Perez**, CIEMAT, Spain

R09-1 (16:00, invited) Toward Ultimate Low-Noise CMOS Front-Ends for Room Temperature Semiconductor Radiation Detectors
G. Bertuccio^{1,2}, S. Caccia^{1,2}
¹*Politecnico di Milano, Italy;* ²*INFN, Italy*

R09-2 (16:20, invited) High Count-Rate CdTe and CZT Detector Structures for X-Ray Imaging
J. S. Iwanczyk¹, W. C. Barber¹, N. E. Hartsough¹, N. Malakhov^{1,2},
E. Nygard^{1,2}, J. C. Wessel^{1,2}
¹*DxRay, Inc., USA;* ²*Interon AS, Norway*

R09-3 (16:40) Development of 4-sides buttable CdTe-ASIC hybrid module for X-Ray FPD
M. Tamaki, Y. Mito, Y. Shuto, T. Kiyuna, M. Yamamoto, K. Sagae,
T. Kina, T. Koizumi, R. Ohno
Acronad Co.,Ltd, Japan

R09-4 (16:55) Demonstration of a New Readout for Pixelated Semiconductor Detectors
R. McLean, W. R. Cook, J. Burnham, S. Kaye, B. Kecman
California Institute of Technology, USA

R09-5 (17:10) Performance of 3-D CdZnTe Detectors Using BNL-H3D ASIC Readout System
C. Herman, Z. He, F. Zhang, *University of Michigan, USA;* G. De Geronimo, E. Vernon, J. Fried, *Brookhaven National Laboratory, USA*

R09-6 (17:25) Use of CZT as 3D Detectors for Gamma-Ray Astronomy
E. M. Quadri¹, E. Caroli², M. Alderighi¹, F. Casini¹, M. Fiorini¹,
M. Uslenghi¹, F. Schiavone², A. Donati², L. Natalucci³, P. Ubertini³,
S. del Sordo⁴, N. Auricchio⁵, P. Bastia⁶, A. Zappettini⁷
¹*inaf-iasf- mi, Italy;* ²*inaf-iasf- bo, Italy;* ³*inaf-iasf- rm, Italy;* ⁴*inaf-iasf- pa, Italy;* ⁵*Dip.Fisica Uni - fe, Italy;* ⁶*Thales-Alenia Space, Italy;* ⁷*CNR-IMEM, Italy*

R09-7 (17:40) High Count Rate Signal Processing for CdTe Photon-Counting X-Ray Imager
B. Shinomiya, A. Koike, H. Morii, Y. Neo, H. Mimura, T. Aoki
Shizuoka University, Japan

R09-8 (17:55, invited) Signal Reconstruction of Multi-Pixel Events for 3-D Wide Band-Gap Semiconductor Detectors
Z. He, F. Zhang, *The University of Michigan, USA*

R10 Alternative Detectormaterials

Thursday, Oct. 23 08:00-09:55 Hall 1
Session Chair: **Douglas S. McGregor**, Kansas State University, United States

R10-1 (08:00, invited) Development of Gamma Ray Imaging Systems Using Mercuric Iodide (HgI2)
L. van den Berg, R. D. Vigil, L. F. Bastian, R. A. Austin
Constellation Technology Corporation, USA

R10-2 (08:20, invited) TlBr, from Optical Material to Detector Grade Crystals
H. J. Sipila, *Oxford Instruments Analytical Oy, Finland*

R10-3 (08:40) Polarization Phenomena in TlBr Detectors
K. Hitomi^{1,2}, Y. Kikuchi², T. Shoji¹, K. Ishii²
¹*Tohoku Institute of Technology, Japan;* ²*Tohoku University, Japan*

R10-4 (08:55) Thallium Bromide Nuclear Radiation Detector Development
A. Churilov¹, H. Kim¹, G. Ciampi¹, L. Cirignano¹, W. Higgins¹,
F. Olschner², K. Shah¹
¹*Radiation Monitoring Devices Inc., USA;* ²*Cremat Inc., USA*

R10-5 (09:10) Defect Engineering of AISb for Improved Room-Temperature Gamma Radiation Detection
P. Erhart, D. Aberg, K. J. Wu, V. Lordi
Lawrence Livermore National Laboratory, USA

R10-6 (09:25) Performance of Monocrystalline Diamond Radiation Detectors Fabricated Using TiW, Cr/Au and a Novel Ohmic Pt/Au Electrical Contact.
A. Galbiati, S. Lynn, K. Oliver, *Research Laboratory, U.K.;* F. Schirru, T. Nowak, B. Marczevska, *Institute of Nuclear Physics, Poland;* J. A. Dueñas, R. Berjillos Morente, I. Martel Bravo, *University of Huelva, Spain*

R10-7 (09:40) Some Studies on Electrical Behaviour of Red Mercuric Iodide Single Crystals
S. L. Sharma, S. P. Behera, A. K. Thakur
Indian Institute of Technology, Kharagpur, India

R11 CdMnTe

Thursday, Oct. 23 10:30-11:50 Hall 1
Session Chair: **Lodewijk Van Den Berg**, Constellation Technology Corporation, United States

R11-1 (10:30, invited) (Cd,Mn)Te as a New Material for X-Ray and Gamma-Ray Detectors
A. Mycielski, M. Witkowska-Baran, D. Kochanowska, R. Jakiela, A. J. Szadkowski, B. Witkowska, W. Kaliszek, J. Domagala, E. Lusakowska, V. Domukhovski, K. Dybko, *Institute of Physics, Polish Academy of Sciences, Poland;* A. Witowski, *Warsaw University, Poland;* Y. Cui, R. James, *Brookhaven National Laboratory, USA;* A. Burger, M. Groza, *Fisk University, USA;* R. Sobolewski, A. Cross, J. P. Knauer, *University of Rochester, USA*

R11-2 (10:50) (Cd,Mn)Te Detectors for Characterization of X-Ray Emissions Generated During the Laser-Driven Fusion Experiments
A. Cross¹, J. Knauer¹, A. Mycielski², D. Kochanowska², M. Witkowska-Baran², R. Jakiela², J. Domagala², Y. Ciu³, R. James³, R. Sobolewski¹

¹University of Rochester, USA; ²Polish Academy of Sciences, Poland;

³Brookhaven National Laboratory, USA

R11-3 (11:05) Optical and Electrical Characterisation of Single Crystal CdMnTe for X-Ray Detection
J. M. Parkin, P. J. Sellin, A. Lohstroh, M. C. Veale, S. Gkoumas, G. Prekas, P. Veeramani, University of Surrey, UK; A. Mycielski, Polish Academy of Sciences, Poland; A. Burger, M. Groza, Fisk University, USA

R11-4 (11:20) Characterization and Development of (Cd,Mn)Te Gamma-Ray Detectors
Y. Cui, A. Hossain, A. Bolotnikov, G. Camarda, G. Yang, R. James, Brookhaven National Laboratory, USA; A. Mycielski, D. Kochanowska, M. Witkowska, Institute of Physics PAS, Poland

R11-5 (11:35) Information-Based Strategies for Candidate Identification in Ternary Semiconductors
K. F. Ferris, B.-J. M. Webb-Robertson, Pacific NW National Laboratory, USA; D. M. Jones, Proximate Technologies, LLC, USA

R12 Postersession

Thursday, Oct. 23 15:00-16:00 Hall 4&5 (Poster)

Session Chair: **Andrea Zappettini**, IMEM-CNR, Italy

Crystal Growth, Materials and Defects Characterization

R12-1 Influence of Annealing on Tellurium Precipitates in (Cd,Mn)Te:V Crystals
D. M. Kochanowska^{1,2}, A. Mycielski², M. Witkowska-Baran², A. Szadkowski², B. Witkowska², W. Kaliszek², V. Domukhowski²
¹Cardinal S. Wyszyński University, Poland; ²Institute of Physics, Polish Academy of Sciences, Poland

R12-2 Electrical Properties of In-Doped CdZnTe Crystals
P. Fochuk, O. Panchuk, Y. Verzhak, Chernivtsi National University, Ukraine; A. Bolotnikov, R. James, Brookhaven National Laboratory, USA

R12-3 Seeded Growth of Cadmium Zinc Telluride Crystals Using Modified Vertical Bridgman Method
Y. Xu^{1,2}, W. Jie¹, P. J. Sellin², T. Wang¹, W. Liu¹, P. Veeramani², M. Veale², J. Parkin²
¹Northwestern Polytechnical University, China; ²University of Surrey, UK

R12-4 Evaluation of Surface Recombination Velocity of CdTe Radiation Detectors by TOF Measurements
K. Suzuki, Hokkaido Institute of Technology, Japan; H. Shiraki, ACORAD Co., LTD., Japan

R12-5 Investigation of Charge Transport Properties of CdZnTe Detectors with Synchrotron X-Ray Radiation
G. Yang, A. Bolotnikov, G. Camarda, Y. Cui, A. Hossain, R. James, Brookhaven National Laboratory, USA

R12-6 Bridgman Growth and Defect Characterization of Large Diameter Mercury Indium Telluride Crystals for NIR Detectors
L. Wang, L. Fu, Y. Yang, W. Jie
State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, China

R12-7 IR Transmittance of CdTe and CdTe:In Crystals after Post-Growth Annealing
M. Bugár
Institute of Physics, Charles University, Czech Republic

R12-8 Relation Between the A-Center and the Resistivity of In-Doped CdZnTe Crystals
J. Rodríguez-Fernández^{1,2}, V. Carcelen², P. Hidalgo³, J. Piqueras³, N. V. Sochinskii¹, J. M. Perez⁴, E. Diéguez²
¹Instituto de Microelectrónica de Madrid, Spain; ²Universidad Autónoma de Madrid, Spain; ³Universidad Complutense de Madrid, Spain; ⁴Centro de investigaciones Energéticas, Medioambientales, Tecnológicas, Spain

R12-9 Dielectric Relaxation and Contactless Measurement of Resistivity of CdZnTe Crystals
V. K. Komar¹, S. L. Abashin², O. N. Chugai², A. S. Gerasimenko¹, V. M. Puzikov¹, S. V. Sulima¹, I. S. Terzin¹
¹Institute for Single Crystals of NASU, Ukraine; ²Zhukovsky National Aerospace University 'KhAI', Ukraine

R12-10 Optical and Electrical Characterization of Bi-Doped CdZnTe Single Crystals
J. Rodríguez-Fernández^{1,2}, V. Carcelen², P. Hidalgo³, J. Piqueras³, N. V. Sochinskii¹, J. M. Perez⁴, E. Diéguez²
¹Instituto de Microelectrónica de Madrid, Spain; ²Universidad Autónoma de Madrid, Spain; ³Universidad Complutense de Madrid, Spain; ⁴Centro de investigaciones Energéticas, Medioambientales, Tecnológicas, Spain

R12-11 Investigation the connection between growth conditions and quality of CZT crystals grown by the AHP method under high pressure.
V. D. Golyshev, S. V. Bykova, M. P. Marchenko, SPP "Thermo A" Ltd, Russia; M. D. Zenkova, Institute of Crystallography of RAS, Russia

R12-12 Characterization of Bulk and Surface Transport Mechanisms by Means of the Photocurrent Technique
M. Zanichelli^{1,2}, M. Pavesi^{1,2}, L. Marchini², A. Zappettini²
¹University of Parma, Italy; ²IMEM-CNR, Italy

R12-13 Electromigration of Fast Diffused Elements in CdTe
E. Belas, M. Bugár, R. Grill, J. Franc, P. Hlíděk, J. Procházka, P. Höschl
Institute of Physics, Czech Republic

R12-14 Progress in the Growth of CdMnTe by the MTPVT Method
P. D. Scott¹, M. Ayoub¹, B. J. Cantwell¹, P. Kaminski², R. Kozolowski², F. Dierre¹, A. T. G. Pym¹, J. T. Mullins¹, A. Owens³, I. Radley¹, A. Basu¹
¹Durham Scientific Crystals Ltd., U.K.; ²Institute of Electronic Materials Technology, Poland; ³ESA/ESTEC, The Netherlands

R12-15 Electrical Properties of Large Area CdTe Layers on Ge Substrates
M. Ayoub, B. J. Cantwell, F. Dierre, P. D. Scott, A. T. G. Pym, J. T. Mullins, I. Radley, A. Basu, Durham Scientific Crystals Ltd., U.K.; A. W. Brinkman, University of Durham, U.K.

