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
The 2008 IEEE Nuclear Science Symposium and Medical Imaging Conference

Is sponsored by:

The Nuclear and Plasma Sciences Society of the Institute of Electrical and Electronics Engineers

With generous contributions from:

U.S. Defense Threat Reduction Agency (DTRA)
ICx Radiation GmbH
ORTEC
Hamamatsu
The European Physical Journal (EPJ)

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Brookhaven National Laboratory, USA
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Deutsche Elektronen-Synchrotron, DESY, Germany
Forschungszentrum Dresden Rossendorf, FZD, Germany
Forschungszentrum Jülich GmbH, FZJ, Germany
International Atomic Energy Agency, IAEA, Austria
The European Organization for Nuclear Research, CERN, Switzerland
Lawrence Livermore National Laboratory, USA
Stanford Linear Accelerator Center, USA

With important support from:

The Henryk Niewodniczanski Institute of Nuclear Physics, Polish Academy of Sciences (IFJ) in Krakow, Poland
Czech Technical University in Prague, Czech Republic
Tokyo Metropolitan University, Tokyo, Japan
Technische Universität Dresden, Germany
Karlsruhe Institute of Technology, Karlsruhe, Germany
Lufthansa

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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 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.
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REGISTRATION INFORMATION

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
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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.

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friday, Oct 17</td>
<td>17:00 - 20:00</td>
</tr>
<tr>
<td>Saturday, Oct 18</td>
<td>07:00 - 09:30</td>
</tr>
<tr>
<td></td>
<td>15:30 - 18:30</td>
</tr>
<tr>
<td>Sunday, Oct 19</td>
<td>07:00 - 09:30</td>
</tr>
<tr>
<td></td>
<td>15:30 - 18:30</td>
</tr>
<tr>
<td>Monday, Oct 20</td>
<td>07:30 - 17:00</td>
</tr>
<tr>
<td>Tuesday, Oct 21</td>
<td>07:30 - 19:00</td>
</tr>
<tr>
<td>Wednesday, Oct 22</td>
<td>07:30 - 18:00</td>
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<tr>
<td>Thursday, Oct 23</td>
<td>07:30 - 17:00</td>
</tr>
<tr>
<td>Friday, Oct 24</td>
<td>07:30 - 12:00</td>
</tr>
<tr>
<td></td>
<td>15:00 - 17:00</td>
</tr>
<tr>
<td>Saturday, Oct 25</td>
<td>07:30 - 09:00</td>
</tr>
</tbody>
</table>
Symposium Registration Fees

<table>
<thead>
<tr>
<th>Registration Attendees</th>
<th>By Oct. 5</th>
<th>Late (by Oct. 14)</th>
<th>On Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEEE Member</td>
<td>475€</td>
<td>525€</td>
<td>565€</td>
</tr>
<tr>
<td>Non-IEEE Member</td>
<td>585€</td>
<td>685€</td>
<td>715€</td>
</tr>
<tr>
<td>IEEE Student</td>
<td>170€</td>
<td>190€</td>
<td>210€</td>
</tr>
<tr>
<td>Non-IEEE Student</td>
<td>260€</td>
<td>290€</td>
<td>310€</td>
</tr>
<tr>
<td>Retired/Unemployed IEEE Member</td>
<td>100€</td>
<td>150€</td>
<td>200€</td>
</tr>
<tr>
<td>One Day Only</td>
<td>200€</td>
<td>200€</td>
<td>200€</td>
</tr>
<tr>
<td>MRBC Workshop</td>
<td>150€</td>
<td>170€</td>
<td>170€</td>
</tr>
<tr>
<td>X-Ray Workshop</td>
<td>170€</td>
<td>190€</td>
<td>190€</td>
</tr>
<tr>
<td>IEEE Life Member</td>
<td>No Charge</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Luncheon/Dinner Fees

<table>
<thead>
<tr>
<th>Luncheon/Dinner</th>
<th>By Oct. 5</th>
<th>Later or On-Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSS Luncheon</td>
<td>29€</td>
<td>34€</td>
</tr>
<tr>
<td>RTSD Lunch</td>
<td>29€</td>
<td>34€</td>
</tr>
<tr>
<td>MIC Dinner</td>
<td>45€</td>
<td>50€</td>
</tr>
</tbody>
</table>

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:
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.

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 (Marianbrucke) 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.

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**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.

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**

<table>
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<tr>
<th>Date</th>
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<tbody>
<tr>
<td>Tuesday, October 21</td>
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</tr>
<tr>
<td>Thursday, October 23</td>
<td>10:00 – 12.00</td>
</tr>
</tbody>
</table>
List of Exhibitors (as of July 31, 2008)

Acrorad Co., Ltd
Alpha Spectra INC.
AMPTEK Inc.
Aspect Systems GmbH
Berthold Technologies GmbH & Co.
CAEN GmbH
DECTRIS Ltd.
Durham Scientific Crystals Ltd
Eljen Technology
eV PRODUCTS
Fibercryst S.A.S.
Freiburger Materialforschungszentrum
Furukawa Co.,Ltd.
GE Energy
GE Global Research
Hamamatsu Photonics Deutschland GmbH
Hilger Crystals
Hitachi Chemical Co. Ltd.
ICX Radiation GmbH
IOP Publishing
ISEG Spezialelektronik 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

PUBLICATIONS

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.

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:


   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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Email: guesteditor@surrey.ac.uk

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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University of Pennsylvania Health System
joelkarp@mail.med.upenn.edu, +1-215-662-3073

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
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.

Companion Program Co-Chairs:
Merry Keyser
E-mail: Rmkeyser@aol.com
Christine Bohnet
E-mail: c.bohnet@fzd.de
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 | | 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€
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€
17. Visit to the Winery at Schloss Wackerbarth | Fri., Oct. 24 | 37€
18. Walking Tour – City Center | Sat., Oct. 25 | 25€
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 sites 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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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.

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 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.

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

† 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-Chou 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 PNSensor 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
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**

*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

MICHAIL 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 Frédéric 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 KRAF 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, $^3$He, $^7$Li, 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 $^{11}$C and $^{10}$C or from the target atoms such as $^{15}$O. 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.

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**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.

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**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 Willemse, 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/Kleinzschachwitz” 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.

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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 accelerometer 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. Braun-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 microelectronics 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 subtrusts.

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 ExtrMe 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.
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 led by Prof. M. Koshiba 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 ZEUS, 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.
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.
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

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 Furletova, 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. Adriani1, L. Bonechi2, C. Avanzini1, M. G. Bagliesi1, A. Basti1, K. Batkov1, G. Bigongiari1, R. Cecchi1, M. Y. Kim1, P. Maestro1, V. Millucci1, F. Morsani1, P. Papini1, E. Vannuccini1, R. Zai1
1University of Siena and INFN, Italy; 2University of Florence, Italy; 3INFN - sezione di Firenze, Italy; 4INFN - sezione di Pisa, Italy

N02-2 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, T. Tokanai, H. Sakurai, Yamagata University, Japan; T. Mihara, T. Sato, RIKEN, Japan; K. Hayashida, N. Anabuki, 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

N02-3 The Power Energy and Peak Detector ASICs with Voltage and Time-over-Threshold Read Outs: Application to Space Science Particle Instrument.
N. Paschalidis
The Johns Hopkins University Applied Physics Laboratory, USA

N02-4 Prototype of Position-Sensitive X-Ray Detector (PSXD) Based on CdTe/CdZnTe Sensitive Elements for X-Ray Space Telescope
L. 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

N02-5 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; E. Castander, IEEC, Spain

N02-6 Measurement of High Energy Cosmic Rays in the Experiment CZELTA
K. Smolek, Czech Technical University in Prague, Czech Republic

N02-7 Expected Performance of the PHENEX Polarimeter by Enlargement of Detection Area
Y. Kishimoto, S. Gunji, Y. Ishikawa, M. Takada, N. Toukairin, Y. Tanaka, T. 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

N02-8 Development of a Low Resource LaBr3/Ce Gamma-Ray Spectrometer for Planetary Research
E. Maddox, S. Kraft, D. Lampridis, coisne Research BV, The Netherlands; C. Dathy, Saint Gobain Crystals and Detectors, France; N. Nelms, A. Owens, F. Quarati, ESA/ESTEC, The Netherlands

N02-9 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

N02-10 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

N02-11 Performance of a Low-Noise Two-Dimensional Analog ASIC with CdTe Detectors
G. Sato1, T. Kishishita1, H. Ikeda1, T. Sakamura1, K. Tamura1, T. Takahashi1,2
1ISAS / JAXA, Japan; 2University of Tokyo, Japan; 3RIGAKU Co., Ltd., Japan

N02-12 Beam Test Results of the Polarized Gamma-Ray Observer, PoGOLite
H. Takahashi1, M. Arimoto1, M. Axelsson1, G. Bogaert1, Y. Fukazawa1, S. Gunji1, L. Hjalmarsson1, T. Kamae1, Y. Kanai2, J. Katoaka2, N. Kawai2, M. Kiss1, W. Klama2, K. Kurita2, S. Larsson1, G. Madejski1, C. Marini Bettolo1, T. Mizuno2, M. Pearce2, F. Ryde1, S. Rydstrom1, H. Tajima2, T. Takahashi2, T. Tanaka1, M. Ueno2, Y. Umeki1, G. Varner2, H. Yoshida1, T. Yuasa3
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. Miyazaki1
1 Univ. of Tokyo, Japan; 2Subaru Telescope NAOJ, USA

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. Soltau4
1 INAF, 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. Soltau4
1 INAF, 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. Makishima1, H. Odaka2, R. Sato3, M. Kokubun4, T. Takashima4, T. Takahashi5, M. Nomachi6, K. Mori7
1 The 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. Argan3, A. Bulgarelli4, G. Di Cocco5, F. Gianotti1, M. Tavani6, M. Trifoglio1, A. Trois7
1 INAF-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. Shaydu1, M. Lopes-Moya2, A. N. Otte3, M. Rissi4, T. Schweizer1
1 Max-Planck-Institut 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. Argan1, M. Tavani1, A. Trois1, M. Feroci1, C. Labanti1, F. Perotti1, Istituto Nazionale di Astrofisica, Italy; M. Prest, Università dell’Insubria, Italy

N02-43 Performance of BGO Crystals for PoGOLite Gamma Ray Polarimeter
W. Klama, Royal Institute of Technology, Sweden
On behalf of the PoGOLite collaboration

N02-45 The X-Ray Telescope of the CAST Experiment
1 Technische Universität Darmstadt, Germany; 2Max-Planck-Institut für extraterrestrische Physik, Germany; 3Laboratorio de Fisica Nuclear y Altas Energias, Spain; 4European Organization for Nuclear Research (CERN), Switzerland; 5Arístote 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
1 Universities 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. Kajino1, T. Yamamoto1, 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-Flight, 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. Pakrzeszewski3, M. Clajus4, S. Hayakawa1, T. O. Tumer5
1 NOVA 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. Lucches, 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, Università di Pavia & INFN, Italy
On behalf of the ATLAS Simulation group

N02-65 The CMS Tracker Detector Control System
L. Masetti1, F. Hartmann1,2, S. Y. Shah1, R. Stringer1,3
1CERN, Switzerland; 2University of Karlsruhe, Germany; 3University of Riverside, USA

N02-66 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. Rajabi1, H. Babaei1, M. J. Rasaei2
1Idmic Azad University, Zanjan Branch, Iran; 2Tarkiat Modares University, Iran; 3Atomic Energy Organization of Iran, Iran

N02-69 Hadrontherapy and Nuclear Processes: Comparison Between Monte Carlo Simulations and Measurements
A. Moreira1, M. Mariotti2, R. Cefalà1, M. Risoldi2, M. Caprini3, D. Buchs3, J. Araújo1, A. Fanfani1
1INFN Legnaro, Italy; 2INFN Bologna, Italy; 3INFN Perugia and INFN Roma, Italy

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. Buchs3, 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. Spiga2,3, A. Fanfani1, M. Cinquilli1, F. Fanzago3, S. Lacaprara4, F. Farina5, E. Vaandering4, V. Miccio3
1INFN Bologna and Università di Bologna, Italy; 2INFN Perugia and Università di Perugia, Italy; 3CERN, Switzerland; 4INFN Perugia, Italy; 5CNAF, Italy; 6INFN Legnano, Italy; 7INFN Milano Bicocca, Italy; 8FNAL, USA

N02-81 Optimization of Light Collection in SiPM Detectors for Scintillating Fibers Readout
S. M. Ansermet-Tentindio
Ecole Politechnique Federale de Lausanne, Switzerland

N02-83 A Proposal to Dynamically Manage Virtual Environments in Heterogeneous Batch Systems
L. Servoli1, M. Mariotti2, R. Cefalà1,2
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. Shelfer, 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. Mittey, 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. Uzhinsky, CERN, Switzerland; D. Wright, SLAC, USA

N02-91 Recent Developments of Electronic Stopping Models for Heavy Ions in Geant4
A. Lechner1,2, 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. Lechner1,2, CERN, 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. Sudhakar1,2, 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
¹Instituto de Radioproteção e Dosimetria, Brazil; ²Università degli Studi di Cagliari, Italy

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
¹University of Seville, Spain; ²CIEMAT, 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
¹INFN Genova, Italy; ²Technische Universität, Vienna, Austria

N02-125 Analysis of Geant4 simulation of proton depth dose profiles for radiotherapy applications
M. G. Pia, INFN Genova, Italy; A. Lechner, Technische Universität, Vienna, Austria

N02-127 Parallel Geometries in Geant4: Foundation and Recent Enhancements
J. Apostolakis¹, M. Asai¹, G. Cosmo¹, A. Howard¹, V. Ivanchenko³,
M. Verderi⁴
¹CERN, Switzerland; ²INFN Genova, Italy; ³SLAC, USA; ⁴MSU, Russia; ⁵IN2P3, 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, Università 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

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. Hoshi², Y. Kikuchi², S. Narita², K. Neichi³,
A. Yamaguchi³
¹Tohoku Gakuen University, Japan; ²Iwate University, Japan; ³Tohoku 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
A. S. Conceição¹, J. M. Maia¹,², J. A. Mir³, L. M. P. Fernandes¹,
J. M. F. Santos¹
¹Atomic and Nuclear Instrumentation Group, Physics Department, University of Coimbra, Portugal; ²University of Beira-Interior, Portugal; ³CCLRC Rutherford Appleton Laboratory, UK