R12-16 Defect Measurements of CdZnTe Detectors Using I-DLTS, TCT, I-V, C-V and γ -ray Spectroscopy
R. Gul^{1,2}, Z. Li¹, R. Rodreguiz², K. Keeter², A. Bolotnikov¹, R. James¹
¹Brookhaven National Laboratory, USA; ²Idaho State University, USA

Semiconductor Materials for Radiation Detection

R12-17 X-Ray Spectroscopy Based on Polycrystalline Diamond
M. Girolami, P. Allegrini, S. Salvatori, G. Conte, *Solid State and Diamond Electronics Lab, Italy*; E. Spiriti, *INFN - Section Roma Tre, Italy*; V. G. Ralchenko, *General Physics Institute, Russian Academy of Sciences, Russia*

R12-18 Relation of Compensation and Trapping in Large Bandgap Semiconductors: Examples of Tuning of a Defect System in CdZnTe

V. Babentsov, *Institute of Semiconductor Physics, National Academy of Sciences of Ukraine, Ukraine*; J. Franc, *Faculty of Mathematics and Physics, Charles University, Czech Republic*; R. B. James, *Brookhaven National Laboratory, USA*

R12-19 Evaluation of Concentration of Deep Levels in Semiinsulating CdTe by Photoconductivity and TEES

J. Kubát, H. Elhadidy, J. Franc, R. Grill, E. Belas, P. Hoschl
Charles University in Prague, Faculty of Mathematics and Physics, Czech Republic

R12-20 Synchrotron Studies of Carrier Physics in a CdZnTe Ring Detector

R. H. den Hartog, A. Owens, *ESA / ESTEC, The Netherlands*; A. G. Kozorezov, K. Wigmore, *Lancaster University, UK*; V. Gostilo, *Baltic Scientific Instruments, Latvia*

R12-21 Optimizing the Usage of Etchants for Chemical Polishing of CdZnTe and CdMnTe Detector Materials

A. Hossain¹, A. E. Bolotnikov¹, G. S. Camarda¹, Y. Cui¹, G. Yang¹, D. Kochanowska², M. Witkowska-Baran², A. Mycielski², R. B. James¹
¹Brookhaven National Laboratory, USA; ²Polish Academy of Science, Poland

R12-22 Bi-Doped CdZnTe as X-Ray and Gamma-Ray Counter

V. Carcelén¹, J. Rodríguez-Fernández^{1,2}, P. Hidalgo³, J. Piqueras³, N. V. Sochinskii², J. M. Perez⁴, E. Diéguez¹
¹Universidad Autónoma de Madrid, Spain; ²Instituto de Microelectrónica de Madrid, Spain; ³Universidad Complutense de Madrid, Spain; ⁴Centro de investigaciones Energéticas, Medioambientales, Spain

R12-23 Recent Results in TlBr Detector Crystals Performance

M. Shorohov^{1,2}, M. Kouznetsov³, I. Lisitsky³, V. Gostilo¹, A. Owens⁴
¹Bruker Baltic, Latvia; ²Institute of Solid State Physics University of Latvia, Latvia; ³GIREDMET, Russia; ⁴ESA/ESTEC, The Netherlands

R12-24 X-Ray Performance of Pixelated CdZnTe Detectors

M. D. Wilson, P. Seller, *STFC, UK*; J. Marchal, N. Tartoni, *Diamond Light Source, UK*; C. Hansson, R. Cernik, *University of Manchester, UK*; M. C. Veale, V. Perumal, P. Sellin, *University of Surrey, UK*

R12-25 Bismuth Tri-Iodide for Room Temperature Gamma-Ray Spectroscopy

A. T. Lintereur, W. Qiu, J. C. Nino, J. E. Baciaik
University of Florida, USA

R12-26 Photodetection Properties of Heavy Metal Iodides Heterostructures

M. E. Pérez Barthaburu, N. Sasen, S. Kröger, I. Aguiar, A. L. Noguera, L. Fornaro
Faculty of Chemistry, Uruguay

R12-27 Lead Borate Glass for Direct Radiation Detection

M. Rodriguez, I. Noguero, H. Bentos Pereira, L. Fornaro
Faculty of Chemistry, Uruguay

R12-28 Effect of Sulfur Treatment on the Gamma-Ray Detection Quality of Al/CdTe/Pt Schottky Diode

M. Yamazato¹, T. Yamauchi¹, R. Ohno², A. Higa¹
¹University of the Ryukyus, Japan; ²Acronad Co., Ltd., Japan

R12-29 Understanding of Si Microstrip Detectors

M. R. Patil, *Tata Institute Of Fundamental Research, India*
 On behalf of the EHEP group TIFR, Mumbai India .

R12-30 Spectroscopic Response of CZT Detectors Obtained by the Boron Encapsulated Vertical Bridgman Method

N. Auricchio¹, E. Caroli², A. Donati², L. Marchini³, M. Zanichelli^{3,4}, A. Zappettini³, M. Quadri²
¹University of Ferrara, Italy; ²INAF, Italy; ³CNR, Italy; ⁴University of Parma, Italy

R12-31 Characterization of AlSb Room Temperature Semiconductor Detectors Grown Using the Czochralski Growth Technique

B. W. Sturm, R. Nikolic, A. W. Coombs, K. J. J. Wu
Lawrence Livermore National Laboratory, USA

R12-32 Dose Rate Effects on the Performance of MWCVD Diamond Films as TL Gamma Radiation Dosimeter

E. Cruz-Zaragoza¹, G. Kitis², S. Gastélum³, C. Furetta¹, R. Meléndrez³, M. Barboza-Flores³
¹instituto de Ciencias Nucleares, Universidad Nacional Autónoma de Mexico, Mexico; ²Aristotle University of Thessaloniki, Greece; ³universidad de Sonora, Mexico

Strip, Pixel and Discrete Semiconductor Detectors

R12-33 Development of a 24x24 CZT-FEE Pixel Detector Block for the CSTD Project

J. Castilla¹, J. Carrascal¹, A. Bulycheva², M. D. Wilson³, V. Gostilo², P. Seller³, J. M. Perez¹
¹CIEMAT, Spain; ²Bruker Baltic, Latvia; ³RAL, UK

R12-34 Experimental setup for various detection tests of radiation semiconductor detectors

T. Slavicek, V. Linhart, P. Pridal
Institute of Experimental and Applied Physics, Czech Republic

R12-35 Induced Charge Dependence on Pixel Size and Small Pixel Effect in Ionization Detectors

V. V. Samedov
Moscow Engineering Physics Institute (State University), Russian Federation

R12-36 Relationship Between Position and Energy Resolution in Strip Detectors

V. V. Samedov
Moscow Engineering Physics Institute (State University), Russian Federation

R12-37 Charge Collection Characterization with Semiconductor Pixel Detector TimePix

M. Kroupa, J. Jakubek, V. Sopko
IEAP CTU in Prague, Czech Republic

R12-38 The Investigation of Polarisation in CdTe P-I-N Detectors of Nuclear Radiation

Y. Perukhov, V. Krop
Center of radiation and nuclear safety (RNIIRP), Latvia

R12-39 Radiation Resistant CVD-Diamond Detector

A. V. Astakhov, V. N. Borisenko, L. N. Davydov, V. I. Gritsyna, V. E. Kutny, D. V. Kutny, A. V. Rybka, D. V. Nakonechny, O. A. Opalev, V. E. Strelnitsky, K. V. Kutny
NSC KIPT, Ukraine

R12-40 Simulation Studies of CdTe Pixel Detectors

K. E. Karafasoulis, C. P. Lambropoulos, *Technological Educational Institute of Halkis, Greece*; V. A. Gnatyuk, S. Levytskyi, *National Academy of Sciences of Ukraine, Ukraine*

R12-41 On-Chip Tetrode JFET for RT X-Ray Spectroscopy: Theory and New Results

A. Fazzi, R. Boggini, L. Corli, S. Dalla Stella, P. Silocchi, V. Varoli
Politecnico di Milano, Italy

R12-42 Resolution Degradation Study in Pixellated CZT Detectors Through System Modeling

J. Kim, W. Kaye, F. Zhang, Z. He
University of Michigan, USA

R12-43 Performance Test of Silicon PIN Diodes with Radioactive Sources

D. H. Son, H. J. Hyun, D. H. Kah, H. D. Kang, H. O. Kim, Y. I. Kim, H. J. Kim, S. H. Lee, H. Park
Kyungpook National University, Korea

R12-44 Fabrication and Performance Test of Silicon Stripixel Sensors

S. Nam, H. Y. Lee, J. Lee, N. H. Lee, I. H. Park
Ewha Womans University, Korea

R12-45 Signals from Guard Rings on Side Wall of CZT Detectors

L. Zhang, *NUCTECH COMPANY LIMITED, China*

R12-46 Silicon Tracking Detector for Antihydrogen Annihilation Detection in the ALPHA -Experiment

P. I. Pusa, *University of Liverpool, U.K.*
On behalf of the ALPHA collaboration

R12-47 Advanced Simulation of Induced Signals in X-Ray Detectors

B. D. Kreisler, G. Anton, J. R. Durst, T. Michel
ECAP, University of Erlangen, Germany

R12-48 COBRA – an Ultra-Low-Background Application of CdZnTe

T. Köttig, *TU Dortmund, Germany*
On behalf of the COBRA Collaboration

R12-49 Characterization of Medipix2 Assemblies with CdTe Detector with Synchrotron Radiation

D. Greiffenberg, A. Zwerger, A. Fauler, M. Fiederle, *PD Dr. Michael Fiederle, Germany*; A. Cecilia, T. dos Santos Rolo, D. Pelliccia, A. Rack, P. Vagovic, T. Baumbach, *Prof. Tilo Baumbach, Germany*

R12-50 CZT Pixel Detector Arrays for Multi-Energy, High-Rate Photon Counting

M. Clajus, V. B. Cajipe, S. Hayakawa, T. O. Tumer
NOVA R&D, Inc., USA

R12-51 Investigation of Pixellated TlBr Detectors Using Digital Signal Processing Techniques

B. Dönmez, Z. He, *The University of Michigan, USA*

R12-52 Signal Linearity of 3-D CZT and HgI₂ Semiconductor Detectors

W. R. Kaye, Z. He, F. Zhang, *University of Michigan, USA*

R12-53 Multiple-Pixel-Event Calibration for Semiconductor Detectors with Simple Pixels

W. R. Kaye, F. Zhang, Z. He, *University of Michigan, USA*

R12-54 Experimental Study on Spectroscopic Performance of CZT Strip Detectors

S.-H. Park, H. S. Kim, H. S. Park, J. H. Lee, J. H. Ha
KAERI, Korea

R12-55 Event Classification in 3D Position Sensitive Semiconductor Detectors

S. E. Anderson, Z. He, S. F. Nowicki
University of Michigan, USA

R12-56 Performance of the RENA-3 IC with Position-Sensitive CZT and CdTe Detectors

V. B. Cajipe¹, R. T. Skelton², M. Clajus¹, S. Hayakawa¹, J. L. Matteson¹, R. E. Rothschild², T. O. Tumer¹, A. Volkovskii¹
¹NOVA R&D, Inc., USA; ²University of California, San Diego, USA

R12-57 Preliminary Results from a Novel Energy-Resolved Photon-Counting CdTe Pixel Sensor

L.-J. Meng, *University of Illinois at Urbana-Champaign, USA*; S. Konstantinos, T. Schulman, *Oy Ajat, Finland*

R12-58 Development of Silicon-on-Insulator Sensor for X-Ray Free-Electron Laser Applications

T. Kudo¹, T. Hatsui¹, Y. Arai², Y. Ikegami², Y. Unno², T. Tsuboyama², S. Terada², M. Hazumi², T. Kohriki², H. Ikeda³, K. Hara⁴, A. Mochizuki⁴, H. Miyake⁴, H. Ishino⁵, Y. Saegusa⁶, S. Ono⁶, M. Ohno⁷, K. Fukuda⁷, H. Komatsubara⁸, J. Ida⁷, H. Hayashi⁷, Y. Kawai⁷, M. Okihara⁸, T. Ishikawa¹
¹RIKEN, Japan; ²KEK, High Energy Accelerator Research Organization, Japan; ³JAXA, Japan; ⁴Univ. of Tsukuba, Japan; ⁵Okayama University, Japan; ⁶Tokyo Institute of Technology, Japan; ⁷Oki Electric Industry Co. Ltd., Japan; ⁸Miyagi Oki Electric Industry Co. Ltd., Japan

R12-59 Medipix 2 Detector Performance Comparison: Si, GaAs and CdTe

S. Procz¹, J. Lübke², A. Zwerger¹, M. Mix², M. Fiederle¹
¹Albert-Ludwigs-Universität Freiburg, Germany; ²Uniklinikum Freiburg, Germany

R12-60 Single Crystal CVD Diamond as a Semitransparent Synchrotron X-Ray Beam Monitor

J. Morse, M. Salomé, *European Synchrotron Radiation Facility, France*; E. Berdermann, M. Pomorski, *Gesellschaft für Schwerionenforschung, Germany*; P. Ilinski, *Deutsches Elektronen-Synchrotron, Germany*

R12-61 Measurements with a Hybrid Detector Prototype Composed of a MOS CCD and a CZT Spectrometer

N. Auricchio^{1,2}, E. Caroli², S. del Sordo², L. Abbene³, R. Ambrosi⁴, A. F. Abbey⁴, C. Brown⁴
¹University of Ferrara, Italy; ²INAF, Italy; ³University of Palermo, Italy; ⁴University of Leicester, UK

R12-62 Investigation of Polarization Effect in Thallium Bromide Detectors

S. F. Nowicki, Z. He, *University of Michigan, USA*

Properties of Electrical Contacts and Device Technology

R12-63 The Effects of Contacts on the Electrical Measurement of Semi-Insulating CdZnTe

G. Zha, W. Jie, L. Fu, T. Wang, Y. Xu
Northwestern Polytechnical, China

R12-64 Technique of Making Good Electrical Contacts to High-Resistivity (Cd,Mn)Te Crystals

M. Witkowska-Baran¹, A. Mycielski¹, D. M. Kochanowska², A. J. Szadkowski¹, B. Witkowska¹, W. Kaliszek¹, E. Łusakowska¹, R. Jakiela¹, V. Domukhowski¹

¹*Institute of Physics Polish Academy of Sciences, Poland;* ²*Cardinal S. Wyszyński University, Poland*

R12-65 Prototype of Si(Li) Detector for EXL Experiment of FAIR Project at GSI

A. K. Khusainov, Y. I. Gusev, A. K. Pustovojt, D. M. Seliverstov
Petersburg nuclear physics institute., Russian Federation

R12-66 Higher Voltage X- and γ -Ray Schottky Diode Detectors with Low Leakage Current