N02-147 Absolute Numbers of Excited Atoms and Ion Pairs Produced by Alpha Particles in High-Pressure Xenon Gas
M. Mimura, S. Kobayashi, M. Miyajima, N. Hasebe
Waseda University, Japan

N02-149 Study on the Performance of High Rating MRPC
Y. Wang, J. Wang, Q. Yan, Y. Li, J. Cheng
Tsinghua University, China

N02-151 Studies on RPC Position Resolution with Different Surface Resistivity of High Voltage Provider
J. Ye¹, J. Cheng¹, Q. Yue¹, Y. Li¹, J. Li¹, Y. Wu¹, H. Yang¹
¹Tsinghua university, China; ²Institute of High Energy Physics, Chinese Academy of Sciences, China

N02-153 Performance of MPGDs with Portable Readout Electronics
D. A. Watts¹, N. Malakhov¹, L. Rogpelewski², F. Sauli³, J. Samarati¹
¹TERA Foundation, Canada; ²CERN, Canada

N02-155 Study on the Space Dispersion of Induced Charge of Resistive Plate Chamber
Q. Yue, J. Ye, Y. Li, J. Cheng, Tsinghua university, China

N02-157 Development of High Counting Rate Measurement System for He-3 Position Sensitive Detector
S. Makino, A. Sumita, T. Onodera, Toshiba Corporation, Japan; Y. Tanaka, N. Hikida, K. Ishizawa, Toshiba Electron Tubes & Devices Co., Ltd., Japan

N02-159 Analytical Evaluation of Incidence Angle Correction in He Mixture Large Planar Drift Chambers
E. Botta
Torino University and INFN - Sezione di Torino, Italy

N02-161 Improved Glass Resistive Plates Chambers for Digital HAdrnic ALorimeter
I. Laktineh, M. Bedjidian, E. Latour, N. Lumb, R. Kieffer
IPNL, France
N02-163 Gas Gain of LHCb MWPC as a Function of Temperature and Pressure
A. Sarti, D. Pinci
1INFN - LNF, Italy; 2INFN - Sezione di Roma 1, Italy; 3Università di Roma “La Sapienza”, Italy

N02-165 Filtering Techniques for the Purification of the LHC Resistive Plate Chambers’ Gas Mixture
R. Guida, M. Capeans, F. Hahn, S. Haider, CERN, Switzerland

N02-167 Particle Identification and Long-Term Performance of the NA49 TPC System
D. Varga, Eötvös Loránd University, Hungary
On behalf of the NA49 Collaboration

N02-169 Results of Studies with a Small TPC Prototype Readout with GEMs and TimePix
U. Renz, Albert-Ludwigs-University, Germany
On behalf of the LCTPC

N02-171 X-Ray Polarimetric Measurements in Xenon Gas Filled Detectors
G. S. Botte, P. J. B. M. Rachinhas, R. H. V. T. Dias
1Universidade de Coimbra, Portugal; 2Hospitai da Universidade de Coimbra, Portugal; 3Universidade de Aveiro, Portugal; 4Institute Politecnico de Leiria, Portugal; 5York University, Canada

N02-173 The UV Laser Calibration System of the ALICE Time Projection Chamber
B. S. Nielsen, J. Westergaard, G. Renault, C. Soegaard, C. Nygaard, J. J. Gaardhøje
Niels Bohr Institute, Denmark

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
J. A. S. Barata, C. A. N. Conde
1Universidade da Beira Interior, Portugal; 2Universidade de Coimbra, Portugal

N02-177 Ageing Phenomena in the Straw Tube Tracker (Outer Tracker) of LHCb
N. Tuning, NIKHEF, The Netherlands
On behalf of the LHCb OT collaboration

N02-179 Performance of a Compact Multi-Purpose Mixed Gas Handling System for Gaseous Detectors
J. E. Yurkon, N. Verhanovitz, NSCL Michigan State Univ, USA

N02-181 Development of a Two-Dimensional Position Sensitive MSGC with New Multi-Layering Technique for Neutron Application
K. Fujita, H. Takahashi, S. Sipau, B. X. Shi, The University of Tokyo, Japan; T. Ino, H. M. Shimizu, S. Kishimoto, High Energy Accelerator Research Organization, Japan; M. Furusaka, Hokkaido University, Japan; T. Oku, J.-I. Suzuki, Japan Atomic Energy Agency, Japan

N02-183 A Prototype Study of the TPC for the International Linear Collider Experiment
R. Yonamine, KEK (High Energy Accelerator Research Organization), Japan
On behalf of part of the ILC-TPC Collaboration

N02-185 Monte Carlo Photoelectron Transmission Efficiency in CO₂ and Ar-CO₂ Mixtures
J. M. D. Escada, P. B. M. Rachinhas, T. H. V. T. Dias
1Universidade de Coimbra, Portugal; 2Hospitai da Universidade de Coimbra, Portugal; 3Instituto Superior de Engenharia de Coimbra, Portugal; 4York University, Canada

N02-187 Thick-GEM Based Trigger Detector Development for ALICE
G. Hamar, MTA KFKI RMKI, Research Institute for Particle and Nuclear Physics, Budapest, Hungary; D. Varga, Eötvös Loránd University, Hungary

N02-189 Cluster Counting Drain Chambers for Collider Experiments
G. F. Tassielli, INFN, Italy
On behalf of the CLUCOU Group

N02-191 Gas VUV Photosensors Operating Face-to-Face at HpXe
1University of Aveiro, Portugal; 2University of Coimbra, Portugal

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 4µpi-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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N02-231 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
Y. Koba, G. Wakabayashi, Y. Uozumi, M. Imamura, H. Iwamoto, Y. Fukui, N. Tomohata, Y. Morimoto, K. Kyohara, Kyushu University, Japan; N. Matsufuji, National Institute of Radiological Sciences, Japan; P. Evtoukhovitch, V. Kalinnikov, N. Khomutov, N. Kuchinskii, A. Moiseenko, D. Mzavia, V. Samoilov, Z. Tsamalaidze, Joint Institute for Nuclear Research, Russia

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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On behalf of the Group of authors

N02-257 X-Ray Fluorescence Study with Pixelated CZT Radiation Sensors
D. Meier, D. J. Wagenaar, B. E. Patt, Gamma Medica - Ideas, Norway; S. Chen, Y. Wang, B. M. W. Tsui, Johns Hopkins University, USA

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 Measured
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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

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.
The Institute of Nuclear Physics PAN, Poland

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
Yonsei University, Korea

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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N02-319 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
G. Lutz¹, S. Herrmann¹, P. Lechner¹, M. Porro², R. H. Richter¹, G. Schaller¹, M. Schnecke¹, F. Schopper², H. Soltan¹, L. Strüder¹, J. Treis¹, S. Wölfel²
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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
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N02-335 The Low Radioactivity Electrical Connecting Link of the CUORE Experiment
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N02-337 Development and Test of Micro-Cables for Thin Silicon Detector Modules in a Prostate Probe.
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N02-339 High Rate Pulse Processing Algorithms for Microcalorimeters

N02-341 Radiation Damage Effects of Li6Gd(BO3)3 and Li6Gd(BO3)3:Ce Single Crystals under Electron, γ-Ray and Fast Neutron
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N02-343 Study of Surface Roughness of CsI:Tl Crystals Treated by Various Abrasives
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N02-345 A Large Area Silicon Drift Detector (SDD) Coupled with a Lanthanum Bromide (LaBr3) Scintillator for γ-Ray Detection
1SHINT USA Inc., USA; 2Consultant, USA; 3Photon Imaging Inc., USA

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

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
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N02-353 Determination of the Absolute Light Yields of LuYAP and LYSO
M. Kronberger, E. Auffray, P. Lecoq
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N02-355 Radiation Damage in CWO Scintillation Crystals with Different Defects
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N02-357 Measurement of Light Yield of Ce3+ Perturbed Emission of CaF2 Scintillator Coupled with Avalanche Photodiode
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N02-359 Basic Properties of Ceramic Pr:LuAG Scintillator
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N02-361 Crystal Growth and Scintillation Property of Nd+-Doped LaF3, Single Crystal
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N02-363 Neutron Responses of Eu2+ Activated LiCaAlF6 Scintillator
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N02-365 Charged-particle-induced Luminescence of Sr3Al2O6:Eu2+, Dy3+

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, A. Takada3, M. Takahashi1, T. Tanimori1, K. Tsushima1, K. Ueno1
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N02-369 Recent Advances in the Development of Large-Area Plastic Gamma-Ray Spectrometers
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N02-371 Construction and Performance of a Scintillating Fiber Detector
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N02-373 Progress Towards the Development of Practical Scintillation Counters Based on SiPM Devices
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N02-375 Scintillation Properties of Praseodymium and Cerium Doped LuAG Scintillator Compared to Cerium Doped LSO
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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
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N02-381 Novel Scintillators with Neutron/Gamma Discrimination, Cs(NH\textsubscript{4})\textsubscript{2}MYX\textsubscript{6}:Ce\textsuperscript{3+} (M = Li, Na; X = F, Cl)
E. V. Van Loef\textsuperscript{1}, C. M. Wilson\textsuperscript{1}, W. W. Moses\textsuperscript{1}, K. S. Shah\textsuperscript{1}
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N02-383 Study of a LaBr\textsubscript{3}/LaCl\textsubscript{3} Phoswich Detector
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N02-385 New CdLa\textsubscript{2}(WO\textsubscript{4})\textsubscript{4}:single Crystal: Growth and Properties

N02-387 Main Parameters and Applications of ZnSe Scintillators
Institute for Scintillation Materials of NAS of Ukraine, Ukraine

N02-389 Trial Application of Ce:Gd\textsubscript{2}Si\textsubscript{2}O\textsubscript{7} Thick Film Scintillator for Neutron Imaging
S. Kawamura\textsuperscript{1}, J. H. Kaneko\textsuperscript{1}, S. Sato\textsuperscript{2}, J. Haruna\textsuperscript{2}, S. Saeki\textsuperscript{2}, M. Higuchi\textsuperscript{1}, K. Kurashige\textsuperscript{1}, S. Ueda\textsuperscript{1}, H. Ishibashi\textsuperscript{1}, S. Nishiyama\textsuperscript{1}, F. Fujita\textsuperscript{1}, A. Homma\textsuperscript{1}, M. Furusaka\textsuperscript{1}, Y. Kiyana\textsuperscript{1}
\textsuperscript{1}Hokkaido University, Japan; \textsuperscript{2}KEK, Japan; \textsuperscript{3}Hitachi Chemical Ltd., Japan

N02-391 Upgrade of Position Sensitive Detector System
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. Togù\textsuperscript{1}, M. Horváth\textsuperscript{1}, K. Blázek\textsuperscript{1}, L. Pina\textsuperscript{1}, B. Sopko\textsuperscript{1}
\textsuperscript{1}Crytur, spol. s r.o., Czech Republic; \textsuperscript{2}Reflex Ltd., Czech Republic; \textsuperscript{3}Czech Technical University, Czech Republic

N02-395 Crystal Growth, Optical Properties and Neutron Responses of Ce\textsuperscript{3+} doped LiCaAlF\textsubscript{6}, 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-Diphenylsiloxyane Based Organic Scintillators with High Light Yield and Radiation Resistance
S. Carturan\textsuperscript{1,2}, A. Quaranta\textsuperscript{1}, V. Kravtchouk\textsuperscript{1}, F. Gramagna\textsuperscript{1}, G. Maggioni\textsuperscript{1,2}, G. Della Mea\textsuperscript{1}
\textsuperscript{1}INFN- Laboratori Nazionali di Legnaro, Italy; \textsuperscript{2}University of Padova, Italy; \textsuperscript{3}University of Trento, Italy

N02-399 Impact of Higher Ce Concentration and Co-Doping on Scintillation Properties of Lu2xGd2(1-x)SiO5:Ce (LGSO, X=0.9)
Y. Kurata\textsuperscript{1}, H. Yamamoto\textsuperscript{1}, T. Usui\textsuperscript{1}, S. Shimizu\textsuperscript{1}, N. Shimura\textsuperscript{1}, H. Ishibashi\textsuperscript{1}
\textsuperscript{1}Hitachi Chemical Co., Ltd. Yamazaki Works(Katsuta), Japan; \textsuperscript{2}Tokyo University of Technology, Japan

N02-401 High Detection Efficiency ZnS Scintillators for a Fibre-Coded Linear Neutron Detector for Thermal Neutron Scattering Instruments
T. Nakamura\textsuperscript{1}, E. M. Schooneveld\textsuperscript{2}, N. J. Rhodes\textsuperscript{3}, M. Katagiri\textsuperscript{3}, N. Tsusui\textsuperscript{3}, K. Tob\textsuperscript{1}, K. Sakasai\textsuperscript{1}, K. Soyama\textsuperscript{1}
\textsuperscript{1}Japan Atomic Energy Agency, Japan; \textsuperscript{2}Rutherford Appleton Laboratory, UK; \textsuperscript{3}Chichibufuji, Japan

N02-403 Test of a 3”x3” LaCl\textsubscript{3} Crystal for Total Absorption Measurements
C. Guerrero, T. Martínez, D. Cano-Ortiz, 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

N02-407 Transparent LSO Ceramic Scintillator for Gamma-Ray Detection
Y. Wang\textsuperscript{1}, J. Glodo\textsuperscript{1}, E. V. Loef\textsuperscript{2}, W. H. Rhodes\textsuperscript{2}, C. Brecher\textsuperscript{2}, L. Nguyen\textsuperscript{1}, A. Lempicki\textsuperscript{1}, W. M. Higgins\textsuperscript{2}, K. S. Shah\textsuperscript{1}, J. G. Baldoni\textsuperscript{1}
\textsuperscript{1}Radiation Monitoring Devices, Inc., USA; \textsuperscript{2}Alem Associates, USA; \textsuperscript{3}Nanocerox Inc., USA
N02-409 Fabrication and Comparison of Gd2O2S(Tb) and CeI(Tl) Films for X-Ray Imaging Detector Application
KAIST(Korea Advanced Institute of Science and Technology), Korea

N02-411 Growth, Optical Properties and Neutron Responses of Ce⁺⁺ 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 Low Activity Sources
J. C. Engdahl, S. Portscherrell, K. Bharwani
Bradley University, USA

N02-415 Scintillation Photodiode Detector Based on CsI:Tl 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. Karazin, Ukraine; E. Valtonen, T. Eronen, University of Turku, Finland; J. Peltonen, J. Lehti, Abo Space Research Oy, Finland; H. Kettunen, A. Virtanen, University of Jyvaskyla, Finland; J. Huovelin, University of Helsinki, Finland

N02-417 A Compton-Scattering Coincidence System for Scintillation 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 Eu⁺⁺ - Doped Barium Silicates as Scintillators
Lawrence Berkeley National Laboratory, USA

N02-421 Simulating Scintillator Light Collection Using Measured Optical Reflectance
M. Janecek, W. W. Moses
Lawrence Berkeley National Laboratory, USA

N02-423 First Principles Computation Study of Ce Scintillation in YI₃
Lawrence Berkeley National Lab, USA

N02-425 Central Time-of-Flight System 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, J. P. Cunha, I. Lopes, V. Chepel, A. Pereira
1Universidade de Coimbra, Portugal; 2Laboratório de Instrumentação e Física Experimental de Partículas, Portugal

Safety Instrumentation / Homeland Security

N02-431 Skyshine Interference with Radiation Detection Systems
PNNL, USA

N02-433 Picture Comparison Binarization Method for Cosmic Ray Muon Radiography
Y. Liu, Z. Zhao, Y. Xing, Z. Chen, L. Zhang, Z. Wang
1Tsinghua University, China; 2Ministry of Education, China

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. Mihalco, Oak Ridge National Laboratory, USA; B. Blackburn, Raytheon, USA; D. Chicher, Idaho National Laboratory, USA

N02-439 A Framework for the Solution of Inverse Transport Problems
J. K. Mattingly, D. J. Mitchell
PandaSec International Laboratory, USA

N02-441 Muon Tomography for the Detection of Nuclear and Radioactive Substances in Containers
M. Benettoni, G. Bonomi, P. Calvini, P. Checchia, E. Conti, F. Gasparini, F. Gonnella, M. Pegoraro, S. Pesente, S. Squarcia, S. Vanini, G. Viesti, G. Zumerle
1INFN Sezione di Padova, Italy; 2University of Brescia, Italy; 3INFN Sezione di Pavia, Italy; 4University of Genova, Italy; 5INFN Sezione di Genova, Italy; 6Università di Padova, Italy

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

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
Department of Engineering Physics, Tsinghua University, China

N02-447 Development of Humanitarian Landmine Detection System by Irradiation of Neutron and Measurement of Neutron and Gamma-Ray
1Kyoto University Research Reactor Institute, Japan; 2Kyoto University, Japan; 3Institute of Advanced Energy, Kyoto University, Japan
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. Penza, 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. Deng3, Z. Xu2, M. Mayorov3, M. Schenk3, E. Bystrov4, J. Brutscher5, V. Kozhemiakin4, H. Shulhovich1, A. Birnbaum1
1 Consultant for the International Atomic Energy Agency, Austria; 2 Support Center of Nuclear Technology, CAEA, China; 3 International Atomic Energy Agency, Austria; 4 Atomtex Company, Balarus; 5 GBS Company, Germany

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. Swoboda1, H. Boeck3, Vienna University of Technology, Austria; M. Schenk, International Atomic Energy Agency, Austria; A. Wolf, Forschungszentrum Dresden/Rossendor, 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. Daghinian3, M. Dahlbom1
1 UCLA School of Medicine, USA; 2 Tiefiertronix, USA; 3 IntraMedical Imaging, USA

N02-469 Nuclear Resonance Fluorescence Using Different Photon Sources
1 Pacific Northwest National Laboratory, USA; 2 Duke University, USA; 3 Passport Systems, Inc., USA; 4 Idaho Accelerator Center, USA; 5 Idaho National Laboratory, USA

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. Schwepp
Pacific Northwest National Laboratory, USA

N02-479 Detectors for Harsh Active Interrogation Environments
B. W. Blackburn1, J. L. Jones1, P. A. Hausladen1, J. T. Mihalco1, C. E. Moss4, K. Ianakiev5, A. W. Hunt1, M. V. Hynes2, B. A. Harris1
1 Raytheon Integrated Defense Systems, USA; 2 Idaho National Laboratory, USA; 3 Idaho National Laboratory, USA; 4 Oak Ridge National Laboratory, USA; 5 Los Alamos National Laboratory, USA; 6 Idaho State University, USA

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 MPDG-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. A. Zmouh, 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. Peskov1,3, F. Pietropaolo4, P. Picchi1
1 CERN, Switzerland; 2 INFN Bari, Italy; 3 Eole Superior des Mines, France; 4 INFN Padova, Italy; 5 INFN 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. Otiojogva, 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
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. Jakůbek2, C. Lebel1, C. Leroy1, L-P. Martin1, M. Platkevič2, S. Pospíšil3
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. Bulgheroni1, M. Caccia1, M. Manghisoni1, M. Jastrzab2, E. Pozzati1, L. Ratti1, 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. Trimp1, R. Yarema, FERMILAB, USA

N04-5 Radiation Resistance of SOI Pixel Sensors Fabricated with OKI 0.15μm FD-SOI Technology
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. Hossbach2, 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. Fed1, 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 NIFITE Collaboration

N05-6 FPGA-Based Solutions for I&C Applications
F. Daumas, T. Nguyen, P. Salaun
Electricité de France, France
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. Greco1,2, S. Lami1,2, A. Magazzù1,2, G. Magazzù1, A. Scribano1,2, E. Oliveri1,2, E. Pedreschi1, M. Sanchez1, W. Snoeys1, F. Spinella1, N. Turini1,2, P. Vulliez3
1INFN, Italy; 2University of Siena, Italy; 3CERN, Switzerland

N06-6 The New Data Acquisition System for the HADES Experiment
M. Palka1,2, M. Traxler1, I. Frohlich1, P. Salabura2, P. Skotl1, R. Trebacz2, M. Kajetanowicz2, J. Michel1, J. Stroth1, H. Strobele1, A. Tarantola3
1Gesellschaft für Schwerionenforschung, Germany; 2Jagiellonian University, Poland; 3Institut für Kernphysik, Germany; 4Nowoczesna Elektronika, Poland

N06-7 The Configuration & Control of the ATLAS Trigger and Data Acquisition System
G. Lehmann Mjøttrup1, I. Alexandrov2, G. Avolio3, M. Carpineti3, A. Cosso-Radu3, A. Kazarov1,2, S. Kolos4, V. Kolov4, A. J. Lankford5, M. Leahu6,7, L. Mapelli1, R. Murillo García4, Y. Ryabov5, J. E. Sloper1, I. Soloviev1,2, I. Fedorko1, E. Badescu3, A. Dos Anjos6, A. E. Bekkelien1, A. Amorim1, L. Vaz Gil Lopes7
1European Laboratory for Particle Physics (CERN), Switzerland; 2Joint Institute for Nuclear Research, Russia; 3National Institute for Physics and Nuclear Engineering, Institute of Atomic Physics, Romania; 4University of California, USA; 5Petersburg Nuclear Physics Institute (PNPI), Russia; 6University of Wisconsin, USA; 7Laboratorio de Instrumentação e Física Experimental, Portugal

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. Talamonti1,2, D. Menichelli1,2, M. Bruzzi1,2, M. Bucciolini1,2, L. Marrazzo1,2, M. Tesi1, M. Brianzi1, A. La Rosa2, G. G. A. Cirrone2, G. Cuttone2, P. LoJacono3
1University of Florence, Italy; 2INFN, Italy

N07-3 Gamma Spectroscopy Performance of Silicon Photomultipliers Coupled with LYSO Scintillators
M. Petacesca1, M. L. F. Lërchet1, M. Safavi1, R. Battiston2, G. U. Pignatel3, A. B. Rosenfeld1
1University of Wollongong, Australia; 2INFN, Italy; 3University 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

N07-5 Response of a PIN Diode and SOI Microdosimeter to the TSL Quasimonoenergetic Neutron Field
D. A. Prokopovich1, I. M. Cornelius1, M. I. Reinhard1, A. B. Rosenfeld2
1Australian Nuclear Science and Technology Organisation, Australia; 2University 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. Lindegaard3, K. Tanderup2
1Riso National Laboratory for Sustainable Energy, Denmark; 2Aarhus 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
1Max-Planck-Institut fuer Physik, Germany; 2Excellence Cluster Universe, Germany; 3Massachusetts Institute of Technology, USA; 4University of Kentucky, USA; 5Yale University, USA; 6Indina University Cyclotron Facility, USA; 7Argonne National Laboratory, USA

N08-3 The Triple-GEM T2 Telescope of the TOTEM Experiment
M. Berrett1,2, E. David3, F. Garcia1, J. Heino1, T. Hilden1, W. Klempt1, K. Kurvinen4, S. Lami5, G. Latino1,2, R. Lauhakangas4, E. Oliveri1,2, L. Ropelewski1, A. Scribano1,2, N. Turini1,2, 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, Physikalisch 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. Leggo, CERN, Switzerland
On behalf of the Atlas Muon Micromegas Collaboration

N08-6 Large Surfaces MicroMegas with Embedded Front-End Electronics for a Digital Hadron Calorimeter
C. Adloff, LAPP - Universite 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. Attanasii, N. Belcari, S. Mochrs, 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. Oliver, R. Speller, University College London, UK

N09-3 Phase Contrast Imaging with a PILATUS 100K Detector
C. Broennimann1,2, C. David2, T. Donath3, O. Bunk2, E. Eikenburg2, F. Pfeiffer2,3, M. Bech4
1DECTRIS AG, Switzerland; 2Paul Scherrer Institut, Switzerland; 3Ecole Polytechnique Federale, 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
1Tohama 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; 6Kyoto 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. Burian3, M. Carrara1, G. Gambarini1, M. Marek2, A. Negri1, L. Viererbl1
1University of Milan and INFN, Italy; 2Nuclear Research Institute, Czech Republic; 3Fondatare 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. Pasquale1, P. Yuri2, 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: Ronaldol 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, Wakoai Wann 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 FAST: Formation Flight All Sky Telescope Covering the High Energy X-Ray Sky
H. Tsunemi¹, K. Hayashida¹, H. Kunieda², Y. Ogasaka³, M. Itoh⁴, M. Ozaki⁵, I. Kawano⁶, N. Anabuki⁷
¹Osaka University, Japan; ²Nagoya University, Japan; ³Kobe University, Japan; ⁴JAXA, Japan

N10-7 The Camera and Readout System of the MAGIC-II Telescope
E. 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 Lavieties, LLNL, United States

N11-1 A Novel Output Baseline Holder Circuit for CMOS Front-End Analog Channels
F. Corsi, M. Foresta, C. Marzocca, G. Matarrrese, A. Tauro
Politecnico Di Bari, Italy

N11-2 MSGROC – an ASIC for High Count Rate Readout of Double-Sided Neutron Sensitive Microstrip Gas Chambers
P. Wiacek¹, A. Brogna², S. Buzzetti³, W. Dawrowski¹, T. Fiutowski¹, B. Gebauer², M. Mindur², C. Schmidt³, C. Schulz³, H. K. Soltveit³, R. Szczylgiel¹, U. Trunk³,⁴
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 VFAT2 : 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. Chalmer¹, 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. Chiozzo¹, O. Cobanoglu², G. Mazza³, D. Panzieri¹,³
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’Amico¹,², A. Baschirotto¹, M. De Matteis¹, F. Grancagnolo², G. Chiodini², M. Panareo², R. Perrino², F. Augustine³
¹University of Salento, Italy; ²INFN, Italy; ³Augustine Engineering, USA

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. Buzhan¹, B. Dolgoshein², A. Ilyin², V. Kaplin³, S. Klemm¹, H. Miyamoto¹, E. Popova², M. Teshima¹
¹Max-Planck-Institut für Physik, Germany; ²Moscow Engineering and Physics Institute, Russia

N12-3 New Developments for CMOS SSPMs
E. B. Johnson¹, C. Stapels¹, E. Chapman¹, D. Wehe¹, F. Augustine¹, P. Barton¹, 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. Ninkovic¹,², R. Eckhart²,³, R. Hartmann²,³, P. Holl¹,², C. Koitsch¹,³, G. Lutz²,³, R. Mirzoyan¹, H.-G. Moser¹,², R. Richter¹,², G. Schaller¹,², F. Schopper¹,², H. Soltau¹,³, M. Teshima¹
¹Max-Planck-Institut für Physik, Germany; ²Max-Planck-Institut für 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
N13-1 Development of Digital Hadron Calorimeter Using Gas Electron Multiplier
J. Yu, University 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. Faso, 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. Hohler1,2, K. Peters1,2, 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. Gill1, D. Belver2, P. Cabanelas3, J. Diaz1, J. A. Garzón1, D. Gonzalez-Diaz1, W. Koenig1, M. Traxler1
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

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. Hertrich1, O. B. Drury1, J. Hoehne2
1Lawrence Livermore National Laboratory, USA; 2VeiCold Technologies, Germany

N14-3 A Low Energy X-Ray Fluorescence Spectrometer for Elemental Mapping X-Ray Microscopy
A. Longoni1,2, R. Alberti1,2, T. Klakta1,2, 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. Breugnot1, B. Caillot1, B. Chantepec1, J.-C. Clemens1, P. Delpierre1, B. Dinkespiller1, S. Godiot1, S. Hustache Ottini1, K. Medjoubi1, M. Menouni1, C. Morel1, P. Panguaud1, E. Vigeolas1
1Institut Neel-CNRS, France; 2CPPM - IN2P3, France; 3Sincrotrone Soleil, France

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
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. Porro1,2, L. Andricek3,4, A. Castoldi1, C. Fiorini4, P. Fischer4, H. Graafsma1, K. Hansen1, A. Kugel1, G. Lutz1,2, U. Pietsch1, V. Re1,2, L. Strueder3,4
1Max Planck Institut fuer Exteraterrestrische Physik, Germany; 2MPI Hallbleiterlabor, 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; 10Universita 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 Physic, 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
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. Harkonen1, J. Kierstead1, J. Metcalfe1, S. Seidel1
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. Bell1, P. V. Dressendorfer2, J. Vigen1
1INFN Genova, Italy; 2CERN, Switzerland; 3ORNL, USA; 4IEEE, USA