L. A. Kosyachenko, V. M. Sklyarchuk, O. F. Sklyarchuk, O. L. Maslyanchuk, *Yuri Fedkovych National University of Chernivtsi, Ukraine;* V. A. Gnatyuk, T. Aoki, *Research Institute of Electronics, Shizuoka University, Japan*

R12-67 Low-Resistivity CdTe-Based Schottky Diodes for X- and γ -Ray Detectors

L. A. Kosyachenko, O. L. Maslyanchuk, I. M. Rarenko, V. M. Sklyarchuk, O. F. Sklyarchuk, *Yuri Fedkovych National University of Chernivtsi, Ukraine;* V. A. Gnatyuk, T. Aoki, *Research Institute of Electronics, Shizuoka University, Japan;* C. P. Lambropoulos, *Technological Educational Institute of Halkis, Greece*

R12-68 Study of Surface Treatment Effects on the Metal-CdZnTe Interface

L. Marchini¹, A. Zappettini¹, E. Gombia¹, R. Mosca¹, M. Pavesi^{2,1}
¹*IMEM-CNR, Italy;* ²*University of Parma, Italy*

R12-69 Pockels Effect in Pixelated CdTe Detectors

A. Cola¹, I. Farella^{1,2}
¹*Institute for Microelectronics and Microsystems (IMM/CNR), Italy;* ²*University of Salento, Italy*

R12-70 Determination of Compositional Profiles and Thicknesses of the Etched Surfaces of CdTe and Cd_{0.9}Zn_{0.1}Te by Spectroscopic Ellipsometry

I. E. Karmakov, A. A. Konova
Sofia University, Faculty of Physics, Bulgaria

Radiation Damage, Long-Term Stability and Environmental Effects

R12-71 Performance of GaN Ionizing Detector and Its Radiation Hardness

S. Narita¹, Y. Chiba¹, D. Ichinose¹, T. Hitara², E. Yamaguchi^{2,3}, Y. Sakemi⁴, M. Itoh⁴, H. Yoshida⁴, J. Kasagi⁵
¹*Iwate University, Japan;* ²*ALGAN K.K., Japan;* ³*Doshisha University, Japan;* ⁴*Cyclotron and Radioisotope Center, Tohoku University, Japan;* ⁵*Laboratory for Nuclear Science, Tohoku University, Japan*

R12-72 Temperature Dependence in the Long Term Stability of the TlBr Detector

F. E. da Costa, M. M. Hamada
Instituto de Pesquisas Energeticas e Nucleares - IPEN/CNEN-SP, Brazil

R12-73 Signal-to-Noise Ratio Measurement and Radiation Damage Study of Silicon PIN Diode with a Proton Beam

Y. I. Kim, H. D. Kang, H. J. Kim, H. Park, D. H. Kah, H. J. Hyun, D. H. Son, *Kyungpook National University, Korea;* K. R. Kim, *PEFP, KAERI, Korea*

R12-74 Investigation of Swift Heavy Ion Irradiation Effect on Au/CdZnTe/In Detector

P. Veeramani¹, M. Haris¹, D. Kanjilal², K. Asokan², S. Moorthy Babu¹
¹*Anna University, India;* ²*Nuclear Science Centre, India*

R12-75 Amorphous DLC Films as Constructive Elements for Medical Radiation Detectors

D. Adlienė, I. Cibulskaitė, J. Laurikaitienė, A. Guobienė, Š. Meškinis
Kaunas University of Technology, Lithuania

Imaging Systems for Med., Astrophys., N-D Testing & Cargo Mon. Apps.

R12-76 A Silicon Pixel Detector System as an Imaging Tool for Proton Beam Characterization

M. G. Bisogni^{1,2}, G. A. P. Cirrone³, G. Cuttone³, A. Del Guerra^{1,2}, P. Lojacono^{3,4}, M. A. Piliero^{1,2}, N. Randazzo⁵, F. Romano^{3,4}, V. Rosso^{1,2}, V. Sipala⁵, A. Stefanini^{1,2}, S. Vecchio^{1,2}
¹*University of Pisa, Italy;* ²*Sezione di Pisa, Italy;* ³*Laboratori Nazionali Del Sud, Italy;* ⁴*University of Catania, Italy;* ⁵*Sezione di Catania, Italy*

R12-77 Experimental Measurements for the SiliPET Project: a Small Animal PET Scanner Based on Stacks of Silicon Detectors

N. Auricchio^{1,2}, G. Di Domenico^{1,2}, R. Malaguti², L. Milano^{1,2}, G. Zavattini^{1,2}, M. Ionica², E. Fiandrini^{2,3}, N. Zorzi⁴, M. Boscardin⁴
¹*University of Ferrara, Italy;* ²*INFN, Italy;* ³*University of Perugia, Italy;* ⁴*ITC- Fondazione Bruno Kessler, Italy*

R12-78 Imaging Performance of Polycrystalline Mercuric Iodide Films on CMOS Readout Arrays

N. E. Hartsough, J. S. Iwanczyk, E. Nygard, N. Malakhov, W. C. Barber, T. Gandhi
DxRay, Inc., USA

R12-79 Improved Readout IC for Multi-Energy X-Ray Imaging with Linear CZT Pixel Arrays

M. Clajus, V. B. Cajipe, S. Hayakawa, T. O. Tumer
NOVA R&D, Inc., USA

R12-80 Medipix2: Comparison of Different Semiconductor Materials (Si, CdTe, GaAs) with Conventional Medical Imaging Systems

J. Lübke, M. Mix, *University Hospital Freiburg, Germany;* S. Procz, A. Zwerger, M. Fiederle, *University of Freiburg, Germany*

Spectrometer Sys. for Homeland Sec., Nucl. Inspections Safeguards...

R12-81 Development of a GMCA (Gamma analysis digital filter and Multi Channel Analyzer)

M. Dambacher¹, A. Zwerger², M. Fiederle¹, U. Stöhlker³
¹*Freiburger Materialforschungszentrum, Germany;* ²*Physikalisches Institut, Germany;* ³*Bundesamt für Strahlenschutz, Germany*

R12-82 Preliminary Evaluation of a Portable Handheld Combined Gamma and Neutron Directional Isotopic Identifying Detector

R. B. Hayes, *Remote Sensing Laboratory, USA*
On behalf of the Remote Sensing Laboratory

R12-83 Portable 8 Channel DAQ System for Cd(Zn)Te Sensors
D. S. Hatzistratis, C. P. Lambropoulos, *Technological Educational Institute of Halkis, Greece*; V. A. Gnatyuk, *National Academy of Science of Ukraine, Ukraine*; C. Potiridis, *Greek Atomic Energy Commission, Greece*

R12-84 Comparison of Different Gamma-Ray Detectors with Respect to Energy Resolution and Performance
E. Hamann¹, M. Dambacher¹, A. Zwerger², M. Fiederle¹, U. Stöhlker³
¹Freiburger Materialforschungszentrum, Germany; ²Physikalisches Institut, Germany; ³Bundesamt für Strahlenschutz, Germany

R12-85 Nuclear Spent Fuel Verification with Using of Miniature CdZnTe Detectors
V. Ivanov, L. Aleksejeva, P. Dorogov, A. Loutchanski
ZRF RITEC SIA, Latvia

R12-86 Multiple Energies Passive Computer γ Tomography of Nuclear Fuel
O. V. Maslov, M. V. Maksimov, V. O. Davydov
Odessa National Polytechnic University, Ukraine

R12-87 The Improved CdZnTe Dose Rate Probe
O. V. Maslov, M. V. Maksimov, L. L. Kalnev
Odessa National Polytechnic University, Ukraine

Detector/ASIC Hybridization, Interconnects and Electronics

R12-88 Readout Electronics Setup for the CSTD Project
J. Carrascal, J. Castilla, J. C. Oller, J. M. Perez
CIEMAT, Spain

R12-89 Synchronous Reset in Pulsed Charge Restoration Detector Arrays
M. A. Mikhailov, L. Pantelev, *INRNE-BAS, Bulgaria*

R12-90 Status Report of Some Elements of the HEXITEC CZT Collaboration
P. Seller, *Science + Technology Facilities Council, UK*
On behalf of the HEXITEC collaboration

R12-91 Readout ICs for High Spatial Resolution Slot-Scan Imaging with CZT or CdTe Pixel Arrays
V. B. Cajipe¹, M. A. Capote², G. Cardoso², M. Clajus¹, S. Hayakawa¹, M. Lee², T. O. Tumer², A. Volkovskii¹
¹NOVA R&D, Inc., USA; ²Aguila Technologies, USA

Scintillator/Semiconductor Array Hybrids

R12-92 Test of PDE Enhanced SiPM with Micro-Lens for PET-MRI Applications
C. H. Lee, G. Cho, H.-T. Kim, J.-K. Kim
Korea advanced institute of science and technology, Korea

R13 CZT Detectors

Thursday, Oct. 23 16:30-18:30 Hall 1
Session Chair: **Michael Fiederle**, Freiburg Materialforschungszentrum, Germany

R13-1 (16:30, invited) Electric Charge Collection in CdZnTe Detectors
A. Burger, *Fisk University, USA*

R13-2 (16:50, invited) X-Ray Irradiation Effects on the Trapping Properties of Cd_(1-x)Zn_xTe Detectors
A. Cavallini, B. Fraboni, L. Pasquini, *Department of Physics University of Bologna, Italy*; P. Siffert, *EURORAD, France*

R13-3 (17:10) Fast Neutron Damage of a Pixellated CdZnTe Gamma Ray Spectrometer
Y. Eisen, A. Shor, *Soreq NRC, Israel*

R13-4 (17:25) Solder Mask Encapsulation on CdZnTe Surface for Radiation Detector Applications
P. H. Lu, H. Chen, G. Bindley, *Redden Technologies, Canada*

R13-5 (17:40) Multienergy Detection Using CdZnTe Semiconductor Detectors
L. Zhang, *NUCTECH COMPANY LIMITED, China*

R13-6 (17:55) Detection Efficiency of 3-D Position-Sensitive CdZnTe Gamma-Ray Detectors
F. Zhang, Z. He, *The University of Michigan, USA*

R13-7 (18:10, invited) Alpha and Neutron Detection at the Outer Electrode Surfaces of Composite Polycrystalline B, BN, B₄C and LiF Aided by Ionized Air Produced by Alpha or Neutron Radiation
M. Schieber, M. Roth, A. Zuck, O. Khakhan, A. Fleider
Hebrew University of Jerusalem, Israel

R14 Pixel Detectors CdTe

Friday, Oct. 24 08:30-10:05 Hall 1
Session Chair: **Michael Campbell**, CERN, Switzerland

R14-1 (08:30, invited) Intrinsic Properties of Semiconductor Detectors Studied with Charged Particles Using Timepix Pixel Devices in Tracking Mode
S. Pospisil¹, P. Cermak¹, M. Fiederle², J. Jakubek¹, C. Leroy³
¹Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic; ²Albert-Ludwigs-Universität Freiburg, Germany; ³Montreal University, Canada

R14-2 (08:50) 3D Semiconductor Detectors for Medical Imaging : Simulation and Design
M. Ruat, E. Gros D'Aillon, L. Verger, *MINATEC, France*

R14-3 (09:05) Performance of double-sided CdTe strip detectors for gamma-ray imaging and spectroscopy
S.-N. Ishikawa, S. Watanabe, H. Aono, M. Kokubun, H. Odaka, S. Sugimoto, S. Takeda, T. Takahashi, *ISAS/JAXA, Japan*; S. Okuyama, K. Nakazawa, *University of Tokyo, Japan*; T. Tanaka, *SLAC, USA*

R14-4 (09:20) Pixelization of Thick Diffused Junctions on CdTe
J. J. Kalliopuska¹, S. Nenonen², H. Sipilä², H. Andersson², S. Vähänen¹, S. Eränen¹, L. Tlustos³
¹VTT, Finland; ²Oxford Instruments Analytical Oy, Finland; ³CERN, Switzerland

R14-5 (09:35) The Characterization of CdTe TimePix Device and the Study of its Capabilities for the Double Beta Decay Measurements
P. Cermak, I. Stekl, V. Bocarov, J. Jakubek, S. Pospisil, *Czech Technical University, Czech Rep.*; M. Fiederle, *Albert-Ludwigs-Universität, Germany*; K. Zuber, *Technische Universität, Germany*

R14-6 (09:50) Comparison of CdTe Pixel Detectors with Different Pixel Sizes from 55 up to 220 μ m
M. Fiederle, A. Fauler, A. Zwerger
Albert-Ludwigs-Universität Freiburg, Germany

R15 Silicon and Neutron Detectors

Friday, Oct. 24 10:30-11:40 Hall 1
Session Chair: **Paul Siffert**, Eurorad, France

R15-1 (10:30, invited) Recent Progress with Silicon Detector Systems for Spectroscopic Imaging Close to Room Temperature
L. W. J. Strueder, *MPI für extraterrestrische Physik, Germany*
On behalf of the MPI Semiconductor Laboratory and PnSensor GmbH

R15-2 (10:50, invited) Solid State Neutron Detectors
D. S. McGregor, *Kansas State University, USA*

R15-4 (11:10) Development of Radiation Detectors Based on Semi-Insulating Silicon Carbide
F. H. Ruddy, J. G. Seidel, R. W. Flammang, *Westinghouse Electric Company, USA*; R. Singh, J. Schroeder, *GeneSiC Semiconductor Inc., USA*

R15-5 (11:25) Silicon Strip Detector with a Polyethylene Converter as a Position Sensitive Detector for Fast Neutrons
I. E. Anokhin, O. S. Zinets
Institute for Nuclear Research, Ukraine