N16-3 MCNPX 2.6.0 - New Features Demonstrated
Los Alamos National Laboratory, USA

N16-4 Recent Developments in the Physics and Operation of the PENELOPE Code System
E. Salvador, J. M. Fernández-Varea, Universitat de Barcelona, Spain; J. Sempau, Universitat Politecnica 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. Battiston, 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
J. Huizenga1, D. R. Schaart1, F. J. Beekman2, M. Andreaco3, M. A. Spurrier3,1
1Lawrence Berkeley National Laboratory, USA; 2University of Tennessee, USA; 3Siemens Medical Solutions, USA

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. Szapyczyński2,3, M. A. Spurrier4, 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. Vinke1, P. Dendooven2, H. Lohner2, F. J. Beekman1
1Delft University of Technology, The Netherlands; 2University of Groningen, The Netherlands
N17-4 A Silicon Strip Detector for Multiplicity Measurements in the Forward Regions of ALICE
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/SPM readout for the Crystal-Barrel CsI(Tl) Calorimeter
C. Wendel, Universität 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. Kopatch1, S. Pospisil3, S. A. Telezhnikov3, Z. Vykydal1
1Czech Technical University in Prague, Czech Republic; 2Joint 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. Herrera, 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)
P. Scardi, 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. Mcke, University of Michigan Ann Arbor, USA; G. Dimitrov, L. Berkeley National Lab., USA; J. Rotherberg, 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. Andragna1, D. Carpana2, D. Cimino3, A. Dotti1, 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
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. Bates3, 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. Kuhne1, T. Lauf3, P. Lechner1, G. Lutz1, S. Rummel1, L. Strueder1, J. F. Treis1
1PNSensor GmbH, Germany; 2University of Leicester, UK; 3Max Planck Institut for Extraterrestrial 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. Killenberger1, J. Abernathy2, K. Dehmelt3, R. Diener4, J. Hunt5, M. E. Janssen5, T. Krautschke6, A. Muennhofer1, A. Vogel1, P. Wienemann1, S. Zimmermann1, J. Engels1
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
L. 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. Nicola1, W. Hulsbergen2, M. D. Needham1, J. M. Amoraa1, 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. Kisel1,2
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, University of Washington, USA
On behalf of the NSS/MIC Joint Session II

NM2-1 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
**N21-3** Fast DEPFET Read-Out for the Simbol-X Low Energy Detector  
L. Bombelli$^{1,2}$, C. Fiorilli$^{1,2}$, A. Ricca$^{1}$, M. Porro$^{3,4}$, S. Herrmann$^{3,4}$, A. Wassatsch$^{4,5}$, J. Treis$^{3,4}$  
$^1$Politecnico di Milano Dip. Elettronica e Informazione, Italy;  
$^2$INFN Sezione di Milano, Italy;  
$^3$Max-Planck-Institut für extraterrestrische Physik, Germany;  
$^4$MPI Halbleiterlabor, Germany;  
$^5$Max-Planck-Institut für Physik, Germany

**N21-4** Simulation of the XEUS Optics Using Geant4  
E.-J. Buis$^{6}$, G. Vacanti$^{1}$, M. Beijersbergen$^{1,2}$, M. Colloni$^{2}$  
$^1$cosine Science & Computing BV, The Netherlands;  
$^2$cosine Research BV, The Netherlands

**N21-5** DEPFET Macropixel Arrays as Focal Plane Instrumentation for SIMBOL-X and MIXS on BepiColombo  
J. Treis$^{3,4}$, P. Lechner$^{3,2}$, L. Andricek$^{6,2}$, F. Aschauer$^{6,2}$, K. Heinzinger$^{3,2}$, S. Herrmann$^{3,2}$, T. Lauf$^{5,2}$, G. Lutz$^{3,2}$, R. H. Richter$^{4,2}$, M. Porro$^{3,2}$, G. Schaller$^{3,2}$, M. Schnecke$^{3,2}$, G. Segneri$^{3,2}$, F. Schopper$^{3,2}$, H. Soltau$^{3,2}$, L. Strüder$^{3,2}$  
$^1$Max-Planck-Institute for Solar System Research, Germany;  
$^2$MPI Semiconductor Laboratory, Germany;  
$^3$PNSensor GmbH, Germany;  
$^4$Max-Planck-Institute for Physics, Germany;  
$^5$Max-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

**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. Giuseppi, 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 $^{106}$Cd  
I. Stekl, JIAP CTU in Prague, Czech Republic  
On behalf of the TGV collaboration

**N22-3** Low-Level $\gamma$-Ray Spectrometry in the Medium Deep Underground Laboratory Felsenkeller/Dresden  
D. Degering, M. Köhler  
Verein für Kernverfahrenstechnik und Analytik Rossendorf e.V. (VKTA), Germany

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**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 PNSensor GmbH

**N21-2** CAST Probing the Axion Model Region  
M. Kuster$^{1,2}$, TU Darmstadt, Germany;  
$^2$Max-Planck-Institut für Extraterrestrische Physik, Germany  
On behalf of the CAST Collaboration

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**N20** Nuclear Measurements and Monitoring Techniques I: Low-Level $\gamma$-Ray Spectrometers in the Medium Deep Underground Laboratory  
Tuesday, Oct. 21  
16:00-18:00  Conference 1

Session Chairs:  
**Richard T. Kouzes**, PNNL, United States  
**Rolf Arlt**, Consultant for the International Atomic Energy Agency, Austria

**N20-1** (invited) The Majorana Neutrinoless Double-Beta Decay Experiment  
V. E. Giuseppi, Los Alamos National Laboratory, USA  
On behalf of the Majorana Collaboration

**N20-2** Low-Background Multi-HPGe Spectrometer TGV II Used for the Study of Double Electron Capture of $^{106}$Cd  
I. Stekl, JIAP CTU in Prague, Czech Republic  
On behalf of the TGV collaboration

**N20-3** Low-Level $\gamma$-Ray Spectrometry in the Medium Deep Underground Laboratory Felsenkeller/Dresden  
D. Degering, M. Köhler  
Verein für Kernverfahrenstechnik und Analytik Rossendorf e.V. (VKTA), Germany

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**N19** Nuclear Measurements and Monitoring Techniques I: Low-Level $\gamma$-Ray Spectrometers in the Medium Deep Underground Laboratory  
Tuesday, Oct. 21  
16:00-18:00  Conference 1

Session Chairs:  
**Richard T. Kouzes**, PNNL, United States  
**Rolf Arlt**, Consultant for the International Atomic Energy Agency, Austria

**N19-1** (invited) The Majorana Neutrinoless Double-Beta Decay Experiment  
V. E. Giuseppi, Los Alamos National Laboratory, USA  
On behalf of the Majorana Collaboration

**N19-2** Low-Background Multi-HPGe Spectrometer TGV II Used for the Study of Double Electron Capture of $^{106}$Cd  
I. Stekl, JIAP CTU in Prague, Czech Republic  
On behalf of the TGV collaboration

**N19-3** Low-Level $\gamma$-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
Pacific Northwest National Laboratory, USA

N22-5 Experimental Set-up for Gamma-Activity Measurements of Astronomical Sources
P. Colombetti1,2, C. Taricco1,2, N. Bhandari3, A. Romero3, N. Verma4, G. Vivaldi1,2
1University of Torino, Italy; 2Istituto di Fisica dello Spazio Interplanetario IFSI-INAF, Italy; 3Basic Sciences Research Institute, India; 4Indian Institute of Astrophysics, India

N22-6 P-Type Modified Electrode High Purity Germanium Detector

N22-7 Calorimetric Measurements of the First Excited State Lifetime in 7Li
I. D. Hau, Canberra Industries Inc., USA; T. Niedermayer, G. 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. Gola1,2, L. Bombelli1,2, C. Fiorini1,2, G. Membretti1, R. Nava1, R. Pelosio1,2
1Politecnico di Milano, Italy; 2INFN, 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. Cuccu
CERN, Switzerland

N23-4 Development of a Readout Circuit for 2D-Imaging Using GEM
S. Sano1, H. Hamagaki1, Y. Tanaka2, T. Fusayasu2, T. Gunji1
1University of Tokyo, Japan; 2Nagasaki Institute of Applied Science, Japan

N23-5 Development of Waveform Multiplexing CMOS ASIC with Decay Time Modulation for Pixelated Detector
B. Shi1, K. Shimazoe1, T. Fujiwara1, H. Takahashi1, J. Ooi1, Y. Kumazawa1
1The University of Tokyo, Japan; 2The University of Tokyo, Japan; 3Shimadzu Corporation, Japan

N23-6 Performance of ASTEROID: a 64 Channel ASIC for Source Follower Readout of DEPFET Matrices for X-Ray Astronomy
M. Porro1,2, G. De Vita1,2, S. Herrmann1,2, A. Wassatsch1,2, J. Treis1,2, C. Fiorini1,2, L. Bombelli1,5
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

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. Shafiiha, M. Asghari, Kotuna 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. Andricel, G. Liemann1, G. Lutz1, H.-G. Moser1, J. Ninkovic1
1MPI Halbleiterlabor, Germany; 2PN 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. Hell1, R. P. Eckhardt1, R. Hartmann1, G. Lutz1, I. Ordavo1, R. H. Richter2, G. Schaller1, H. Soltan2, L. Strüder3
1PN Sensor GmbH, Germany; 2Max-Planck-Institut für Physik, Germany; 3Max-Planck-Institut für extraterrestrische Physik, Germany
N24-7 High-Speed Single-Photon Avalanche CCD
L. Ordovo¹,², R. Eckhardt¹,², P. Holl¹,², G. Lutz¹,², R. H. Richter¹,³, G. Schaller¹,², H. Soltau¹,², L. Strüder²,⁴
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
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
E. 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. Iwanski¹, C. de la Taille¹, B. Lavigne¹, P. Puzo¹, J.-L. Socha¹
¹IN2P3/Laboratoire de l’accelerateur lineaire, 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
Hong Joo 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. Alimov¹,², A. Borga¹, A. Brogna¹,², S. Buzzetti²,², F. Casinini³, W. Dabrowski³, T. Fiutowski³, B. Gebauer³, G. Kemmerling³, M. Klein³, B. Mindur³, G. Modzel³, C. Petrillo³, F. Sacchetti³, C. J. Schmidt³, H. K. Soltveit³, K. S. Solvag³, R. Szczygiel³, C. Schulz³, C. Thielmann³, U. Trunk²,², P. Wiatek³, T. Wilpert³
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. Angelone¹, B. Esposito¹, L. G. Clonts, C. L. Britton, A. Hidvegi³, M. A. Foster, University of Southampton, UK; ²ENEA - Frascati, Italy; ³LNF-INFN Symetrica, Italy

N26-6 Characterization of High-Efficiency Neutron Detector Array (HENDA)
P. B. Ugorski¹, C. M. Henderson¹, S. Bellingier¹, W. L. Dunn¹, L. M. Crow¹, 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. Trocme, E. Baussen, S. Huguéret, D. Husson, T.-D. Lê, A. Nourreddine, M. Vanstalle
IPHC-DRS, ULB; CNRS, IN2P3 : 23 rue du Løss, 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. Gjersdal4, J. Hasi1, C. Kenney1, V. Linhart5, S. Parker6, O. Rohne1, M. Ruspa1, T. Slavicek1, A. Solano7, M. Tomasek8

1 University 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. Prest1, M. Feroci1, F. Perotti1, A. Argan1, M. Tavani1, E. Al.1

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. Fried4, Z. Li1, B. D. Ramsey5, P. Rehak6, D. P. Siddons7
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. Lapshov1,2, F. Lazzarotto1, M. Mastropietro13, E. Morelli1, L. Pacciani1, M. Rapisarda1, 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
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. Iwahashi1,2, T. Tamagawa1,2, A. Hayato1,2, A. Harayama3, N. Yasuda4, H. Kitamura5, F. Tokanai5, H. Sakurai5, K. Makishima4, K. Abe1,2, S. Iwamoto5,6, S. Nakamura12
1RIKEN, Japan; 2Tokyo Univ. of Sci., Japan; 3Saitama Univ., Japan; 4NIRS, Japan; 5Yamagata Univ., Japan; 6Tokyo Univ., Japan

N28-7 Performance of a Negative Ion Drift TPC Polarimeter
Z. Prieskorn1, K. Black2, P. Deines-Jones3, J. Hill4,5, K. Jahoda6, 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
L. Andreotta, 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. Belforte1, A. Fanfani1, I. Fisk3, N. Magini1, V. Miccio1, J. Hernandez2, F. Würthwein2, J. Letts2, J. Klem8
1CERN, Switzerland; 2Port d’Informació Científica, PIC (CIEMAT - IFAE - UAB), Spain; 3INFN, Sezione di Trieste, Italy; 4Universita degli Studi di Bologna, Italy; 5Fermi National Accelerator Laboratory, USA; 6Centro de Investigaciones Enfermeras de México y Tecnológica, 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. Zapri, 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. Fella1, 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

Analog 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. Maehlum, I. Ninive, P. Oya, B. Sundal
Gamma Medica - Ideas, Norway

N30-6 Digital Part of PARISROC: a Photomultiplier Array Readout Chip
E. Dulucq, C. de la Taille, G. Martin-chassard
Laboratoire de l’Accelerateur Lineaire, France

N30-8 CMOS RC-Cell Using Constant Transconductance Method for Readout Circuits in High Rate Particle Detector Systems
L.-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. Scarpacci1,2, S. Brambilla2, F. Camera2, B. Million2, S. Riboldi2, A. Geraci1,2, 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. Marrocca, Politecnico Di Bari, Italy
On behalf of the INFN-DASI-P2 collaboration - ( Univ. and INFN Pisa-Bari-Bologna-Perugia-Trento and ITA-irst (Italy))

N30-14 Real Time Noise Estimation in Radiation Measurements
V. T. Jordanov, Y.antel, LLC, USA

N30-16 Nuclear Pulse Height Measurement Using FPGA Techniques
P. C. Tsao, H. P. Chou
National Tsing Hua University, Taiwan

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. Sun1,2, A. S. Brogna1, C. Hu-Guo1, Y. Hu1
1Institut Pluridisciplinaire Hubert Curien, France; 2Beihang Universirty, China

N30-26 A Versatile ASIC for Gas Filled Pad and Wire Sensors at the GlueX Detector
F. M. Newcomer, N. Doshi, N. Dressandt, 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
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
P. O'Connor1, F. de Notaristefani1, V. Orsolini Cencelli1, A. Fabbri1, E. D'Abra2, M. Marinelli2, G. Verona2
1University of 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. Gil1, J. Díaz1, Instituto de Física Corpuscular (CSIC-Universidad de Valencia), Spain; M. Traxler1, Gesellschaft für Schwerionenforschung mbH (GSI), Germany

N30-42  A Cryogenic Low-Noise JFET-CMOS Preamplifier for the HPGe Detectors of GERDA
A. Pullia1,2, F. Zocca1,2, S. Riboldi1,2, D. Budjas1, A. D'Andragora4, C. Cattadori1,2
1University of Milano, Italy; 2INFN, Italy; 3MPI, Germany; 4INFN-LNS, Italy

N30-44  Signal Deconvolution Concept Combined with Cubic Spline Interpolation to Improve Timing with Phoswich PET Detectors
H. Semmaoui1, B. J. Blalock1,2, F. Zocca1,2,5, C. L. Britton1,2, S. Riboldi1,2, A. Pullia1,2, F. Camera1,2, B. Million1, O. Wieland1
1INFN, Italy; 2University of Milan, Italy

N30-46  A 16 Channel NIM Module for a Complete Processing of the Fast Scintillator Signals
C. Boiano1, R. Bassini1, F. Camera1,2, B. Million1, O. Wieland1
1INFN, Italy; 2University of Milano, Italy

N30-48  Test of a Fully Integrated CMOS Preamplifier for HPGe Detectors
S. Riboldi1,2, A. Pullia1,2, F. Zocca1,2, A. D'Andragora3, D. Budjas4, C. Cattadori1,2
1Università degli Studi di Milano, Italy; 2INFN Milano, Italy; 3INFN LNS, 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. Ericson1,2, J. Oliver3, R. Van Berg4, P. O'Connor5, C. L. Britton1,2
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. Pullia1,2, F. Zocca1,2
1University of Milano, Italy; 2INFN, Italy

N30-54  A Circuit Technique for Offset Cancellation in Low Noise Preamplifiers for Ionising Radiation Sensors
A. Pullia1,2, F. Zocca1,2
1University of Milano, Italy; 2INFN, Italy

N30-56  In-the-Flash Pulse Shape Discrimination with Liquid Scintillators
K. D. Ianakiev1, B. W. Blackburn1, P. Hausladen2, A. W. Hunt2, J. T. Johnson1, J. L. Jones1, R. W. Williams1, J. T. Mihalzo1, C. E. Moss1
Los Alamos National Laboratory, USA

N30-58  A Programmable Module for Fast Amplitude and Time Measurements
H. P. Lima Jr1, M. A. Filho1, A. F. Barbosa1
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. Dahoumane1,2, D. Drahini2, Y. Hu1
1IPHC Strasbourg, France; 2LPSC Grenoble, France

N30-62  An Investigation of Shaper Circuit Optimization for Digitally Pulse Processing in PET
B. Zhang1, Q. Xie1, N. Guo1, X. Guo1, J. Zhu1
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
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N30-66  An 8K Pulse Height Analyzer and Multi-Channel Scaler with the USB, Ethernet and Wireless Interfaces Featuring Internal Backup File System
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Solita Institute for Nuclear Studies, Poland

N30-68  Performance of a High Speed and High Density Data Acquisition System for Multiple Gamma-Ray Detection
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N30-70  A Novel Approach for Mass Storage Data Custodial Management for the Daya Bay Neutrino Experiment
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N30-72  Design and Implementation of BESIII Online Farm
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N30-74  High-Precision Time-to-Digital Converters in a FPGA Device
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N30-76  Research and Design of DAQ System for Daya Bay Reactor Neutrino Experiment
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N30-78  A DWDM Link for Real-Time Data Acquisition Systems
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N30-80  Data Acquisition System for a Large TPC
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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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University of Tennessee, USA

N30-86 DSP Method for BGO Crystal Detectors Readout Electronics
G. Panjkovic, A. Lynch, J. Gillam, A. Berry
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N30-88 Platforms for Hybrid Charge Preamplifiers and CZT/CdTe Detectors
G. Panjkovic, S. Midgley, A. Berry, S. King
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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
A. Aloisio, R. Giordano, V. Izzo
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N30-94 A Modular DAQ System for Ultra – Fast Sampling for Application in High Energy and Astroparticle Physics
M. Bitossi, INFN Pisa, Italy; R. Paoletti, R. G. Pegna, R. Cecchi, University of Siena, Italy

N30-96 Go4 V4 Analysis Framework
H. G. Essel, J. Adamczewski, S. Linev, GSI, Germany

N30-98 DABC, a Data Acquisition Backbone Core Library.
H. G. Essel, J. Adamczewski, N. Kurz, S. Linev
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N30-100 The Upgrade of the Multiwire Drift Chamber Readout of the HADES Experiment at GSI
A. Tarantola, I. Froehlich, B. Kolb, J. Michel, C. Muentz, M. Palka, H. Stroebele, J. Stroth, M. Traxler, J. Wuestenfeld
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N30-102 Online Data Quality Monitoring Tools of LHCb
P. Somogyi, CERN, Switzerland
On behalf of the LHCb Collaboration / Online Group

N30-104 Monitoring the AGILE Payload Through the WEB
A. Bulgarelli, F. Gianiotti, M. Trifoglio, F. Fuschino, C. Labanti, M. Marisaldi
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N30-106 An Acquisition System for a Large Mass Array of Bolometric Detectors
G. Pessina, C. Arnaboldi
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N30-108 Functional Description of the ANTARES Electronics Containers and Their Production Test Bench.
L. Caponetto, INFN, Italy
On behalf of the ANTARES Collaboration

N30-110 Flexible DAQ System for Pixel Detectors
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N30-112 Bringing the Control System to the Web - a Middle Layer Control System Bridge Service
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N30-114 Data Analysis for Characterizing pnCCDs
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N30-116 Tests of an Operation-Server Based Distributed Data Acquisition System
C. C. W. Robson, S. Silverstein, C. Bohm
Stockholms universitet, Sweden

N30-118 Performance of the Final Data-Logging System of the Trigger and Data Acquisition for the ATLAS Experiment at CERN
A. Battaglia, H. P. Beck, K. Kordas, LHEP University of Bern, Switzerland; W. Vandelli, M. Dobson, CERN, Switzerland; S. Gadomski, DPNC, University of Geneva, Switzerland

N30-120 Readout and Timing System Prototypes for DETNI
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N30-122 RUIN – Rapid Universal Interface for Medipix Detector
M. Platkevic, J. Jakubek, Z. Vykaldal
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N30-124 Status of the ATLAS Trigger System for LHC Startup
C. Padilla, CERN, Switzerland
On behalf of the ATLAS DAQ and Trigger Community

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N30-126 The Influence of GEM Readout Detector Gain on the Spatial Resolution of a GEM-TPC Prototype
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1 Tsinghua University, China; 2 Institute of High Energy Physics, China

N30-128 Upgrading ATLAS: Short Strips for the sLHC
U. Parzefall, University of Freiburg, Germany
On behalf of the ATLAS SCT Collaboration

N30-130 Overview of the CMS Pixel Detector
G. B. Cerati, Università degli Studi di Milano Bicocca and INFN, Italy
On behalf of the CMS Collaboration
N30-132 Curved Radiation Detector
B. E. Phillips, M. Christophersen
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N30-134 Performance of the SiGe HBT 8HP and 8WL Technologies after High Dose/Fluence Radiation Exposure
1University of California Santa Cruz, USA; 2Brookhaven National Laboratory, USA; 3Centro Nacional de Microelectrónica, Spain; 4Columbia University, USA; 5Georgia Institute of Technology, USA; 6Jožef Stefan Institute, Slovenia; 7Lawrence Berkeley National Laboratory, USA; 8University of Pennsylvania, USA

N30-136 Thermal Runaway Characteristics of Silicon Microstrip Module Designed for ATLAS Upgrade Inner Tracker at Super LHC
S. Terada, T. Kohriki, Y. Unno, Y. Ikeyama, KEK, Japan; K. Har, University of Tsukuba, Japan

N30-138 The Integration of DEPFET into the EUDET Telescope
J. Furletova, University of Bonn, Germany
On behalf of the DEPFET collaboration

N30-140 Utilization of Double-Sided Silicon Strip Detectors Within the PANDA Micro-Vertex-Detector (E)
T. Wüschig, Technische Universität Dresden, Germany
On behalf of the PANDA-MVD detector subgroup

N30-142 SLHC Upgrade Plans for the ATLAS Pixel Detector
C. Troncon, INFN, Italy
On behalf of the ATLAS Pixel Detector Collaboration

N30-144 Testbeam Measurements on Irradiated Silicon Modules
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N30-146 The CMS All Silicon Tracker Simulation
V. Cuplov, University at Buffalo, SUNY, USA
On behalf of the CMS Collaboration

N30-148 A Tracking Fiber Detector Based on Silicon Photomultipliers for KAOS/A1
S. Sanchez, KPH institute, Germany

N30-150 Evaluation and Development for a Radiation Hard Pixel Sensor in the ATLAS Experiment under Super LHC Conditions
C. Gösling, R. Klingenberg, D. Münstermann, A. Rummier, T. Wittig, R. Wünstorff
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N30-152 Gossip: a Gaseous Vertex and Tracking Detector
H. van der Graaf, NIKHEF, The Netherlands

N30-154 Infrared Transparent Microstrip Detectors
M. Fernandez Garcia, I. Vila Alvarez, J. Duarte, J. Gonzalez, S. Heinemeyer, R. Jaramillo, A. Lopez, C. Martinez, A. Ruiz, Instituto de Fisica de Cantabria, Spain; E. Cabrera, M. Lozano, G. Pellegrini, D. Bassignana, Centro Nacional de Microelectrónica CN-IMB, Spain

N30-156 A Low-mass Vertex Detector for Linear Collider Applications
W. E. Cooper, Fermilab, USA

N30-158 The NA62 Rare Kaon Decay Experiment Photon Veto System
R. Fantechi, INFN - sezione di Pisa, Italy
On behalf of the NA62 Collaboration

N30-160 TPAC1: A 0.18 Micron MAPS Device for Digital Electromagnetic Calorimetry at the ILC
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N30-162 Quartz Calorimetry for Radiation Hard Environment
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On behalf of the CALICE Collaboration

N30-164 Tests of Digital Hadron Calorimeter
J. O. Repond, Argonne National Laboratory, USA

N30-166 R&D for a SiW Electromagnetic Calorimeter
D. R. Ward, University of Cambridge, UK
On behalf of the CALICE Collaboration

N30-168 Muon Identification with the ATLAS Tile Calorimeter Read-Out Driver for Level-2 Trigger Purposes
1CSIC - Universitat de Valencia, Spain; 2Argonne National Laboratory, USA; 3University of Chicago, USA; 4Universitat de Valencia, Spain

N30-170 Position-Sensitive Sensors for the PHENIX Silicon-Tungsten Calorimeter
A. Y. Sukhanov, Brookhaven National Laboratory, USA
On behalf of the PHENIX Forward Upgrade group

N30-172 High Resolution Homogeneous Hadron Calorimeter
A. Para, Fermilab, USA

N30-174 Calibration of a Highly Granular Hadronic Calorimeter with SiPM Readout
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N30-176 Signal Transmission Studies for CALICE ECAL Prototype Slabs
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N30-178 Integration Prototype of the CALICE Tile Hadron Calorimeter for the International Linear Collider
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On behalf of the CALICE Collaboration

N30-180 The CERN NA62 Liquid Krypton Calorimeter Data Acquisition Upgrade
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N30-182 Electron and Photon Reconstruction and Identification with the ATLAS Detector
M. Aleksa, CERN, Switzerland
On behalf of the ATLAS LAr group

N30-184 The Commissioning of the CMS Electromagnetic Calorimeter Light Monitoring System
T. I. Orimoto, California Institute of Technology, USA
On behalf of the CMS ECAL Group

N30-186 The Absorbed Dose of the BaBar Electromagnetic Calorimeter
A. S. Randle-Conde, A. Khan, Brunel University, UK; J. Yi, University of Manchester, UK

N30-188 The ATLAS Tile Calorimeter: Calibration, Commissioning and Preparation for Collisions
J. G. M. Saraiva, LIP, Portugal
On behalf of the TileCal/ATLAS Collaboration

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N30-190 Detector Control System for the Power Supply of Muon Drift Chambers of ATLAS Experiment in CERN
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On behalf of the NTU Athens

N30-192 Calibration of the ATLAS Muon Precision Chambers with a Universal Time-to-Space Function
D. S. Levin, University of Michigan, USA
On behalf of the ATLAS Collaboration

N30-194 Measuring the Magnetic Field Inside the CMS Steel Yoke Elements
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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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On behalf of the ATLAS Muon Collaboration

N30-198 Temperature Studies for ATLAS MDT BOS Chambers
A. Engl, O. Biebel, R. Hertenberger, R. Mameghani, D. Merkl, F. Rauscher, D. Schaile, R. Ströhmer
Lehrstuhl Schaile, Germany

N30-200 A Hough Transform Based Tracking Algorithm for the LHCb Muon Detector
R. A. Nobrega, INFN sezione di Roma, Italy; A. Sarti, LLRF, Italy

N30-202 Systematic Study of the Auto-Calibration of the Drift Tubes for Muon Tracking in the ATLAS Experiment at the LHC
S. Di Luise, Roma University INFN, Italy
On behalf of the ATLAS Muon Collaboration

N30-204 Monitored Drift Tube Chambers in Neutron Background
R. Hertenberger, T. A. Müller, A. Mlyněk, O. Biebel, F. Rauscher, D. Merkl, T. Nunnemann, D. Schaile, R. Ströhmer
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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
D. Pinci, INFN-Roma1, Italy

N30-210 Cosmic Ray Muon Tomograph Prototype
M. Bogolyubsky, N. Bojkko, A. Borisov, R. Fakhruddinov, A. Kozhin, O. Yushchenko, Institute for High Energy Physics, Russia; V. Demidova, Joint Institute of Nuclear research, Russia