R16 Spectrometers

Friday, Oct. 24 13:30-15:25 Hall 1
Session Chair: **Alan Janos**, DNDO, United States

R16-1 (13:30, invited) Spectroscopic Detectors for the Monitoring of the Environmental Radioactivity
U. Stoehliker, *Bundesamt für Strahlenschutz, Germany*

R16-2 (13:50, invited) The GammaTracker Handheld Radioisotope Identifier
C. E. Seifert, *Pacific Northwest National Laboratory, USA*

R16-3 (14:10) High Resolution , Portable Gamma Spectrometer Not Requiring Liquid Nitrogen Cooling for Field Use for Nuclear Security and Safeguards
A. K. Khusainov, T. T. Antonova, V. V. Lysenko, V. G. Muratov, A. M. Pirogov, V. A. Fedorov, *Petersburg nuclear physics institute, Head of Laboratory, Russian Federation*; R. D. Arlt, *International Atomic Energy Agency, Austria*; G. D. Camarda, R. B. James, *Brookhaven National Laboratory, USA*

R16-4 (14:25) Hand-Held Gamma-Ray Spectrometer Based on Frisch-Ring CdZnTe Detectors
Y. Cui, A. Bolotnikov, G. Camarda, A. Hossain, G. Yang, R. B. James, G. De Geronimo, P. O'Connor, *Brookhaven National Laboratory, USA*; A. Kargar, M. J. Harrison, D. S. McGregor, *Kansas State University, USA*

R16-5 (14:40) Detecting Shielded Sources in Natural Background Using 3-D CZT Detectors
Z. He, W. Wang, F. Zhang, *The University of Michigan, USA*

R16-6 (14:55) Sensitivity-Optimized Wide-Field Imaging with a CZT-Based Coded Mask Imager
R. T. Skelton, J. L. Matteson, *University of California, San Diego, USA*; B. Cardoso, *Aguila Technologies, Inc., USA*

R16-7 (15:10) Searching for Ultra-Rare Decays with CdZnTe Detectors
O. Schulz, *TU Dortmund, Germany*
On behalf of the COBRA Collaboration

R17 Pixel Detectors CZT

Friday, Oct. 24 16:00-17:50 Hall 1
Session Chair: **Stanislav Pospisil**, Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic

R17-1 (16:00, invited) Recent Developments on High Spatial Resolution CdZnTe Pixel Detectors
J. M. Perez, *CIEMAT, Spain*

R17-3 (16:20) HEXIS Module Performance with RENA-3 ASIC Readout
R. E. Rothschild, J. L. Matteson, M. R. Pelling, R. T. Skelton, S. Suchy, T. Gasaway, F. Duttweiler, P. Leblanc, *University of California, San Diego, USA*; T. Tumer, V. Cajipe, M. Clajus, *Nova R&D Inc., USA*

R17-4 (16:35) Investigation on Pixellated CZT Detectors Coupled with a Low Power Readout ASIC
L. Abbene¹, S. Del Sordo², G. Agnetta², B. Biondo², A. Mangano², F. Russo², E. Caroli², J. B. Stephen², G. Ventura², G. Bertuccio³, G. Raso¹
¹*DiFeT Università di Palermo, Italy*; ²*IASF-INAF, Italy*; ³*Politecnico di Milano, Italy*

R17-5 (16:50) Fabrication and Test of Modified Horizontal Bridgman CZT Detectors with Different Thicknesses and Pixel Pitches
Q. Li¹, J. Martin¹, A. Garson¹, M. Beilicke¹, I. Jung², M. Groza³, A. Burger³, G. De Geronimo⁴, H. Krawczynski¹
¹*Washington University in St. Louis, USA*; ²*Universität Erlangen-Nürnberg, Germany*; ³*Fisk University, USA*; ⁴*Brookhaven National Laboratory, USA*

R17-6 (17:05) Two-Dimensional Detector Arrays for Gamma Spectroscopy
M. Clajus, V. B. Cajipe, T. O. Tumer, A. Volkovskii
NOVA R&D, Inc., USA

R17-7 (17:20) Energy Resolution Limiting Factors of Multi-Pixel Events in 3D Position Sensitive CZT Gamma-Ray Spectrometer
W. Li, Y. Du, B. D. Yanoff, J. S. Gordon
GE Global Research, USA

R17-8 (17:35) Charge Collection Studies of a High Resolution CZT-Based Detector for PET
J. L. Matteson¹, R. T. Skelton¹, A. A. Deal¹, E. A. Stephan¹, F. Duttweiler¹, T. M. Gasaway¹, Y. Gu^{2,3}, C. S. Levin²
¹*University of California, San Diego, USA*; ²*Stanford University School of Medicine, USA*; ³*Stanford University, USA*

Special Focus Workshops are intended to have a focused discussion among experts on interdisciplinary topics. The following special focus workshops will be organized to address topics of current instrumentation research. The Joint Workshop on Detector Development for Future Particle Physics and Photon Science Experiments will take place at DESY Hamburg before the Conference (Oct. 16-17), and the Workshop on “Hybrid Imaging with MR-PET” following the Conference at the Forschungszentrum Jülich (Oct. 27-28).



Norbert Wermes



Wim de Boer

Workshop Co-Chairs

Micro-Pattern Gas and Silicon Detectors for Tracking

Saturday, October 18, 2008 09:00 – 17:00

Location: International Conference Center, Conference 2

Organizing committee:

John Jaros, SLAC, USA

Erik Heijne, CERN, Switzerland

Klaus Desch, University Bonn, Germany

Charged particle tracking in future particle physics experiments is faced with many, sometimes contradictory, requirements, such as high space point precision, good radiation hardness, high rate capability, low-power consumption or low-material budget, precision alignment of large, low-mass systems. Both silicon detectors and gaseous tracking detectors are under constant development to meet these challenges. R&D is being performed to prepare for the LHC-upgrade detectors and for the future linear collider, and also for experiments in neutrino physics, particle astrophysics, and future experiments at moderate energies requiring extremely high sensitivity or high precision.

The workshop will be a forum to survey some of the major issues in charged particle tracking, with overview talks on both silicon and gaseous tracking devices.

Ideas for the future of tracking will be discussed by specialists in gaseous and semiconductor tracking detectors. The invited speakers will give their vision. Attendees are invited to participate in a lively discussion, for which 2 hours have been reserved. It is also possible for attendees to show 2 or 3 slides, with prior agreement of the organizers.

Preliminary program:

1. TPC for Linear Colliders, Takeshi Matsuda, KEK
2. Low mass tracking for e+e-, Tim Nelson, SLAC
3. Tracking challenges for future hadron colliders, José Garcia, Univ. Genève
4. Challenges of forward detectors, Marcel Vos, U Valencia
5. Discussion “Low mass tracking systems”, Hiro Aihara, U Tokyo
6. Is there need for sub-micron precision? tba
7. Gaseous vertex detectors-science or fiction? Harry van der Graaf, NIKHEF
8. 3D vertex detectors, John Jones, U Princeton
9. Discussion “New vertex detectors”, Jim Brau, U Oregon
10. Exotic TPCs, Dave Nygren, LBNL
11. Vision on future detectors, Marcel Demarteau, FNAL

Micro and Nano Dosimetry

Sunday, October 19, 2008 08:30-12:30

Location: International Conference Center, Seminar 5 & 6

Organizing committee:

Peter Beck, Austrian Research Centers, Austria

Anatoly Rosenfeld, University of Wollongong, Australia

Hadron therapy allows small volume dose deposition by using the large ionisation increase from the Bragg peak, especially for heavy ions. However, to make certain the tumour is really hit requires precise simulations.

The goal of the workshop is to provide a forum for interested participants to discuss in a convivial way the progress in the field and to exchange recent experiences.

The topics include:

- Simulation of radiation effects in tissue and silicon
- Code validation by using microdosimetric quantities
- Comparison of measurements and simulations in
 - heavy ion heavy ion irradiation (silicon & tissue)
 - microdosimetric measurements (2µm sensitive volume)
 - Monte Carlo simulation (e.g., FLUKA, Geant4)

Detector Developments for the sLHC

Sunday, October 19, 2008 13:30-17:30

Location: International Conference Center, Seminar 5 & 6

Organizing committee:

Mara Bruzzi, University and INFN of Florence, Italy

Michael Moll, CERN, Switzerland

One of the biggest challenges with respect to the design and construction of experiments for the luminosity upgrade of the LHC (Super-LHC or sLHC) is the development of high granularity semiconductor detectors for the inner tracking layers. These devices will face radiation levels of

up to 10¹⁶ particles/cm²; a fluence well beyond the radiation tolerance of present silicon detector technology.

This half day workshop aims to present the challenges arising from the luminosity upgrade (occupancy, radiation levels, etc.) and the latest developments for radiation hard tracking detectors. The workshop will cover the following topics:

- Radiation tolerant detector concepts
- Radiation tolerant sensor materials
- Detector interconnect technologies
- Readout and Front-end electronics
- Material, Cooling and Integration
- Triggering
- Simulations

ATCA/μTCA for Physics

Saturday, October 18, 2008 08:00-18:00
Sunday, October 19, 2008 08:30-17:00

Location: International Conference Center, Conference 5 & 6
Organizing committee:

- Patrick Le Dú, IRFU CEA Saclay, France
- Ray Larsen, SLAC, Stanford, USA
- Vincent Pavlicek, FNAL, Batavia, USA

The ATCA and μTCA system is a unique open standard card-modular hardware and software architecture that has attracted the attention of the physics community for application to machine controls and instrumentation as well as experiment controls and high speed data acquisition. ATCA (Advanced Telecommunications Computing Architecture or Advanced TCA) is a modular crate (or shelf as it is called in the Telco world) architecture the size of a VXI crate but with the unique feature that all inter-board backplane and inter-crate communications is via serial links with speeds as high as 2.5 Gbps for a single link and 10 Gbps combining four links. Micro-TCA (μTCA) is a smaller chassis embodiment which uses the ATCA standard daughter-cards, called AMCs (Advanced Mezzanine Card) which have similar features to the large carrier card in that they are hot-swappable and can employ N+1 redundancy in power systems, crate controllers and switching hubs for extremely high crate availability of 0.99999 (5-nines). This level of availability (equivalent to allowable average downtime of five minutes per year) is achieved by a combination of hardware redundancy Intelligent Platform Management (IPM) diagnostic hardware and software, and hot-swap capability at both Carrier and AMC card levels. Shelf availability of 5-nines is judged to be essential for the new ILC accelerator controls and instrument systems, a major factor spurring interest for machine controls. At the same time, the shelf design throughput of 2 TB/s has spurred interest in detector applications where tens of millions of data channels are becoming common, for preprocessing, real-time data processing and event builders.

ATCA and μTCA are attractive platforms even for systems not requiring high availability because of the modern serial link architecture and many packaging options. Less-demanding applications can be met economically by scaling back speed and redundancy as required for both the ATCA full carrier and μTCA cards.

ATCA/μTCA WORKSHOP PROGRAM

Overall Goals:

1. Tutorials on ATCA, μTCA hardware, software platforms
2. Presentations on recent industry developments in areas of interest: Controls; High Throughput DAQ, Shelf Management, Hardware/ Software Development Tools
3. Presentations on new physics and accelerator applications
4. Explore inter-laboratory standards collaboration for interoperability in physics applications

Preliminary Program

Saturday October 18, 2008

08:00-18:10	Introduction to Workshop Organizing Team
08:10-09:00	Tutorial: Status, Plans for Hardware Standards PICMG Speakers
09:00-09:40	Hardware Standards Issues for Physics R. Downing, SLAC consultant
09:40-10:00	Discussion
10:00-10:20	Coffee Break Hallway
10:20-11:10	Tutorial: Status, Plans for Software Standards PICMG Speakers
11:10-12:00	Software Standards Issues for Physics C. Saunders, Argonne Nat'l Lab
12:00-13:30	Luncheon Workshop Lunch Room
13:30-15:00	Industry Interactive Demo Presentations Industry Speakers
	1. ATCA Platform Hardware for Controls, DAQ 2. ATCA Platform Software for Controls, DAQ
15:00-15:30	Coffee Break Hallway
15:30-17:00	Industry Interactive Demo Presentations Industry Speakers
	3. Shelf Management on ATCA 4. Shelf Management on μTCA AMC
17:00-18:00	Exhibits Open Exhibit Hall
18:00-21:00	Dinner Workshop Dinner Room

Sunday October 19, 2008

08:30-10:00	Contributed Papers Session 1
	ACTA-1: xTCA for a Large Accelerator K. Rehlich, DESY
	ATCA-2: Digital LLRF Control System for the Linear Accelerator W. Jalmuzna, Univ. Lodz
	ATCA-3: Low Level RF Controls for the European XFEL T. Jezynski, Univ Lodz

ATCA-4: Interfaces & Communication Protocols for LLRF		
D. Makowski, Univ Lodz		
ATCA-5: Control System for Compensation SC Cavities		
K. Przygoda, Univ Lodz		
10:00-10:30	Coffee Break	Exhibit Hall
10:30-12:00	Contributed Papers session 2	
ATCA-6: Redundant Controller Configuration Software		
K. Furukawa, KEK		
ATCA-7: FPGA Compute Node for PANDA Experiment		
Z. Liu, IHEP		
ATCA-8: Application of SysML for LLRF Control System		
M.K. Grecki, DESY		
ATCA-9: Analog & Digital Signals Distribution in LLRF		
K. Czuba, Univ. Warsaw		
ATCA-10: ATCA Carrier Board with 3 AMC Bays		
A. Zawada, Univ. Lodz		
12:00-13:00	Luncheon	Workshop Lunch Room
13:00-13:15	Collaboration Opportunities for ATCA for Physics Standard	
	R. Larsen, SLAC	
13:15-14:00	Review of Draft ATCA for Physics Hardware Profile	
	R. Downing, SLAC Consultant	
14:00-14:45	Review of Issues for Physics Software Profile	
	– Controls and Monitoring	
	C. Saunders, Argonne Nat'l Lab	
	- High Speed Data Acquisition	
	TBD	
14:45-15:15	Coffee Break	Exhibits Area
15:15-17:00	Open Discussion	
	- Questions for Speakers	
	- Questions for Vendors	
	- Discussion of future collaboration opportunities, organization	
17:30	Adjourn to 2008 NSS-MIC Welcoming Reception	

**4th International Workshop on
the Molecular Radiology of Breast Cancer**

Monday, October 20, 2008 08:30-17:30
Tuesday, October 21, 2008 08:30-17:30

Location: Art’Otel, Dresden
Organizing Committee:

Martin Tornai, Ph.D., Duke University, USA
Craig Levin, Ph.D., Stanford University, USA
Ramsey Badawi, Ph.D., University of California at Davis, USA
Michael Hofmann, M.D., Ph.D., University of Hannover, Germany

a. Goals

This two-day Workshop runs in parallel to the early days of the annual IEEE Nuclear Science Symposium & Medical Imaging Conference to be held from Oct. 20-21, 2008 in Dresden, Germany. In 2002, 2004 and 2006 similar successful Workshops were originally named the “Workshop on the Nuclear Radiology of Breast Cancer,” and has been renamed to reflect the rapid advances in the range of modalities dedicated to breast imaging. As in past years, the overall goals of the proposed events are to convene imaging physicists and engineers as well as chemists, biologists, physicians and students from around the world to discuss important issues related to breast cancer evaluation using functional Molecular Imaging techniques involving nuclear radiotracers, x-rays, MRI and optical. Key issues to address are the recent successes and limitations of nuclear imaging approaches [single photon emission computed tomography (SPECT) and positron emission tomography (PET)] and what steps are required to continue to increase their role in breast cancer detection and management. Thus, in addition to having educational goals, the meeting serves as a venue to understand and suggest solutions to problems associated with incorporating nuclear imaging methods into the clinic for breast cancer screening, diagnosis, and staging. The outline of the two-day program, which incorporates suggestions from past convened Workshops, is as follows: (1) Review of the biology, biochemistry, and markers of breast cancer; (2) Breast cancer management and imaging from the treating surgeon’s perspective; (3) Review of the clinical state-of-the-art in breast cancer radiology using contemporary approaches (e.g., MRI); (4) Breast cancer management from the oncologist’s perspective; (5) Latest developments in non-ionizing (optical) molecular breast imaging approaches; (6) Review of dedicated breast x-ray CT technologies; (7) Review and outlook of the future direction of molecular breast imaging; and (8) International review of research groups specifically working on dedicated breast cancer molecular imaging. While there is a logically progressive and structured format, the setting is meant to be informal, with the morning portions of the Workshop devoted to discussion and interaction between the audience members and invited presenters, compared to standard didactic scientific meetings. There will be a competition for up to 10 student travel awards to promote education/training in this field. This Workshop will provide the latest research information and lively interaction and discussions.

b. Outline

Day 1: Monday, October 20, 2008 08:00-20:30	
08:00 – 08:30	Introduction / Welcome to Day 1
08:30 – 10:10	Session 1-I: Invited Presentations
	Daniel Faverly, MD (University of Brussels) – “Breast Pathology for the Non-Pathologist. Medical Imaging Correlation: The Keys for Understanding”
	Michael Hofmann, MD/PhD (University of Hannover) – “Current Clinical Use of Breast PET/CT vs. Future Receptor Specific Molecular Breast Imaging (MBI) - Breakthrough Tracers at the Horizon?”
10:10 – 10:30	Coffee Break
10:30 – 12:10	Session 1-II: Invited Presentations
	Lee Wilke, MD (Duke University) – “Seeing Breast Cancer - Through the Surgeon’s Lens”

Debra Ikeda, MD (Stanford University) – “Current Methods of Percutaneous Breast Biopsy: Hardware Requirements for Targeting and Biopsy”

12:10 – 12:30 Discussion Session 1

12:30 – 14:00 Lunch

14:00 – 14:30 Session 1-III: Abstract Presentations

15:20 – 17:00 Session 1-IV: Coffee Break – Poster Session

17:00 – 18:00 Session 1-V: Abstract Presentations

18:30 – 20:30 Dinner

Day 2: Tuesday October 21, 2008 08:30-16:00

08:00 – 08:30 Introduction to Day 2

08:30 – 10:10 Session 2-I: Invited Presentations

P. Kelly Marcom, MD (Duke University) – “Toward Personalization of Breast Cancer Care - Medical Oncology Perspective on Genomics, Imaging, and Treatment”

Brian Pogue, PhD (Dartmouth University) – “Imaging Breast Tumors with MR-Guided Near-Infrared Spectroscopy”

10:10 – 10:30 Coffee Break

10:30 – 12:10 Session 2-II: Invited Presentations

Steven Glick, PhD (University of Massachusetts) – “Tomographic X-ray Imaging of the Breast”

David Mankoff, MD/PhD (University of Washington) – “Radio-nuclide Imaging as a Breast Cancer Biomarker: Using Imaging to Help Direct Breast Cancer Therapy”

12:10 – 12:30 Discussion Session 2

12:30 – 14:00 Lunch

14:00 – 15:00 Session 2-III: Abstract Presentations

15:00 – 15:20 Coffee Break

15:20 – 16:20 Session 2-IV: Abstract Presentations

16:20 – 17:00 Discussion Session 3

17:00 – 17:30 Concluding Remarks, Adjournment

c. Workshop Organizing Committee

The organizers and the confirmed speakers for the Workshop are participating because: (1) they are currently performing breast imaging or breast cancer management research; (2) they participate in clinical breast imaging; (3) they have some perspective on the breast imaging field as a whole; (4) they have a sincere interest in pushing the limits of the performance capabilities of state-of-the-art technologies; (5) they are lucid and highly creative individuals who are particularly interested in exchanging their ideas; and (6) they are experts in their field. We hope that attendees will have an outstanding educational experience and scientific exchange of ideas.

d. Registration

The registration fee of 150€ includes lunch on two days, dinner on Monday, breaks over the two-day period, and handouts.

e. Publication

As in the past, papers corresponding to the presentations will be published together in a distinct section of the 2008 IEEE NSS/MIC/RTSD Conference Proceedings. Submissions for Conference Proceedings papers for the Workshop are due at the same time that the normal IEEE NSS-MIC Proceedings papers are due.

f. Student Support

Provided adequate external funding, there will be up to 10 student/post-doc travel awards of \$1500 USD each available on a competitive basis. Further details may be found on the 2008 IEEE NSS-MIC website.

Workshop on X-Ray Micro Imaging of Devices, Materials and Organisms

October 22-24, 2008

Location: Art'Otel, Dresden

Chair: Prof. Tilo Baumbach, ANKA, Karlsruhe Institute of Technology, Karlsruhe, Germany

Co-Chair: Dr. Randolph Hanke, Fraunhofer X-ray Development Center, Fürth/Erlangen, Germany

a. Workshop Goals

Summary:

The workshop wishes to enhance communication between developers of modern X-ray imaging techniques, instrumentation, algorithms and software, and their users coming from different application areas of research and industry.

Due to the excellent properties of X-rays in terms of penetration depth, wavelength, and non-destructiveness of the measurement, methods such as X-ray radiography, tomography, microscopy, and holography may be applied in nearly any field of engineering, natural and life sciences. The workshop will cover the progress achieved in the areas described by the following keywords:

Methods

- Digital radiography
- Real-time radiography
- 2D and 3D computed tomography
- Ultra-fast tomography
- X-ray microscopy
- Micro-beam imaging
- Tomosynthesis, laminography
- In-situ imaging and process-integrated testing

X-ray contrast mechanisms

- Absorption contrast (inc. dual energy, anomalous absorption, etc.)
- Phase contrast (incl. holographic phase reconstruction)
- Diffraction and Compton scattering contrast
- Fluorescence and photo-emission contrast
- Instrumental developments
- High performance x-ray imaging sources (laboratory tubes, synchrotron sources, linacs)
- Imaging detectors (TFT, CCD, CMOS-based scintillating and

- directly converting array detectors)
- Precise mechanics (sample manipulation, loading and handling robotics)
- X-ray optics (X-ray lenses, mirror optics, beam magnifiers)
- Rapid image reconstruction algorithms
- 2D and 3D image analysis

Application

- 2D and 3D structure imaging
- Materials diagnostics
- Defect recognition
- Geometrical measuring
- Non-destructive testing
- Quality assurance

Research and technology fields

- Materials science and technology
- Automotive
- Microelectronics, micro system technology
- Biology / life sciences
- Heritage, paleontology, archeology

b. Preliminary Program:

Day 1: Wednesday, October 22, 2008 08:30-18:00

Plenary - Methods & Instrumentation

08:30 – 08:35 Introduction / Welcome to Day 1

08:35 – 10:30 Radioscopy and Computed Tomography (3 Invited Presentations)

10:30 – 11:00 Coffee Break

11:00 – 12:30 Nano-Tomography Coherent Imaging and Microscopy (3 Invited Presentations)

12:30 – 13:30 Lunch

Parallel Sessions - Methods & Instrumentation

13:30 – 15:00 μ - CT, nano-CT (5 Submitted Abstract Presentations)

13:30 – 15:00 Coherent Imaging (5 Submitted Abstract Presentations)

15:00 – 15:30 Coffee Break

15:30 – 17:00 Synchrotron-CT (5 Submitted Abstract Presentations)

15:30 – 17:00 Methods and Instrumentation (5 Submitted Abstract Presentations)

17:00 – 18:00 Poster Session Methods & Instrumentation

Day 2: Thursday October 23, 2008 (08:30-18:00)

Plenary 1 - Methods & Instrumentation

08:30 – 10:30 Imaging Detectors, algorithms and image and analysis (3 Invited Presentations)

10:30 – 11:00 Coffee Break

Plenary 2 - Applications

11:00 – 12:30 Materials diagnostics (3 Invited Presentations)

12:30 – 13:30 Lunch

Parallel Sessions - Applications

13:30 – 15:00 Real time Radioscopy ultrafast Radioscopy (5 Submitted Abstract Presentations)

13:30 – 15:00 Detectors, Algorithms and Image analysis (5 Submitted Abstract Presentations)

15:00 – 15:30 Coffee Break

15:30 – 17:00 Ultrafast CT (5 Submitted Abstract Presentations)

15:30 – 17:00 Paleontology, Archeology, Heritage (5 Submitted Abstract Presentations)

17:00 – 18:00 Poster Session Applications

20:00 Workshop Banquet

Day 3 : Friday October 24, 2008 (08:30-17:00)

Plenary - Applications

08:30 – 10:30 Industrial applications (3 Invited Presentations)

10:30 – 11:00 Coffee Break

11:00 – 12:30 Life science and Heritage (3 Invited Presentations)

12:30 – 13:30 Lunch

Parallel Sessions - Applications

13:30 – 15:00 Organics, life science (5 Submitted Abstract Presentations)

13:30 – 15:00 NDT (5 Submitted Abstract Presentations)

15:00 – 15:30 Coffee Break

15:30 – 17:00 Materials diagnostics (5 Submitted Abstract Presentations)

15:30 – 17:00 Geometrical Measuring (5 Submitted Abstract Presentations)

c. Workshop Organizing Committee:

- Yun Wenbing, X-Radia, USA
- Francesco de Carlo, APS, USA
- Peiping Zhu, IHEP, Beijing, China
- Uwe Hampel, FZ Dresden, Germany
- Peter Degischer, TU Wien, Germany
- Berndt Müller, BAM, Berlin, Germany
- Walter Bauer Bosch, Stuttgart, Germany
- Peter Cloetens, ESRF, Grenoble, France
- Anke Pyzalla, MPI-E, Düsseldorf, Germany
- Christian David, PSI, Villingen, Switzerland
- Bruno Lengeler, University Aachen, Germany
- Alexander Flisch, EMPA, Dübendorf, Switzerland
- Keith. A. Nugent, University of Melbourne, Australia
- Stephen Wilkins, CSIRO, Claiton South, Australia
- Joris Dik, University Antwerpen, Delft, The Netherlands
- Michael Maisl, Fraunhofer IZFP, Dresden, Germany
- Philip J. Withers, University of Manchester, UK
- Ehrenfried Zschech, AMD Saxony LLC & Co. KG, Dresden

More info: <http://www.nssmic-xray2008.com>

GATE Software for Emission Tomography

Friday, October 24, 2008 13:30-17:30

Location: International Conference Center, Conference 2

Organizing committee:

Irene Buvat, Imaging and Modeling in Neurobiology and Cancerology Lab, France

Sébastien Jan, CEA, Orsay, France

The OpenGATE collaboration (<http://www.opengatecollaboration.org>)

GATE is an open access Monte Carlo simulation tool based on Geant4 and dedicated to emission tomography (SPECT and PET), but which can also be used for CT simulations or imaging-based dosimetry. The GATE user workshop is intended to gather all those interested in using GATE for various applications.

The workshop will give the users an overview of what GATE can achieve. The future functionalities of GATE will also be presented. Finally, the users will be given the opportunity to ask questions about GATE and express their needs in terms of the features they would like to be included or improved in GATE.