N30-212 The CMS Muon System
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N30-214 Detectors for Absolute Luminosity Measurement for Crabbed Waist Collisions at DAFNE Phi-Factory
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N30-216 Mobile Test Bench for the LHC Cryogenic Instrumentation Crate Commissioning
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N30-218 Aerosol at Hadron Colliders
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N30-220 Beam Diagnostics Around the ELBE Linac at FZD
ELBE, Germany

N30-222 Development of Fast Micron-Resolution Beam Position Monitors for Linear Collider Beam-Based Feedback Systems
P. N. Burrows, Oxford University, UK

N30-224 SLAC Facility for Accelerator Research with High Energy Beams
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N30-226 Hydrogen-Free Recombination Chambers for Dosimetry in High-Energy Neutron Radiation Fields
N. Golnik, Warsaw University of Technology, Poland; M. Zielczynski, M. A. Gryzinski, Institute of Atomic Energy, Poland
N30-228 Beam Stop for Electron Accelerator Beam Characterisation
G. Roach, V. Sharp, J. Tickner, J. Uher
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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
1INFN sez. Pisa, Italy; 2INFN sez. Milano & LASA, Italy; 3Consortium EGO, Italy

N30-236 Photodetector Studies and Prototype Simulation of a Cherenkov Detector for an ILC Polarimeter
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N30-238 Development of the Muon Beam Monitor for the T2K Long Baseline Neutrino Oscillation Experiment
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Kyoto University, Japan

N30-240 Real-Time Beam Loss Monitoring System for the Injector of SRF
M. Zeng, B. Shao, L. Hou, Tsinghua University, China; Y. Li, University of Science and Technology of China, China; J. Cai, Chinese Academy of Sciences, China

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
M. Oroku, T. Yamanaka, Y. Kamiya, H. Yoda, T. Nakamura, T. Suehara, S. Komiami, University of Tokyo, Japan; Y. Honda, T. Tauchi, N. Terunuma, T. Kume, S. Araki, R. Sugawara, KEK, Japan; T. Sanuki, University of Tokyo, Japan

Neutron Instrumentation

N30-248 Measurement of 14 MeV Neutron Flux from D-T Neutron Generator Using Activation Analysis
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N30-250 The Efficiency of Detection of Fast, Resonance and Thermal Neutrons and Gamma Ray Discrimination by Inorganic Scintillators
V. D. Ryzhikov, B. V. Grinoy, L. L. Nagornaya, G. M. Onyshchenko, L. A. Piven, O. D. Opolonin, O. K. Lysetska
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N30-252 The Research on Neutron Dose Equivalent Meter for Pulse Neutron Radiation Field
W. Wang, K. Kang, J. Li, Tsinghua University, China

N30-254 First Measurements of the Inclined Boron Layer Thermal-Neutron Detector for Reflectometry
T. L. Van Vuure, Spallation Neutron Source - ORNL, USA

N30-256 Measurement of Variations in the Neutron Background at Sea Using a Neutron Scatter Camera
P. A. Marleau, N. Mascarenhas, K. Krenz, S. Mrowka, J. Brennan
Sandia National Laboratories, USA

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
K. Toh, H. Yamagishi, K. Sakasai, T. Nakamura, K. Sonyama
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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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On behalf of the KLONE collaboration

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
D. R. Lowe, R. J. O’Brien, University of Nevada Las Vegas, USA; E. C. Hagen, B. T. Meehan, National Security Technologies, USA

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
A. Ronzhin, M. Demarteau, S. Los, E. Ramberg, Fermi National Accelerator Laboratory, USA

N30-286 Fast X-Ray Spectroscopy Using Si-Drift Detectors
K. Hansen, C. Reckleben, I. Diehl, H. Klär, E. Welter, Deutsches Elektronen-Synchrotron DESY, Germany

N30-288 Signal Evolution in Semiconductor Radiation Detectors
V. Polushkin, Oxford Instruments Nano-Analysis, UK

N30-290 Simulation of the Focusing DIRC Optics with Mathematica
J. Va’vra, SLAC, USA

N30-292 MISTI Imaging and Localization
E. A. Wulf, B. F. Phillips, W. N. Johnson, B. Leas, L. J. Mitchell, Naval Research Laboratory, USA

N30-294 Development of a Novel Type Compton Imager (DCI)
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N30-296 Assessment of Novel TMO Radiation Detectors

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

N30-304 Characterization of a γ-Ray Detection System Based on a Cd(TI) Scintillator Coupled to a Silicon PIN Diode
A. Farzi, V. Varoli, Politecnico di Milano, Italy; G. U. Pignatel, Università di Perugia, Italy; F. Corsi, Politecnico di Bari, Italy; S. Cerrato, Università di Trieste, Italy; G.-F. Dalla Betta, Università di Trento, Italy; F. Garibaldi, Istituto Superiore di Sanità, Italy

N30-306 Monte Carlo Simulations of a Multi-Layer Semiconductor Gamma Photon Tracker
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Japan Atomic Energy Agency, Japan

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Y. Ishii¹, I. Adachi², H. Kawai³, Y. Saito¹, T. Sumiyoshi³, M. Tabata¹, H. Yokogawa⁴
¹Chiba University, Japan; ²High Energy Accelerator Research Organization (KEK), Japan; ³Tokyo Metropolitan University, Japan; ⁴Matsushita Electric Works Ltd., Japan

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D. Vavrík¹,², J. Jakubek²
¹Institute of Theoretical and Applied Mechanics, Czech Republic; ²Institute of Experimental and Applied Physics, Czech Republic

N30-322 Detection of Low Energy Axions with an MCP Detector
S. Gerhard¹, M. Kuster¹, D. H. H. Hoffmann¹, J. Barnstedt², A. Nordt¹
¹TU Darmstadt, Germany; ²TU Tuebingen, Germany

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¹Chiba University, Japan; ²Osaka University, Japan; ³Yamagata University, Japan

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 / KEKDT Project Photon Sensor Group

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P. Takoukam Talla, T. Michel, M. Firsching, J. Durst, G. Anton
Universität Erlangen-Nürnberg, Germany

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¹Sapienza University of Rome, Italy; ²Casaccia Research Centre, Italy; ³University of Bologna, Italy; ⁴University of Padova, Italy; ⁵University of Rome III, Italy

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Ewha Womans University, Korea

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M. Ramilli, UNiverita’ degli Studi dell’Insubria, Italy
On behalf of the RAPSDI

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Y. Feng¹, R. Detwiler¹, W. Kernan², C. Seifert³, J. Baciak¹
¹University of Florida, USA; ²Pacific Northwest National Laboratory, USA

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S. Korpar¹,², R. Pestotnik¹,², A. Stanovnik¹,²
¹University of Maribor, Slovenia; ²J. Stefan Institute, Slovenia; ³University of Ljubljana, Slovenia

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¹Argonne National Laboratory, USA; ²University of Chicago, USA; ³Charles University, Czech Republic

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¹Rotem Industries Ltd, Israel; ²Nuclear Research Center, Israel

Semiconductor Tracking and Spectroscopy Detectors

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P. Kvasnicka, Charles University, Czech Republic
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\textsuperscript{1}INFN Perugia, Italy; \textsuperscript{2}University of Perugia (Italy), Italy

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\textsuperscript{1}CERN, Switzerland; \textsuperscript{2}Ioffe-Physico-Technical Institute, St. Petersburg, Russia; \textsuperscript{3}Russian Institute of Material Science and Technology, Russia

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CERN, Switzerland

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\textsuperscript{1}Politecnico di Milano, Italy; \textsuperscript{2}INFN, Italy; \textsuperscript{3}PNSensor GmbH, Germany; \textsuperscript{4}Max Planck Institut für Extraterrestrische Physik, Germany; \textsuperscript{5}Universität Siegen, Germany

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\textsuperscript{1}Lawrence Berkeley National Laboratory, USA; \textsuperscript{2}University of California at Berkeley, USA; \textsuperscript{3}Istituto Nazionale di Fisica Nucleare, Italy

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Max-Planck-Institut für Kernphysik, Germany

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\textsuperscript{1}INFN Trieste, Italy; \textsuperscript{2}University Bari, Italy; \textsuperscript{3}University Trieste, Italy; \textsuperscript{4}NSC KIPT, Ukraine

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Space Research Institute, IKI, Russia

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\textsuperscript{1}University of Hamburg, Germany; \textsuperscript{2}DESY, Germany

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<td>²Pontificia Universidade Católica de São Paulo – PUC/SP, Brazil; ³Helsinki Institute of Physics – HIIR, Switzerland</td>
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Jerry Va'vra, SLAC, United States

N31  Gaseous Detectors III - Gaseous Detectors Basics: Ionization and Scintillation

Wednesday, Oct. 22  13:30-15:30  Conference 1

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; 3Weizmann Institute of Science, Israel

N31-3  GEM Operation in CF4: Studies of Charge and Scintillation Properties
H. Natal da Luz1,2, 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. Attié2, M. Campbell1, M. Chefdeville1, E. Delagnes1, K. Fuji1, I. Giomataris1, H. van der Graaf1, X. Llopart1, 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. Carageorgheopol1, E. Dohrmann1, B. Kampfer2, R. Kotte2, L. Naumann2, M. Petris1, M. Petrovici2, 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
E. 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
P. Marchese, INFN sez. Tor Vergata, Italy
On behalf of the ATLAS Trigger Configuration Group

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. Döring1, V. I. Dormenev1,
A. A. Fedorov1, Y. M. Gorsharenko1, V. A. Kachanov2,
M. V. Korzhik1, Y. M. Melnik3, A. P. Meschanin2, O. V. Mishevitch1,
V. V. Mochalov1, R. W. Novotny3, A. V. Ryazantsev3, P. A. Semenov3,
A. V. Uznov1, A. N. Vasiliev2, A. E. Yakutin2
1Institute for Nuclear Problems, Belarus; 2Institute for High Energy Physics, Russia; 32nd 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. Verbistskaya, 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. Verbistskaya
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. Orava1,3, L. Tlustos4
1VTT, Finland; 2Helsinki Institute of Physics, Finland; 3Helsinki University, Finland; 4CERN, Switzerland
N34-4 Functional Characterization of 3D-DDTC Detectors Fabricated at FBK-IRST
1 University of Trento, Italy; 2 Fondazione FBK-irst, Italy; 3 University of Trondheim, INFN, Italy; 4 Albert Ludwig University, Germany

N34-5 Thick Silicon Drift Detectors
M. Christophersen, B. F. Phillips
U.S. Naval Research Laboratory, USA

N34-6 Performance Testing and Applications of Microcalorimeter X- and Gamma-Ray Spectrometers
1 Los Alamos National Laboratory, USA; 2 National Institute for Standards and Technology, USA

N34-7 Ultra-High Resolution Alpha Particle Spectrometry Using Superconducting Microcalorimeter Detectors

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
1 Lawrence Berkeley National Laboratory, USA; 2 Lawrence Livermore National Laboratory, USA; 3 Faculty of Education, Health and Science, Charles Darwin University, Australia; 4 Institute of Nuclear Physics, Moscow State University, Russia; 5 Department of Physics, Wake Forest University, USA

N35-2 Luminescence Investigation in ZnMoO4 Single Crystals
1 Skobeltsyn Institute of Nuclear Physics, M.V. Lomonosov Moscow State University, Russia; 2 M.V. Lomonosov Moscow State University, Russia; 3 A.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. Zhuravleva, M. Nikl, J. Pejchal, J. A. Mares, A. Yoshikawa
1 Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan; 2 Institute of Physics AS CR, Czech Republic

N35-4 Suppression of Afterglow in Microcolumnar Ca:TI by Co-Doping with Sm3+: Recent Advances
V. V. Nagarkar, V. B. Gaysinskii, 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. Świderski, 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. Wilson, E. V. Van Loef, J. Glodo, N. J. Cherepy, S. A. Payne, K. S. Shah
1 Radiation Monitoring Devices Inc., USA; 2 Lawrence 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 CDF II
S. America, M. Casarsa, G. Cortiana, J. Donini, D. Lucchesi, S. Pagan Griso, L. Ristori
1 University of Padova & INFN, Italy; 2 Fermilab, USA; 3 INFN 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. Byrum³, T. Cundiff⁴, 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. Cecchi³, R. Pegna¹
¹University of Siena and INFN, Italy; ²University of Padova and INFN, Italy; ³INFN Pisa, Italy

N36-8 A Low Energy Muon Trigger for IceCube
C. Bohm¹, H. Kavianipour¹, D. Nygren⁴, C. Robson¹, C. Wernhoff⁵, 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. Schaelicke, 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
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. Kourkoulakis, 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. Nikolopoulos¹,², 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 (C6H4(CH2)2NH3)3PbBr4 Crystal
C. W. E. Van Eijk, 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
Lawrence Berkeley National Laboratory, USA

N40-4 Scintillation and Optical Properties of Li3YCl6:Ce3+ and Radioluminescence Studies on Eu2+ and Ce3+ Oxy-Nitride Compounds
P. Putaj1, K. W. Kraemer2, A. C. A. Delsing1, H. T. Hintzen1, P. Dorenbos1
1Delft University of Technology, The Netherlands; 2University of Bern, Switzerland

N40-5 Lead Tungstate Scintillator for the Future Particle Physics Detectors
M. Korjik, A. Fedoron, O. Mishevitche, RINP, Belarus; E. Auffray, P. Lecoq, CERN, Switzerland

N40-6 Polycrystalline and Columnar Growth of LaBr3: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 CeBr3
M. J. Harrison1, C. F. Linnick1, S. O. Brinton1, P. Ugorowski1, F. P. Dossy1, D. S. McGregor1
1Kansas State University, USA; 2Sandia National Laboratories, USA

N40-8 Gamma Radiation Hardness of O1” × 1” LaBr3:Ce, LaCl3:Ce, and CeBr3 Scintillators
W. Drozdowski, P. Dorenbos, A. 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. Weidenspointner2,3
1University of California at Berkeley, USA; 2Max-Planck-Institut für extraterrestrische Physik, Germany;
3MPI 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. Sojka2, G. Hilgers1, B. Grosswendt1
1Physikalisch-Technische Bundesanstalt, Germany; 2Austrian Research Centers GmbH, Austria

N41-8 Experimental Verification of Radiation Track Structure Models
V. A. Bashkirov, R. W. Schulte, G. Coutufrakon, 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 & LNF, 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. Solc3, T. Soldner1
1Institute of Experimental and Applied Physics of the Czech Technical University, Czech Republic; 2Institut 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
1University of California at Berkeley, USA; 2Rutherford Appleton Laboratory, UK; 3NOVA Scientific, USA
Thursday