Tentative program:

13:30 – 13:45: Welcome, short intro about the workshop, presentation of the workshop program (I. Buvat)

13:45 – 14:15: GATE : state of the art (S. Jan)

14:15 – 15:15: Various applications of GATE (12 min + 3 min questions for each presentation)

- Application of GATE to detector optimisation in transmission gamma ray tomography. N. Kienling, A Bieberle, U. Hampel, Forschungszentrum Dresden-Rossendorf, Germany
- Using GATE as a forward projector in iterative SPECT reconstruction. Tom Ghekiere, Ghent University, Belgium
- Creating patient database including known abnormalities using GATE. Simon Stute, IMNC, Orsay, France
- Using GATE for external dosimetry applications. David Sarut, CREATIS, Lyon

15:15 – 15:45: Coffee break

15:45 – 16:15: Upcoming features in GATE (S. Jan)

16:15 – 17:30: Questions and Answers about GATE

You can already send the questions you would like to be addressed during this Q&A sessions to sebastien.jan@cea.fr and buvat@imnc.in2p3.fr using “GATE workshop” as the mail subject.

Compton Cameras for Medical and Industrial Applications

Friday, October 24, 2008 13:30-17:30

Location: International Conference Center, Seminar 5

Organizing committee:

Neal H. Clinthorne, U. Michigan, USA

Peter Weilhammer, CERN, Switzerland

Compton cameras have demonstrated their potential in some applications while in others, a significant gap between predictions and actual performance remains. The goal of this half-day workshop—relevant to participants in NSS, MIC, and RTSD—is to examine and discuss reasons for the gap and to define the steps necessary to advance Compton cameras for astrophysical, industrial, security, and medical applications. The workshop format will consist of invited talks presenting the state of Compton camera technology for space, industrial, and medical uses followed by presentations by participants aimed at shining a light on the most significant impediments to more widespread use of Compton technology. Potential solutions to these challenges will be discussed in breakout groups, and finally, the steps necessary to advance the field will be proposed by workshop participants.

Innovative Techniques for Hadron Therapy

Friday, October 24, 2008 10:30-18:30

Location: International Conference Center, Conference 1

Organizing committee:

Patrick Le Dû, IRUF CEA Saclay, France

Anatoly Rosenfeld, University of Wollongong, Australia

Steve Peggs, Brookhaven National Lab., USA

The treatment of non-operable and radio-resistant cancer tumors using particle beam like proton and light ion is becoming a medical reality. The number of clinical facilities is growing very rapidly around the world. After the first successful workshop organized during the 2003 IEEE NSS-MIC conference in Portland, we propose this year to review the evolution of technological ideas and instrumentation around this emerging topic. This is a perfect illustration of a merging nuclear and detectors experts with the medical imaging community.

The goal of the workshop is to provide a forum for interested participants to discuss in a convivial way the progress in the field and to exchange recent experiences.

The preliminary agenda of contributions fields is the following:

- Hadrontherapy: a clinical introduction
- Survey of new facilities and projects around the world
- New machine concepts (FFAG, portable proton linac)
- Instrumentation for beam control and real time dose monitoring
- In-beam PET systems
- Proton CT imaging
- Advanced dosimetry (micro and nano dosimetry)
- Modeling of space radiation environment using ions
- Simulation using Geant
- New ideas using antiprotons and neutrons.

Stand-off Detection Techniques for Radiological and Nuclear Sources

Friday, October 24, 2008 13:30-17:30
Saturday, October 25, 2008 08:30-12:30

Location: International Conference Center, Conference 3
Organizing committee:

Ralph B. James, Brookhaven National Lab, USA
James Jones, Idaho National Lab, USA

The major thrust of this 2-day workshop is to identify current and future technologies that enable stand-off ability to detect, identify, and track radiological and nuclear materials. For the purpose of this workshop, stand-off detection is defined as cases where either the material-detector separations or probe-material separations exceed about 5 m.

The following topics will be discussed at the workshop:

- new neutron and gamma detectors with the potential for higher efficiency,
- imaging detectors capable of distinguishing point sources of radiation from distributed background counts,
- spectroscopic detectors for identifying radioactive materials,
- fast detectors capable of measuring time-correlated events,
- the effects of imaging and spectroscopic detectors in harsh or high background environments,
- novel approaches to enhance detectable signatures from fissile or radiological materials,
- software to improve identification using spectrum processing, and
- other modeling and analytical tools to facilitate stand-off detection.

SD1 Gamma Detection

Friday, Oct. 24 13:30-15:00, Conference 3
Session Chair: **Klaus P. Ziock**, Oak Ridge National Laboratory, United States

SD1-1 Two-Sided Coded Aperture Imaging Without a Detector Plane

K. P. Ziock, M. F. Cunningham, L. Fabris
Oak Ridge National Laboratory, USA

SD1-2 Mobile Imaging and Spectroscopic Threat Identification (MISTI)

L. J. Mitchell, B. F. Philips, W. N. Johnson, E. A. Wulf,
R. G. Roberts, D. Taibi, K. D. Bynum, B. Leas, G. Guadagno,
T. Pickard, *Naval Research Laboratory, USA*; C. J. Lister, *Argonne National Laboratory, USA*

SD1-3 A Technique for Estimating Detection Limits of Radio-Nuclide Identifying Detector Arrangements by Means of Computer Simulations

C.-M. Herbach, Y. Kong, R. Lentering, M. Neuer, G. Pausch,
C. Plettner, K. Ruhnau, J. Stein
ICx Radiation GmbH, Germany

SD1-4 Unmasking Radioactive Sources with the Compact Compton Imager

L. Mihailescu¹, K. M. Vetter^{1,2}
¹*Lawrence Berkeley National Laboratory, USA*; ²*UC Berkeley, USA*

SD2 Neutron/Gamma

Friday, Oct. 24 15:30-17:00, Conference 3
Session Chair: **Brandon W. Blackburn**, Raytheon Integrated Defense Systems, United States

SD2-1 Detectors in Harsh Active Interrogation Environments

B. W. Blackburn¹, J. L. Jones², P. A. Hausladen³, J. T. Mihalcz³,
C. E. Moss⁴, K. Ianakiev⁴, M. V. Hynes¹, B. A. Harris¹
¹*Raytheon Integrated Defense Systems, USA*; ²*Idaho National Laboratory, USA*; ³*Oak Ridge National Laboratory, USA*; ⁴*Los Alamos National Laboratory, USA*

SD2-2 Fabrication and Materials for a Long Range Neutron-Gamma Monitor Using Straw Detectors

J. L. Lacy, A. Athanasiades, C. S. Martin, L. Sun, T. D. Lyons
Proportional Technologies, Inc, USA

SD2-3 Decreasing the Minimum Detectable Level of an Advanced Spectroscopic Portal by Using Multiple Detector Approach

I. Yaar, *NRCN, Israel*; I. Peysakhov, A. Rahav, *Totem Plus, Israel*; D. Ginzburg, J. Paran, A. Osovitzky, Y. Mazor, M. Ellenbogen, *ROTEM Industries Ltd, Israel*

SD2-4 Detection of Chemical Agents by Using a Portable Tagged Neutron Inspection

C. Cedric, P. Bertrand, M. Jean-Luc, M. Alain, R. Anne-Cecile,
G. Mehdi, S. Guillaume, N. Stephane
CEA, France

SD3 Systems

Saturday, Oct. 25 08:30-10:00, Conference 3
Session Chair: **James L. Jones**, Idaho National Laboratory, United States

SD3-1 High Energy Bremsstrahlung Radiation for Standoff Nuclear Material Detection

J. L. Jones, D. R. Norman, K. J. Haskell, J. W. Sterbentz, W. Y. Yoon,
J. T. Johnson, S. M. Watson, M. T. Kinlaw, *Idaho National Laboratory, USA*; A. W. Hunt, K. L. Folkman, C. C. O'Neill, *Idaho State University, USA*; M. P. Shannon, *Georgia Institute of Technology, USA*

SD3-2 Nuclear Resonance Fluorescence of ²³⁵U and ²³⁸U above 5 MeV

G. A. Warren, J. A. Caggiano, *Pacific Northwest National Laboratory, USA*; W. Bertozzi, S. E. Korbly, R. J. Ledoux, W. H. Park, *Passport Systems, Inc, USA*

SD3-3 Utilization of Intense Pulsed Characteristic Gamma-Ray Sources for Detection of Fissile Materials*

J. W. Schumer, R. J. Commisso, S. L. Jackson, D. Mosher,
D. P. Murphy, D. G. Phipps, S. J. Stephanakis, S. B. Swanekamp,
B. V. Weber, F. C. Young, G. Cooperstein
Naval Research Laboratory, USA

SD3-4 Ultra-Fast High Resolution in Vivo CT of the Murine Cerebrovascular System

S. J. Schambach¹, A. Lechner², J.-P. Steffen², L. Schilling³,
C. Groden¹, M. A. Brockmann¹

¹(a) University of Heidelberg, Medical Faculty Mannheim, Germany;
²YXLON International GmbH, Germany; ³(c) University of Heidelberg,
Medical Faculty Mannheim, Germany

SD4 Neutron Detection and Systems

Saturday, Oct. 25 10:30-11:40, Conference 3

Session Chair: **Peter E. Vanier**, Brookhaven National Lab, USA

SD4-1 Stand-off Detection of Special Nuclear Materials Using Neutron Imaging Methods

P. E. Vanier¹, L. Forman², I. Dioszegi¹, C. Salwen¹, V. J. Ghosh¹
¹Brookhaven National Laboratory, USA; ²Ion Focus Technology, USA

SD4-2 Highly Integrated Assemblies of Radiation Detectors for Interrogation Systems

V. I. Mikerov, E. P. Bogolubov, A. P. Koshelev
All-Russian Research Institute of Automatics, Russia

SD4-3 Ultra-Fast μ vCT Scanning Algorithm for High-Speed in Vivo Imaging.

M. A. Brockmann¹, S. J. Schambach¹, A. Lechner², J.-P. Steffen²,
L. Schilling¹, C. Groden¹

¹University of Heidelberg, Medical Faculty Mannheim, Germany;
²YXLON International GmbH, Germany

Joint Workshop on Detector Development for Future Photon Science and High Energy Physics Experiments

DESY, Hamburg, Germany, October 16-17, 2008

Please register for this satellite workshop at <http://satworkshop2008.desy.de>

a. Workshop Goals

Under the auspices of the IEEE Nuclear Science Symposium, the Deutsches Elektronen Synchrotron (DESY) will host a Joint Workshop on Detector Development for Future Photon Science and High Energy Particle Physics Experiments at DESY in Hamburg, on October 16-17, 2008.

The main objective for this joint workshop is to bring together detector experts from both fields, to foster their mutual understanding, and trigger ideas for cooperation. There is a huge potential for cross-fertilization with benefits for both the photon science and particle physics communities. To achieve this, it is important to first understand the different needs of the two communities and identify those areas of development that are of mutual benefit.

The workshop will consist of invited talks only, with plenty of opportunities for discussion. At the end of the workshop a round table discussion involving all speakers will take place to address the challenge of “how to build the bridge” between the two communities. This discussion will help point the way forward to bring the often quoted “synergies” to reality. The opening address will be given by Rolf-Dieter Heuer, the 2008 NSS Program Chair.

Attendance at the workshop will be open for everybody; however you need to register on <http://satworkshop2008.desy.de>. A registration fee of 20 EUR will be charged except for those who are pre-registered to the Nuclear Science Symposium and Medical Imaging Conference in Dresden (registration invoice number requested).

b. Program Outline: Joint Workshop in Detector Development for Future Photon Science and High Energy Physics Experiments

DESY, Hamburg, Germany October 16-17, 2008

Day 1: Thursday, October 16, 2008 13:00-22:30 (including dinner)

13:00 – 15:15 Opening and Science Session

15:15 – 15:45 Coffee Break

15:45 – 18:45 Sensor Session

19:30 – 22:00 Workshop Dinner

Day 2: Friday October 17, 2008 (09:00-17:00)

08:30 – 10:30 Frontend Session 1

10:30 – 11:00 Coffee Break

11:00 – 13:00 Frontend Session 2

13:00 – 14:00 Lunch Break

14:00 – 16:00 Data Acquisition Session

16:00 – 16:30 Coffee Break

16:30 – 17:15 Round table discussion

c. Workshop Program Committee:

Christophe DE LA TAILLE, LAL, France
 Heinz GRAAFSMA, DESY, Germany*
 Ingrid-Maria GREGOR, DESY, Germany*
 Sol GRUNER, Cornell, USA
 Erik HEIJNE, CERN, Switzerland
 Rolf-Dieter HEUER, DESY, Germany*
 Roland HORISBERGER, PSI, Villigen, Switzerland
 John MORSE, ESRF, France*
 Felix SEFKOW, DESY, Germany*
 Paul SELLER, RAL, UK
 Tohru TAKESHITA, Shinshu University, Japan
 Niels VAN BAKEL, SLAC, USA
 Norbert WERMES, University Bonn, Germany

* organizing committee

Invited speakers:

Michael CAMPBELL, CERN, Switzerland
 Piet DE MOOR, IMEC, Leuven, Belgium
 Christophe DE LA TAILLE, LAL, Orsay, France
 Paul O'CONNOR, Brookhaven National Lab., New York, USA
 Veljko RADEKA, Brookhaven National Lab., New York, USA
 Kenichi SATO, Hamamatsu Photonics K.K., Japan.
 Edgar WECKERT, DESY, Germany
 Harry WEERTS, Argonne National Laboratory, Illinois, USA
 Matthew WING, University College London, UK
 Marc WINTER, IPHC-Strasbourg, France
 Christopher YOUNGMAN, DESY, Germany

Hybrid Imaging with MR-PET

Forschungszentrum Jülich, Jülich

Monday, October 27, 2008 09:00-18:00

Tuesday, October 28, 2008 09:00-18:00

Please register for this satellite workshop at www.mr-pet-juelich.de.