N42-3 The nELBE Neutron Time of Flight Facility

N42-4 Electronic Neutron Generators Using Electrostatic Field Desorption and Electrostatic Field Evaporation Ion Sources
D. L. Chichester, K. L. Heritz, P. R. Schwobel, C. E. Holland, B. Reichenbach, I. Solano, P. J. Resnick
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
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. Andriczek, M. Beimforde, H.-G. Moser, R. Nisis, 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
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
University Bonn, Germany

N43-8 Design and Construction of INGRID Neutrino Beam Monitor for T2K Neutrino Experiment
M. Ota, N. I. Nitta, O. Ferreira, M. Gonin, T. Nakaya, M. Yokoyama
1Kyoto University, Japan; 2LLR Ecole polytechnique, 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. Calvo, T. Kugathasan, G. Mazza, M. Mignone, A. Rivetti, T. Stockmanns, R. Wheaddon
1INFN, Italy; 2Università di Torino, Italy; 3Forschungszentrum Jülich, Germany

N44-2 Integrated Front-End Readout Electronics and Analog Filtering Strategies for DEPFETs with Special Functionalities
M. Porro, G. De Vita, S. Herrmann, G. Lutz, L. Strueder, J. Treis, C. Fiorini, L. Bombelli
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. Jarrom, CERN, Switzerland; W. Dabrowski, AGH University of Science and Technology, Poland

N44-4 CAMEX Readout ASIC for pnCCDs
S. Herrmann, W. Butler, R. Hartmann, N. Meidinger, M. Porro, L. Strueder
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. Martoiu, G. Mazza, F. Osmic, A. Rivetti, F. Marchetto
1INFN, Italy; 2CERN, Switzerland

N44-6 Time Invariant Analog Processors for Monolithic Deep N-Well CMOS Pixel Detectors
L. Ratti, C. Andreoli, M. Manghisoni, E. Pozzati, V. Re, G. Traversi
1University of Pavia, Italy; 2INFN Pavia, Italy; 3University of Bergamo, Italy
N44-1 Sensors for the STAR Detector.
A. Dorokhov1, G. Bertolone1, A. Besson1, A. Brogna1, C. Colledani1, G. Claus1, Y. Degerli1, W. Dulinski1, M. Goffe1, F. Guilloux1, A. Himmi1, C. Hu-Guo1, K. Jaaskelainen1, M. Koziel1, F. Morel1, I. Valin1, M. Specht1, M. Winter1
1IPHC, France; 2CEA, France

N44-2 Radiation Monitoring Devices, Inc., USA; Politecnico di Milano, Italy; Max-Planck-Institut für Plasmaphysik, Germany
A. Himmi1,2, A. Besson1, L. Strueder1, R. Peloso1,2, A. Longoni1,2, P. Lechner3, L. Strueder4, A. Niculae4, H. Soltau4
1Politecnico di Milano, Italy; 2INFN, Italy; 3PNSensor GmbH, Germany; 4MPI Halbleiterlabor, Germany

N44-3 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. Degerli1, W. Dulinski1, M. Goffe1, F. Guilloux1, A. Himmi1, C. Hu-Guo1, K. Jaaskelainen1, M. Koziel1, F. Morel1, I. Valin1, M. Specht1, M. Winter1
1IPHC, France; 2CEA, France

N44-4 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. Fiorini1,2, A. Gola1,2, R. Peloso1,2, A. Longoni1,2, P. Lechner3, L. Strueder4, A. Niculae4, H. Soltau4
1Politecnico di Milano, Italy; 2INFN, Italy; 3PNSensor GmbH, Germany; 4MPI Halbleiterlabor, Germany

N45-3 Pulse Shape Discrimination for a Fast Neutron Detector
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. Peirani, 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 RE&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. Koyama3, Y. Nagasaka4, T. Sasaki5, 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)
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 PCle Systems
L. Giannone, Max-Planck-Institut für Plasmaphysik, Germany
On behalf of the ASDEX Upgrade Team and National Instruments collaborators
N47-3 Development of Fuel Assembly Tags for Nuclear Safeguards Monitoring
Pacific Northwest National Laboratory, USA

N47-4 New Generation Enrichment Monitoring Technology for Gas Centrifuge Enrichment Plants
Nuclear Nonproliferation Division, USA

N47-5 Measurement of Neutron Yields from UF4
Z. W. Bell 1, K. P. Ziolk 1, M. F. Ohmes 2, Y. Xu 3, T. J. Downar 4, S. A. Pozzi 1
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. Bowden 1, A. Bernstein 1, J. Brennan 3, S. Dazeley 1, D. Reyna 3, L. Sadler 2, R. Svoboda 1
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. Krivka, N. Klassen, V. Kurlov, V. Kedrov, I. Shmytko, S. Shmurak, E. Kudrenko, A. Orlov
Institute of Solid State Physics Russian Academy of Sciences (ISSP RAS), Russia

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) EUROT eV Overview
E. Elsen, DESY, Germany
On behalf of the EUROT eV Consortium

N48-2 The New Superconducting RF Photoinjector at the ELBE Linac

N48-3 A Cyclotron project for Medical and Research Usage at Jožef Stefan Institute
Š. Štrek, Jožef Stefan Institute, Slovenia

N48-4 Beam Stabilization at the ELBE Electron Accelerator and the FELBE Infrared User Facility
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

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. Re 1, L. Gaioni 2, M. Manghisoni 1, L. Ratti 2, V. Speziali 2, G. Traversi 1
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. Tahi 1, B. Djezzar 1, A. Mokrani 2, S. Oussalah 1
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 1, M. Ullán 1, M. Lozano 1, G. Pellegrini, Centro Nacional de Microelectrónica (CNM-CSIC), Spain; I. Mandic, Jožef Stefan Institute, Slovenia; D. Knoll, B. Heinemann, Innovation for High Performance Micronicos (IHP), Germany

N49-5 Random Telegraph Signal in Monolithic Active Pixel Sensors for Charged Particle Tracking
M. Deveaux 1, S. Amar-Youcef 1, A. Bäudenhäuser 1, D. Döring 1, C. Münz 1, F. M. Wagner 1, J. Stroth 1
1 University Frankfurt, Germany; 2 University of Oregon, United States

N49-6 Estimation of Radiation Effects in the Front-End Electronics of an ILC Electromagnetic Calorimeter
V. Bartsch 1, M. Postranecky 1, M. Warren 1, 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 V'la'ra,  SLAC, United States  
Carl Zorn,  Jefferson Laboratory, United States

N50-1 Development of Multi-Pixel Photon Counters for T2K Long Baseline Neutrino Experiment  

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. Korpar1,2,  R. Dolenc,  P. Krizan1,2,  R. Pestotnik,  A. Stanovnik1,2  
1University of Maribor,  Slovenia;  2J. Stefan Institute,  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. Dolenc,  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  
E. 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. Sorace1  
1JRC EU Commission,  The Netherlands;  2University of Pisa,  Italy;  3Kawasaki Medical School,  Japan;  4CNR,  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 Catolica 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 Universitat  Dresden,  Germany

N51-6 A Volume Visualization Driver in Geant4 for Radiotherapy Simulation  
A. Kimura,  Abikaga 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. Arge,  P. Rato Mendes,  J. I. Laguna,  CIENTIA,  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. Bisogni1,2,  G. Collazuol1,3,  A. Del Guerra1,2,  G. Llosa3,  G. Magazzù1,  S. Marcatili1,2  
1INFN,  Italy;  2Università di Pisa,  Italy;  3Scuola 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. Howes1,  M. Kleifges1,  A. Menshikov1,  D. Tcherniakhovski1,  J. F. Wilkerson1,  S. Wüstling1  
1Forschungszentrum Karlsruhe,  Germany;  2University 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

N52-7 A Data Acquisition System for a Silicon Photomultiplier Based PET Detector
A. B. Mamau, 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. Tuppuri, 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 an 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
1 Gesellschaft fuer Schwerionenforschung mbH, Germany; 2 Forschungszentrum Juelich GmbH, Germany; 3 SEMIKON Detector GmbH, Germany

N54-4 Development of 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 10^14 Neq/cm^2 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
I. 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 Compton Polarimeter
R. Reuschl, 1,3, Ralf Reuschl
1,2,3 Forschungszentrum Juelich GmbH, Germany; 3 Forschungszentrum Juelich GmbH, Germany; 3 SEMIKON Detector GmbH, Germany

N55-3 Studies of Hadron Damage in Lead Tungstate and Cerium Fluoride Crystals for HEP Calorimetry
C. Kozuharov, 1,3, J. Krings
1,2,3 Forschungszentrum Juelich GmbH, Germany; 3 Forschungszentrum Juelich GmbH, Germany; 3 SEMIKON Detector GmbH, Germany

N55-4 Application of a Position Sensitive Si(Li) Detector as a Compton Polarimeter
1 Gesellschaft fuer Schwerionenforschung mbH, Germany; 2 Forschungszentrum Juelich GmbH, Germany; 3 SEMIKON Detector GmbH, Germany

N55-5 Application of a Position Sensitive Si(Li) Detector as a Compton Polarimeter
1 Gesellschaft fuer Schwerionenforschung mbH, Germany; 2 Forschungszentrum Juelich GmbH, Germany; 3 SEMIKON Detector GmbH, Germany

N55-6 Development of 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

N55-7 Bumpless Hybrid Pixelated Particle Detector
I. Peric, P. Fischer, C. Kreidl
University of Heidelberg, Germany

N55-8 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

N55-9 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

N55-10 CMS RPC Technical Triggers Performances in Cosmic Runs
S. A. Tuppuri, INFN Sezione di Bari, Italy
On behalf of the CMS Collaboration

N55-11 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

N55-12 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

N55-13 Gas monitoring system for CMS Experiment at LHC
S. Colafranceschi, CERN, Switzerland
On behalf of the CMS RPC collaboration

N55-14 Trigger Detectors for the ALICE Muon Spectrometer
A. Piccotti, Istituto Nazionale di Fisica Nucleare, Italy
On behalf of the ALICE Collaboration

N55-15 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

N55-16 CMS RPC Technical Triggers Performances in Cosmic Runs
S. A. Tuppuri, INFN Sezione di Bari, Italy
On behalf of the CMS Collaboration
N55-2 Radiation Hardness and Recovery Processes of Cooled PWO-II Crystals for PANDA
R. W. Novotny1, W. M. Doering1, V. Dormenev2, S. Felsing1, M. Korjik3, S. Lugert1, P. A. Semenov4, A. N. Vasiliev1
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

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. Danovich2, S. S. Nagornyy2, V. M. Mokina3, H. Kraus4, V. Mikhailil4, O. G.dishkova2
1Institute for scintillation materials, Ukraine; 2Institute for Nuclear Research, Ukraine; 3University of Oxford, UK

N55-8 Construction and Performances of an High Granularty Calorimeter
P. Branchini1, F. Ceradini2, G. Corradi3, B. Dimicco3, S. Loffredo3, A. Passeri1
1INFN, Italy; 2Universita' RomaTRE, Italy; 3INFN LNF, Italy

N56 Photon Detectors and Radiation Imaging Detectors IV
Thursday, Oct. 23 16:00-18:00 Conference 1

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
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

N56-4 A Novel HPD Based on the Timepix
U. S. Gehert, 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-Bombed CMOS Device
R. Barbier1, J. Baudot2, E. Chabanat1, P. Depasse1, W. Dulinski2, N. Estre3, M. Winter4
1IPNL, France; 2IPHC, France

N56-6 Progress on Development of a New TOF Concept Using MCP-PMT Detectors
J. Ya'ara, 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
1Argonne National Laboratory, USA; 2University of Chicago, USA; 3Fermi National Accelerator Laboratory, USA

N57 ATCA (Advanced Telecommunications Compinting Architecture)
Thursday, Oct. 23 16:00-18:10 Conference 2

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. Stettler1,2, M. Hansen3, 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
N58  High Energy Physics Instrumentation: Beam Monitors and Other Detector Systems II

Thursday, Oct. 23  16:00-18:15  Conference 3

Session Chairs:  Karsten Bueser, DESY, Germany
                 Jae Yu, University of Texas, United States

N58-1 (invited) EUDET: Detector R&D Towards the International Linear Collider
Karsten Bueser, DESY, Germany
On behalf of the EUDET

N58-2 Hydrogen Isotope Ion Source Studies for Neutron Generators
B. Reichenbach, I. Solano, K. Hertz, C. Holland, D. Chichester,
P. Resnick, P. Schwobel
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

N58-4 Fast Beam Conditions Monitoring (BCM1F) for CMS
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. Domke, C. J. Ilgner, S. Köstner, M. Lieng, M. Nedos,
J. Sauerbrey, S. Schleich, B. Spaan, K. Warda
1Technische Universität Dortmund, Germany; 2CERN, Switzerland

N58-7 Expected Performance of Shintake Monitor (IP Beam Size Monitor at ATF2)
T. Yamanaka, M. Orok, 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, D. Kaefer, J. List
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. Arlt, M. Mayorov, M. Schrenk, G. Lasche, A. Bacheller,
S. Chuvaev, A. Lebedev, J. Brutscher, V. Danilenko
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. Mehner1, 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
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

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. Mihalco, 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 Fissile Materials in Aqueous Solution
A. W. Hunt1,2, H. A. Seipel1,2, E. T. E. Reedy1,2
1Idaho State University, USA; 2University of New Mexico, USA

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 Elementary Analysis
M. Blumers1, B. Bernhard2, P. Lechner3, J. Girones Lopez1, J. Maul1, R. Eckhardt4, H. Soltan4, L. Strüder4,5, H. Henkel1, 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. Ihle1,2, R. Hartmann1,2, M. Downing3, L. Strüder4,5
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

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. Taddeucci1, 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
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. Dazeley3, 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)
Institute for High Energy Physics, Russian Federation

N61-8 Bayesian Image Reconstruction for Muon Tomography
G. Wang1, L. Schulz2, 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
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. Dixit1,3, 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 de 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
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

N64 Analog and Digital Circuits IV
Conference 4&5

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. Hügging¹, J. Rittmann¹, T. Stockmanns¹
¹Forschungszentrum Jülich, Germany; ²Universität 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, Universite De Sherbrooke, Canada