Organizing committee:

Karl Ziemons, FZ Jülich, Germany
 Hans Herzog, FZ Jülich, Germany
 Uwe Pietrzyk, FZ Jülich, Germany
 Paul Vaska, BNL, USA

In the last few years there has been increasing interest in hybrid MR-PET scanners. Several groups have been developing such scanners for the study of rodents. Some of these prototypes utilize innovative solid-state electronics such as APDs as a replacement of magneto-sensitive photo-multipliers. First studies demonstrating the advantages of simultaneous MR-PET measurements have already been published. An industrial prototype for combined MR-PET in humans is being constructed and the first acquired images of simultaneous MR-PET measurements demonstrate the feasibility of the new approach.

The workshop on MR-PET will offer a platform to present and discuss the present state of both animal and human MR-PET scanners. The ability of MR-PET systems to retain the typical PET attribute of absolute quantitation, new instrumental progress as well as developments towards whole-body MR-PET and the involvement of ultra-high field MR will be addressed. For each topic there will be an invited speaker and a limited number of proffered presentations.

The preliminary program comprises these topics:

- state-of-the-art of small animal MR-PET scanners;
- state-of-the-art of human MR-BrainPET scanners;
- issues of quantitative PET in hybrid imaging;
- improved MR-compatible PET components;
- advantages and challenges of whole-body MR-PET;
- future MR-PET scanners utilizing ultra-high field.

SPECIAL EVENTS

Excursions to the Radiation Source ELBE at FZD

It is a pleasure for us to welcome you to the 2008 IEEE NSS/MIC/RTSD, taking place in Germany for the first time. We are deeply honored that the 2008 Committee chose the Forschungszentrum Dresden-Rossendorf (FZD) as the organizing institution and Dresden as the location for the meeting. The meeting will be held at the International Congress Center Dresden (ICCD). This congress venue is located at the banks of the river Elbe in the city of Dresden, near all its architectural and cultural highlights like Zwinger Palace, Dresden Castle, and Semper Opera

ELBE is also the name of the main radiation source at FZD. It stands for "Electron Linac for beams with high Brilliance and low Emittance". During the conference you will have the opportunity to visit our radiation source, which includes two free-electron lasers that deliver coherent infrared radiation, quasi-monochromatic X-rays, bremsstrahlung, pulsed neutron beams, and pulsed mono-energetic positrons. In addition, FZD scientists will give you an internal view of our novel 150 TW laser system located in the ELBE building. This high-intensity laser is used for particle acceleration - a fascinating new topic in the broad spectrum of physics in general and of acceleration technology in particular.

Our objective is to provide excellent conditions for the 2008 IEEE Meeting. Your contribution will turn the Conference into an important and successful scientific event. We look forward to welcoming you in Dresden!

This program is free of charge and is limited to 100 participants each.

Schedule for the Excursions to the FZD

Tuesday, October 21, 2008	09:00 – 12:00
Thursday, October 23, 2008	13:00 – 18:00

Coaches will start at 9:00 or 13:00 at the conference venue (in the area between the Maritim and the International Congress Centre Dresden, ICCD). They will return to the ICCD about 12:00 noon or 18:00.

Registration

You can register for the tour via the registration website <http://www.nss-mic.org/2008> or at the Registration desk at the conference.

Forschungszentrum Dresden-Rossendorf (FZD)

Professor Dr. Roland Sauerbrey	Prof. Dr. Dr. h. c. Peter Joehnk
Scientific Director	Administrative Director

Nuclear Instrumentation for Accelerator Applications and Non-intrusive Detection in a Changing World

Tuesday 21 October 2008, 16:00 - 18:00

Location: International Conference Center, Conference 3

Organizing committee:

F. Mulhauser, IAEA, Vienna
R. Lanza, MIT, Boston
G. Nebbia, INFN

The International Atomic Energy Agency (IAEA) insures activities under the framework of "Utilization of Accelerators and Instrumentation". Some main topics are the application of low-energy accelerators, the continuation of accelerator based analytical techniques, and the exploration of non-intrusive nuclear-based detection of explosives or other threat and concealed materials. Nuclear instrumentation is indispensable for the development and application of nuclear techniques in industry, health, environment and agriculture. Nuclear instruments are complex and the prerequisites for their effective use are to have a good understanding of their basic principles and to properly operate, calibrate, and maintain them. The IAEA provides nuclear instrumentation to developing Member States mainly through its Technical Cooperation programme and has been approached by many Member States to assist in training and fellowships in the area of operation, calibration, and maintenance of nuclear instrumentation.

The IAEA encourages and assists research on, and development and practical application of, these selected nuclear fields throughout the world and fosters the exchange of scientific and technical information, as well as the exchange of scientists. Rapid innovations in nuclear electronics and instrumentation result in the availability of new instruments on the market and a high rate of obsolescence. These new developments make it important for the laboratories in Member States to keep the knowledge and maintenance skills of their technical staff up to date. The purpose of this round table is to foster discussions and create a platform of exchange for nuclear instrumentation utilized at accelerator facilities and various laboratories in developed and developing Member States.

Special WIE Session: New Challenges and New Opportunities for Women Scientists and Engineers in the World of Internet Era

Thursday 23 October 2008, 19:00 - 21:00

Location: International Conference Center, Conference 2
Organizing committee:

Barbara Obryk, IFJ, Krakow
Maryam Al Thani, WIE R8 Coordinator

We are pleased to welcome you to the Women In Engineering (WIE) Session that is meant to give an opportunity for participants to exchange ideas and information on the topics that are of importance to the society of women in science, technology, engineering and mathematics (STEM). These topics can be roughly divided into three issues:

- how to prepare high school girls to make an unprejudiced choice regarding their study and careers in STEM and give them good background for that,
- how to seal a women academic pipeline to minimize "pipe leakage" phenomena,
- how to overcome barriers for advancement of women already working in STEM.

There will be discussions on opportunities for scientists created by Internet (telecommute) as



Barbara Obryk



Maryam Al Thani

its development generates new types of dispersed research programs of special importance for women in regard of their double role in the society.

During a panel discussion we intend to cover the matter of barriers that women face to entry and success in scientific careers, which persist despite recent advances. We also want to present encouraging examples of successful women in the fields of the Conference and summarize women contribution to twentieth century physics.

The importance of the topic of this Session is being appreciated: "The early departure of women from physics research means the loss of an enormous scientific potential. Both society and the universities must create conditions that will help reduce this bias." (German Physical Society Report, 2002).

Details about the WIE Session can be found on the website: <http://www.nss-mic.org/2008> under Special Events.

Special Session on Technology Transfer and Intellectual Property

Wednesday 22 October 2008, 10:30 - 12:30

Location: International Conference Center, Conference 3

Organizing committee:

Jean-Marie Le Goff, CERN Technology Transfer
Hartmut Hillemanns, CERN Technology Transfer

Intellectual Property (IP) reflects broadly to the creation of the human mind. It relates to items of information or knowledge. IP is usually divided into industrial property, covering inventions, trademarks, industrial designs, and protected designations of origin and copyrights, represented by literary, musical, artistic, photographic, and audio-visual works.

IP in public research is not limited to patent and to the dissemination of technologies through licenses. It has an important role in research projects where proper IP management is considered by funding agencies as a pre-requisite for financing.

Today, IP is considered as an important asset of a public research organization. The value of IP as an asset strongly depends on a common understanding of its usage and on the way it is managed within public research organizations and industry. Open to scientists and researchers involved in scientific programs aiming at developing new technologies, the objective of this seminar is to raise awareness on the importance of IP. The seminar will comprise a series of presentations from experts and will be followed by discussions with the speakers.



Jean-Marie Le Goff



Hartmut Hillemanns

ROUND TABLE: nano CMOS and 3D Electronics for Scientific Instrumentation and Imaging Opportunities and Practical Aspects

Wednesday 22 October 2008, 16:00 – 19:00

Location: International Conference Center, Conference 6

Organizing committee:

Erik Heijne, erik.heijne@cern.ch
Alessandro Marchioro, alessandro.marchioro@cern.ch
Ray Yarema, yarema@fnal.gov

Following a number of successful developments in custom-designed microelectronics for use in physics experiments, space, and medical imaging equipment, there is an interest to continue in this direction by using more advanced technologies. What are the specific opportunities, advantages, and difficulties? Can the scientific community access CMOS at 65 nm, 45 nm or smaller nodes? Can they master the challenges of designing at this level? Can relatively small teams conceive complex 3D layered systems with high density interconnects between layers; use Gbit transmission? Is more specialization required to achieve such integration of full systems-on-chip? Industry and semiconductor foundries principally aim at large volume manufacturing, although multi-user mechanisms, fables companies, and brokers have been established. How will this evolve over the coming years? Technical aspects are not automatically compatible, for example 3D technology usually requires full-wafer processing and cannot easily profit from wafer sharing by multiple users. Finally, what impact could these developments have on semiconductor sensor technologies for Si, CdTe or other materials?

The round table brings together representatives from industry, foundries, research institutes, scientific instrument designers, and users.

FORUM members:

- Dr Carl Das, Europractice IC Service Manager, IMEC, Leuven
- Dr Ralf de Marino, Head Components Division TEC/QC, ESA/ESTEC, Noordwijk
- Dr Bart Dierickx, Caeleste, Edegem (Antwerp)
- Dr Erik Heijne, Instrumentation Physicist, CERN PH Dept, Geneva
- Dr Alessandro Marchioro, Group leader Microelectronics, CERN, Geneva
- Dr Maarten Vertregt, Senior Principal, NXP Semiconductors/Corporate I&T/Research, Eindhoven
- Dr Ray Yarema, Group leader Microelectronics Design, Fermilab, Batavia Ill

During the first part of the Round table each of the Forum members will make a brief statement. Issues for discussion can be introduced by participants, preferably in advance of the conference, by contacting one of the organizers before 10 October.

Dr Carl Das, IMEC, Leuven

Since 1984 IMEC has developed training and chip design programs using the most advanced CMOS technologies. Carl Das is IC Service Manager for Europractice. This is one of the brokers that allow multiple users to fabricate on common wafers prototype chips and small volume. A variety of deep submicron technologies are currently offered.

Ralf de Marino, ESA/ESTEC, Noordwijk

Head of the Components Division in the Product Assurance & Safety Department TEC/QC, Directorate of Technical and Quality Management for ESA/ESTEC. With a team of designers and technology specialists he evaluates advanced microelectronics technologies for applicability in future ESA satellite projects.

Dr Bart Dierickx, founder and CTO of Caeleste, Edegem (Antwerp).

Did R&D on many pixelized CMOS and hybrid imaging devices, at IMEC, which spun-off into FillFactory, which later became Cypress. He is now at Caeleste. Specialist in most aspects of consumer, industrial and scientific imaging, such as sensitivity and noise, extreme environmental conditions, radiation tolerance.

Dr Erik Heijne, Instrumentation Physicist, CERN PH Dept, Geneva

Contributed since 1980 to the introduction of custom-designed microelectronics in particle physics experiments, and in particular to the concepts of silicon pixel detectors and radiation-hardness by layout.

Dr Alessandro Marchioro, Group leader Microelectronics, CERN, Geneva

He became interested in chip design in 1987. Was deeply involved in several microelectronics projects for the LHC experiment CMS. Since 1996 responsible for the digital section of the CERN microelectronics section, and since 2007 for all activities.

Ir Maarten Vertregt, Senior Principal, NXP Semiconductors/ Corporate I&T/Research, Eindhoven

Joined Philips Research in 1985. Coordinates scaling aspects of nanometer-CMOS design in signal processing, in particular for high-speed A/D and D/A conversion.

Dr Ray Yarema, Group leader Microelectronics Design, Fermilab, Batavia Ill

Ray has been involved with ASIC design at Fermilab for 20 years. His group has designed ASICs for High Energy Physics, Nuclear Physics, and medical imaging. He is currently leading an effort to exploit 3D integrated circuit design for pixel detectors in various applications, and Monolithic Active Pixel Sensor (MAPS) design in SOI technologies.

Marie Curie Fellows: Networking Event

Opportunities to Meet Other Fellows, Senior Colleagues,
and EU Representatives

Thursday 23 October 2008, 18:00 - 20:00

Location: International Conference Center, Conference 6

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Marinos Ioannides, EU Research DG, Marie Curie Actions-T3

The EU organizes Marie Curie Actions under the 6th Framework stimulation program. These Marie Curie Actions are aimed at the development and transfer of research competencies, the consolidation and widening of researchers' career prospects, and the promotion of excellence in European research. Networking at the European and world-wide level is a good way to broaden the scientific horizon of a researcher. The Organizing Committee of the IEEE NSS/MIC/RTSD Conference is most anxious to create opportunities for the Marie Curie Fellows in our community and to highlight their research activities. A brief presentation of the Marie Curie Actions will be given at the beginning of the MIC Plenary Session on Thursday 23 October, at 14.10. A booklet with substantial details about participating Marie Curie Fellows will be included in your registration package so that it will be easy to look for colleagues in your own field of activity.

Please mention (checkbox) that you are a Marie Curie Fellow when submitting a paper and when registering on the website. We will send each Marie Curie Fellow, who checks the box during registration, by e-mail, a template to submit a brief description of their project, a photograph, biography, and contact information.

Please register for the conference as soon as possible and send your completed submission to us by the end of August, so that we can prepare the booklet in time for the conference.

The Marie Curie actions are open to researchers in all fields of scientific and technological research from the EU Member States, from countries associated with FP6, and from developing countries. Eligibility for the various programs is based on research experience and expertise, not age. All levels are covered from researchers at the start of their career to world-class researchers with well-established scientific expertise. The actions are also open to business, universities and institutions active in research. The various opportunities open to individual researchers depend on their level of research experience:

- Early-stage researchers: This refers to researchers at the beginning of their research career with less than four years active research experience
- Experienced researchers: This applies to researchers with more than four years of active research experience or those with a doctorate degree.

Details about the Marie Curie activities can be found on the website:

http://ec.europa.eu/research/fp6/mariecurie-actions/action/level_en.html

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Uwe Bratzler
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Saturday Oct. 18	Conference 1	Conference 2	Conference 3 & 4	Conference 5	Conference 6	All NSS posters can be set up after 08:00 on Monday, and must be removed by 18:00 on Wednesday. All RTSD posters can be set up after 08:00 on Monday, and must be removed by 20:00 on Friday. All MIC posters can be set up after 19:00 on Wednesday, and must be removed by 18:00 on Saturday.					
AM	Short Course 1: Radiation Detection Basics	Workshop 1: μ -Pattern Gas & Silicon Detectors	Short Course 3: Geant4	Short Course 2: Silicon Detector Applications	Workshop 4: ATCA for Physics						
PM				Workshop 4 Exhibit							
Sunday Oct. 19	Conference 1	Conference 2	Conference 3 & 4	Conference 5	Conference 6	Seminar 5 & 6	OncoRay				
AM	Short Course 1: Radiation Detection Basics	Short Course 4: Front-end Electroncis	Short Course 5: Grid	Workshop 4 Exhibit	Workshop 4: ATCA for Physics	Workshop 2: Micro Dosimetry	Short Course 10: PET Pharmacokinetic				
PM						Workshop 3: Detctors for sLHC					
17:30-19:30	Welcome Reception (Terrace Level)										
Monday Oct. 20	Hall 1	Hall 2	Hall 3	Hall 4 & 5	Conference 1	Conference 2	Conference 3	Westin	Art'Otel	OncoRay	
09:00-12:00	N01: NSS Plenary I							Short Courses 6: Image Quality (Bellevue 1) Short Course 7: Monte Carlo in Medical Imaging (Bellevue 2)	Workshop 5 MRBC	Short Course 10: PET Pharmacokinetic	
12:00-14:00	NSS Luncheon (Conference 4,5,6)										
14:00-16:00	R01: CdZnTe			N02: NSS Poster Session I							
16:30-18:30	R02: Defects 1	N03: Gaseous Detectors I - New Detectors for New Applications	N04: New Solid State Detectors I		N05: Nuclear Power	N06: Data Acquisition and Analysis Systems : Big Systems in Operation	N07: Instrumentation for Radiation Applications in Medicine I				
Tuesday Oct. 21	Hall 1	Hall 2	Hall 3	Conference 1	Conference 2	Conference 3	Conference 4 & 5	Conference 6	Westin	Art'Otel	OncoRay
08:00-10:00	R03: Imaging System 1	N08: Gaseous Detectors II - Large Area Detectors	N09: Instrumentation for Radiation Applications in Medicine II	N10: Astrophys. & Space Instrum. I-Gamma and High-Energy Detectors			N11: Analog and Digital Circuits I	N12: Photon Detectors and Radiation Imaging Detectors I	Short Course 8: Ion Bean Therapy (Bellevue 1) Short Course 9: Image Recon-struction (Bellevue 2)	Workshop 5 MRBC	Short Course 10: PET Pharmacokinetic
10:30-12:30		NMR: NSS/MIC/RTSD Joint Session		N13: Nuclear Physics Instrumentation I	N14: Synchrotron Radiation and FEL Instrumentation		N15: Radiation Damage Effects on Detection Materials I.	N16: Monte Carlo Codes and Technology			
13:30-15:30	R04: Imaging Systems 2	NM1: NSS/MIC Joint session I		N17: Nuclear Physics Instrumentation II	N18: Data Acquisition and Analysis Systems: Analysis Methods		N19: Radiation Damage Effects on Detection Materials II	N20: Software for Detectors			
16:00-18:00	R05: Crystal Growth 1	NM2: NSS/MIC Joint Session II		N21: Astrophysics and Space Instrumentation II - X-Ray detectors	N22: Nucl. Meas. & Monitoring Techniques I: Low Background	IAEA Meeting	N23: Analog and Digital Circuits II	N24: Photon Detectors and Radiation Imaging Detectors II			
19:00-21:00	Exhibitor Reception										
Wednesday Oct. 22	Hall 1	Hall 2 & 3	Hall 4 & 5	Conference 1	Conference 2	Conference 3	Conference 4 & 5	Conference 6	Art'Otel		
08:00-10:00	R06: Defects 2	M01: MIC Plenary I, Opening		N25: Trigger and Front-end Systems I	N26: Neutron Instrumentation I: Neutron Detectors	N27: HEP Instrumentation: Trackers I	N28: Astro. & Space Instrum. III - Solid State & Gas Detectors	N29: Grid Computing	Workshop 6 X-ray Imaging		
10:30-12:30	R07: Crystal Growth 2	M02: Detectors: PET	N30: NSS Poster Session II			Tech. Transfer					
13:30-15:30	R08: Electrical Contacts	M03: Image Reconstruction: PET I		N31: Gas Detectors III - Basics: Ionization and Scintillation	N32: HEP Computing	N33: HEP Instrumentation: Calorimeters I	N34: New Solid State Detectors II	N35: Scintillators and Scintillation Detectors I			
16:00-18:00	R09: Detector, ASIC and Electronics	M04: Compensation Techniques		N36: Trigger and Front-end Systems II	N37: HEP Simulation	N38: HEP Instrumentation: Muon Systems I	N39: Round Table - Nano CMOS and 3D Electronics	N40: Scintillators and Scintillation Detectors II			
19:00-21:00	Conference Reception										

Conference Timetable (Thursday, October 23 through Saturday, October 25)

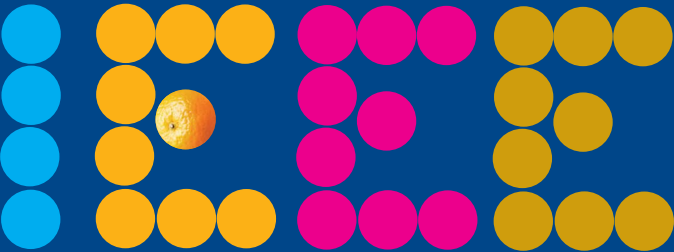
Thursday Oct. 23	Hall 1	Hall 2 & 3	Hall 4 & 5	Conference 1	Conference 2	Conference 3	Conference 4 & 5	Conference 6	Conference 7 & 8	artotel			
07:30-08:15		MIC Refresher Course I								Workshop 6: X-ray Micro-Imaging			
08:00-10:00	R10: Alternative Detectormaterials	M05: Multimodality Imaging (08:30-10:00)		N41: Simulation	N42: Neutron Instrum. II: Facilities, Technology and Applications	N43: HEP Instrumentation: Trackers II	N44: Analog and Digital Circuits III	N45: Scintillators and Scintillation Detectors III					
10:30-12:30	R11: CdMnTe		M06: MIC Poster I	N46: Software Tools	N47: Nucl. Meas. and Monitoring Techniques II: Safeguards	N48: HEP Instru-mentation: Beam Monitors and Other Detector Systems I	N49: Radiation Damage Effects on Electronics and Components	N50: Photon Detectors and Radiation Imaging Detectors III					
12:45-15:00	RTSD Luncheon (Westin Hotel)												
13:30-15:30		M07: MIC Plenary II, Awards	R12: Postersession (15:00-16:00)	N51: Medical Phys-ics Software	N52: Data Acquisi-tion and Analysis Systems : Small Systems	N53: HEP Instru-mentation: Muon Systems II	N54: Semiconduc-tor Tracking and Spectroscopy Detectors I	N55: Scintillators and Scintillation Detectors IV					
16:00-18:00	R13: CZT Detectors	M08: Application Specific Imaging, Imaging for Radio-therapy		N56: Photon Detectors and Radiation Imaging Detectors IV	N57: ATCA (Adv. Telecommunica-tions Compitung Architecture)	N58: HEP Instru-mentation: Beam Monitors and Other Detector Systems II	N59: Safety Instrumentation / Homeland Security I		N60: Astrophysics and Space Instru-mentation IV - New Techniques				
Evening					Women In Engineering (19:00-21:00)			Marie Curie Network (18:00-20:00)					
Friday Oct. 24	Hall 1	Hall 2 & 3	Hall 4 & 5	Conference 1	Conference 2	Conference 3	Conference 4	Conference 5	Conference 6	Conf. 7&8	Seminar 5	artotel	
07:30-08:15		MIC Refresher Course II										Workshop 6 X-ray Micro-Imaging	
08:00-10:00	R14: Pixel Detectors CdTe (08:30-10:05)	M09: Detectors: SPECT, CT (08:30-10:00)		N61: Safety Instru-mentation / Home-land Security II	N62: Gaseous Detectors IV - Large TPCs and Applications	N63: HEP Instrumentation: Calorimeters II	N64: Analog and Digital Circuits IV		N65: Photon Detec-tors and Radiation Imaging Detectors V				
10:30-12:30	R15: Silicon and Neutron Detectors	N66: NSS Plenary II	M10: MIC Poster II	Workshop 9 Hadron Therapy									
13:30-15:30	R16: Spectrometers	M11: Image Reconstruction: CT, SPECT		Workshop 9 Hadron Therapy	Workshop 7: GATE	Workshop 10: SD1: Gamma Detection	N67: Applied Com-puting Techniques	N68: Semiconduc-tor Tracking and Spectroscopy Detectors II	N69: Scintillators and Scintillation Detectors V	N70: Data Acquisi-tion and Analysis Systems: Concepts and Tools	Workshop 8 Compton Camera		
16:00-18:00	R17: Pixel Detectors CZT	M12: Systems and High-Resolution Imaging: PET		Workshop 9 Hadron Therapy	Workshop 7: GATE	Workshop 10 SD2: Neutron/ Gamma							
19:00-21:00	MIC Dinner (Westin Hotel)												
Saturday Oct. 25	Hall 2 & 3	Conference 3											
07:30-08:15	MIC Refresher Course III		All NSS posters can be set up after 08:00 on Monday, and must be removed by 18:00 on Wednesday. All RTSD posters can be set up after 08:00 on Monday, and must be removed by 20:00 on Friday. All MIC posters can be set up after 19:00 on Wednesday, and must be removed by 18:00 on Saturday.										
08:30-10:30	M13: Image Recon-struction: PET II	Workshop 10 SD3: Systems											
10:30-12:30	M14: Quantitative Imaging	SD4: Neutron Detection and Systems											
13:30-15:30	M15: Image Processing												
16:00-18:00	M16: High Resolution Imaging: SPECT, CT												

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O R L A N D O , F L O R I D A



Hello all,

The 2009 IEEE Nuclear Science Symposium and Medical Imaging Conference will be held from October 25 – 31 in Orlando, Florida at the Hilton located in Walt Disney World. The meeting offers a great opportunity to meet old friends and colleagues, and to make new ones from different parts of the world. We will exchange new knowledge and ideas in nuclear science and medical imaging.

The Hilton is located adjacent to Disney World and the facilities of Disney World are easily reached from the hotel. The NSS-MIC will have the entire hotel for our meeting. Attendees will have all the features of a first class hotel along with the opportunity to visit Disney World.

The Organizing Committee plans to make this a truly joint conference which will encourage attendees to participate in both parts of the meeting. In addition, we are planning a variety of short courses before the meeting, several workshops and special sessions to acquaint attendees with reviews of current state-of-the-art in technologies. There will also be self contained sessions on subjects such as computing beyond the LHC, nuclear forensics, nuclear techniques in the well-logging industry, and the use of graphic processing units for high speed computing.

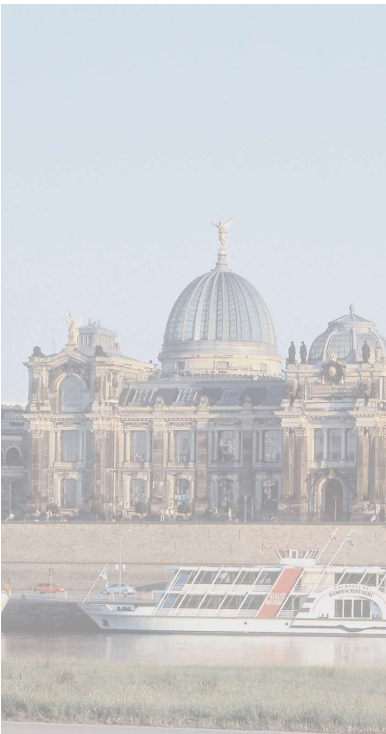
Companion tours will include several short trips in the Orlando area and a visit to the NASA Space Center at Cape Kennedy. The current launch schedule for 2009 is not firmly fixed, but there are potential spacecraft launches in the late October time frame. Of course, there is also the entire Disney World site for both individual and organized exploration.

This location not only will provide an excellent venue for our professional meeting, but also is an ideal location for attendees who can bring their families.

On behalf of the organizing committee, I encourage you to make plans now to attend next year's exciting joint conference of the IEEE Nuclear and Plasma Sciences Society and look forward to welcoming you to Orlando.

Dick

Richard Lanza, General Chair, MIT
Conference e-mail:nssmic2009@mit.edu
Conference Website: www.nss-mic.org/2009



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