N64-7 The 10-ps Wavelet TDC: Improving FPGA TDC Resolution Beyond Its Cell Delay
J. Wu, Z. Shi, Fermilab, 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. Gallo², A. G. Cocco³, F. Carbonara¹
¹Università degli Studi di Napoli Federico II, Italy; ²INFN, Italy

N65-2 Silicon Drift Detectors with Optimized Detection Efficiency for X- and Gamma Ray Applications
A. Niculae, H. Soltau, G. Lutz, P. Lechner, 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. Graafsma¹, M. Karagounis², H. Krüger², R. Mazzocco³, B. Schmitt¹, U. Trunk²
¹DESY Deutsches Elektronen-Synchrotron, Germany; ²Physikalisches Institut der Universität Bonn, Germany; ³PSI 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. Passeri¹,², D. Biagetti¹,², P. Dellanti¹,², A. Marras²,³, P. Placidi¹,², L. Servoli², P. Ciampolini¹,³
¹University of Perugia (Italy), Italy; ²INFN Perugia (Italy), Italy; ³University 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. Fröjdhe, G. Thungström  
*Mid Sweden University, Sweden*

**N65-7 Distance Measuring Using Position Emission Backscatter**  
*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. Takada1, 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 Rolands 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*

**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 Spen gergasse, Austria*

**N67-6 Hto4lEV in the ATLAS EventView Analysis Framework**  
T. Lapouri, 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 Catolica 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 Universitat 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. Gusev3, S. Schoenert1, M. Shirenko1,4  
1Max-Planck-Institut fuer Kernphysik, Germany; 2Laboratori Nazionali del Gran Sasso, Italy; 3Russian Research Center Kurchatov Institute, Russia; 4Joint 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. Budakovskiy¹  
¹Institute for Scintillation Materials, National Ac.Science of Ukraine, Ukraine; ²Technology 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 Sr₁₂Eu₂⁺ 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. Lingertat¹, V. Sarin¹, K. S. Shah¹  
¹Radiation Monitoring Devices, Inc., USA; ²ALEM Associates, USA; ³Boston 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**


**N69-7 On the Development of Heavy and Fast Scintillation Nano-Ceramics**

M. Korjik, A. Fedorov, O. Misievitch, 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

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**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 Technology, 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. Chrámowicz, 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 - Irfu, 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
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 Habilitations 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)
**MIC PROGRAM**

**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, R. Steadman, G. Zeitler  
Philips Research Europe, Germany

**NMR-4** PICASSO: a Silicon Microstrip Detector for Mammography with Synchrotron Radiation  
L. Rigon1, F. Arfelli1,2, A. Bergamaschi1, D. Dreossi1,4, R. Longo1,2, R. H. Menk1,4, B. Schmitt3, E. Vallazza3, E. Castelli1,2  
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. Arakawa1,2, S. Takeda3, S. Ishikawa1, H. Aono1, S. Watanabe3, M. Yamaguchi3,2, T. Takahashi, H. Shimada1, Y. Yoshida1, Y. Suzuki1, 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. Szupryczynski2,3, M. A. Spurrier4, W. S. Choong2, 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. Dendooven3, H. Löhner1, 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. Nassalski1, M. Moszyński, A. Synfkteld-Kałuż, T. Szczęśniak, L. Świderski1, D. Wolski1, T. Batsch1, 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. Tiefer3, F. Daghhiyan1, 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. Eriksson1,2,3, D. W. Townsend1, M. Conti1, C. L. Melcher1, M. Eriksson2, B. W. Jakoby1,5,6, H. Rothfuss1,4, 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 Boer2, 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. Lu1, 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
**MIC 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

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**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**


1 University of Pisa, Italy; 2 INFN- Sezione di Pisa, Italy; 3 Scuola Normale Superiore, Italy; 4 FBK-ir, Italy; 5 Laboratoire de l’Accélérateur Linéaire IN2P3-CNRS, France

**M02-2 SiPM- Array Based PET Detectors with DOI Correction**

D. R. Schacht, H. T. van Dam, S. Seifert, R. Vinke, P. Dendooven, H. Löchner, J. B. Beckman

1 Delft University of Technology, The Netherlands; 2 University of Groningen, The Netherlands; 3 University 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. Herraitz, E. Vicente, J. M. Udías, Universidad Complutense de Madrid, Spain; M. Desco, J. J. Vaquer, Hospital General Universitario Gregorio Marañón, Spain

**M02-5 PET Block Detector Readout Approaches Using G-APDs**

A. Kolb, M. S. Judenhofer, E. Lorenz, D. Renker, J. Pichler

1 Laboratory for Preclinical Imaging and Imaging Technology of Werner Siemens Foundation, Department of Radiology, University of Tübingen, Germany; 2 Max Plank Institute for Physics, Föhringer Ring 6, Germany; 3 Paul Scherer Institute, Switzerland

**M02-6 Initial Results from a Full-Ring PET Scanner for the Mouse Brain Using CZT Pixel Detectors**


1 Brookhaven National Laboratory, USA; 2 Stony Brook University, USA

**M02-7 Study of a High Resolution, 3-D Positioning Cross-Strip Cadmium Zinc Telluride Detector for PET**


1 Stanford University, USA; 2 University of California, San Diego, USA

**M02-8 Performance characterization of a new ultra-high resolution, 3-D positioning PET scintillator detector**


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. Enghardt123
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. Hub, 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: Iréne Buvat, INSERM, France

M04-1 Correlating Motion of Internal Organs with the Displacements of Fiducial Markers During Respiration
R. Bouchcho, 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. Ay3, R. Lautamaki1, B. M. W. Tsui4, 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. Dez1, 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. Smyczynski1, H. C. Gifford1, A. Lehovich1, J. E. McNamara1, W. P. Segars2, J. Dez1, 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. Dawood123, T. Kösters2, M. Fieseler123, F. Büther123, X. Jiang4, K. P. Schäfers123
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. Dez, 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. Wehr1, 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. Maramai1, S. J. Junnarkar1, B. Ravindranath1, S. S. Suthakal1, S. P. Stoll1, D. S. Smith1, W. Lenz2, J.-F. Pratte3, M. L. Puschke4, S. Krishnamoorthy4, P. Vaska4, C. L. Woody4, D. J. Schlyer4
1Stony Brook University, USA; 2Brookhaven National Laboratory, USA

M05-4 Evaluation of the First Clinical MR/PET-System – Initial Results
A. Kolb1, H. F. Wehr1, M. S. Judenhofer1, M. P. Lichi2, M. J. Schmand1, J. Breuer1, C. D. Claussen1, 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
L. S. Huber, W. W. Moses, Q. Peng, R. H. Huesman, B. W. Reutter, D. S. Wilson, Lawrence Berkeley National Lab, USA; J. Pouliot, L.-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. Chen, N. Kirkpatrick, R. A. Gatenby, N. G. Knowles, L. S. Goobar, H. H. Barrett
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. Kloe, B. N. M. van Berckel, F. L. Buijs, G. J. Luurtsema, A. A. Lammertsma, R. Boellaard
VU Medical University Centre, The Netherlands

M06-3 High Sensitivity Converging Collimators for Brain SPECT
R. Ter-Antonyan, J. E. Bowsher, K. L. Greer, S. D. Metzler, R. J. Jaszcak
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. Ndney-awa, D. Brasse, Y. Yu
ipic in2p3 enr, 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. Studenski, D. R. Gilland
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 TiBr Detector Array for Ultra High Resolution PET
1Tohoku University, Japan; 2Tohoku Institute of Technology, Japan

M06-19 Correcting Spatial Distortion and Non-Uniformity in Planar Images from γ-Camera Systems
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
1Instituto de Fisica Corpuscular (CSIC-UV), Apto. 22085, 46071, Valencia, Spain; 2Instituto de Aplicaciones de las Tecnologias de la Informacion 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. Fadali, A. Souloumnic, R. Maroy, R. Trebossen, R. Boisgard, B. Tavitian
CEA, LIST, Stochastic Process and Spectra Laboratory, CEA Saclay, France

M06-29 Performance Evaluation of the Siemens Inveon Small Animal PET Scanner
J. G. Mannheim, M. S. Judenhofer, K. Lankes, D. F. Newport, B. J. Pichler
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. Gregory, M. J. Osborne, M. Holstenson, S. Sassi, M. Partridge, G. D. Flux
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. Jakoby1,2,3, Y. Bercier1, M. Conti3, M. E. Casey3, T. Gremillion3, C. Hayden3, B. Bendriem1, 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. Dong1, 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. Guo1,2,3, Q. Xie1,2, B. Zhang1, X. Wang1,2, 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. Jeremic1, G. Platsch1, 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. Hold1, 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. Chesi1, N. Clinthorne2, E. Cochran1, K. Honscheid1, S. Huh1, H. Kagan1, M. Knopp1, C. Lacasta1, M. Mikusz2, P. Schmalbrock1, A. Studen3, P. Weilhammer2,6
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 System
K. Erlandsson1, M. Núñez1,2, 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 Julich, 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. Schimel1, L. E.Via1, M. Cordell1, C. P. D. Longford1, R. Nutt1, C. Landry1, A. P. Tybinkowski1, E. M. Bailey1, L. J. Frye1, C. M. Laymon1, B. J. Lopresti1
1University of Pittsburgh, USA; 2National Institutes of Health, USA; 3Siemens Molecular Imaging, USA; 4Neurologia 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. Uyen1, J. J. Min1, M. S. Kim1, 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
Maastro Clinic, The Netherlands

M06-73 High Resolution 125I Pinhole SPECT Imaging of the Mouse Thyroid with the MediSPECT Scanner
G. Miotivier, 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. Almeida1,2, S. Augusto1, R. Bugalho1, B. Carriço1, C. S. Ferreira1, M. Ferreira1, R. Moura1, P. Parkhurst1, C. Ortião3, J. F. Pinheiro1, P. Rodrigues1, D. N. Sá1, J. C. Silva1, A. Trindade1, J. Varela1,5,6
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. Bekarst, 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. Baek2, Y. H. Chung1,2, 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
F. Nishikido1, E. Yoshida1, T. Yamaya1, N. Inadama1, K. Shibuya1, T. Tsuda2, H. Tonami2, K. Kitamura2, H. Murayama1
1National Institute of Radiological Sciences, Japan; 2Shimadzu Corporation, Japan

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. Cesareo, A. Brunetti, Universita di Sassari, Italy; T. Akatsu, T. Yuasa, Yamagata University, Japan; T. Takeda, University of Tsukuba, Japan; G. Tromba, Elettra, Italy; G. E. Gigante, Universita 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. Round1, N. Sodini1, C. Hall4, B. H. J. Juurlink5
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M06-99 Positioning Accuracy and Precision of a Three Degrees of Freedom Manipulator Guided by Tilting-Scanner Scintillation Camera
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M06-101 A Novel Parallel Hole Collimator for High Resolution SPET Imaging with a Compact Lab3:Ce Gamma Camera
R. Pani1, R. Pellegrini1, P. Benatti1, M. N. Cinti1, S. Ridel1, R. Scafe1, G. De Vincentis1, S. Lo Meo1, N. Lanconelli2, F. Navarra1, G. Moschini1, A. Fabbrì1, E. D’Abramo2, D. Sacco3, V. Orsolini Cencelli1, F. de Notaristefani1
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M06-103 Influence of Respiratory Motion on Cardiac Mouse Images Using High-Resolution Small Animal PET
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M06-105 Design Simulations of a LSO Crystal Block Detector Module for Dual PET/SPECT Systems
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M06-107 PET/CT Alignment for Small Animal Scanners Based on Capillary Detection
A. Rodríguez-Ruano1, J. Pascau1, 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
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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. Antoran2, M. Desco1
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M06-113 Imaging Performance of the LabPET APD-based Digital PET Scanner
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M06-115 Dynamic Imaging of Arthritic Vasculature in Mouse-Models Using HiSPECT and In-111 Labelled Cyclic RGD Peptide
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M06-117 Experimental scanner setup from miniPET-II detector modules
I. Valastyan1,2, 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
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M06-121 Characterization of the Compton Scattering in Clinical PET/CT with a High Resolution Half Ring PET Insert Device
Washington University in St. Louis, USA

M06-123 Quantitative image-quality evaluation for a high-sensitivity small-animal PET system
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M06-125 Design Study of Gamma-Cube - a High Resolution and High Sensitivity SPECT System for in Vivo Mouse Brain Studies
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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-sekiiguchi, 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
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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
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
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M06-141 An Imaging ß-Probe for Radioguided Surgery
S. C. Thacker1, B. C. Stack2, V. J. Lowe2, 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. Debarbieres1,2, A. Bonissent2, P. Breugnon2, F. Cassol-Brunner2, P. Delpierre2, C. Hemmer2, J.-C. Clémens2, B. Dineskplier2, J. Luchino2, F. Mann1, C. Meessen2, E. Vigeolas2, G. Rougon2, C. Morel2
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M06-147 Implementation of a High Level Hands-on-Training at an Experimental PET Scanner
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M06-149 Demonstration of the Superiority of Digital Breast Tomosynthesis over Digital Mammography Through a Series of Sophisticated Computational Breast Phantomson
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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. Clinihome, M. Piert, University of Michigan, USA; H. Kagan, Ohio State University, USA
A Gamma-Localization System Using Stereotactic Imaging
B. L. Welch, D. Banks, T. S. Saviour
Dilon Technologies, USA

Method for Multi Energy Window Photon Counting X-Ray CT
T. Tanimori, A. Livne, A. Gringauz, Y. Berman, A. Fuksman, N. Wainer

Reduced Variance

Finland

Proton Radiotherapy Facility at IFJ PAN, Krakow, Poland

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Laboratoire SYMME, Polytech'Savoie Annecy, Université de Savoie, France; P. Henriquet, M. Boutemeur, L. Goujon, M.-C. Ricol, R. Rosset.


Z. Yin, D. D. Harrison, B. K. B. De Man, D. Beque, GE Global Research, USA; J. Baek, N. Pelc, Stanford University, USA

An Experimental Study of Multi-Source Inverse Geometry CT
Z. Yin, D. D. Harrison, B. K. B. De Man, D. Beque, GE Global Research, USA; J. Baek, N. Pelc, Stanford University, USA

Optimization of the Patient Dose During Positioning at the Proton Radiotherapy Facility at IFJ PAN, Krakow, Poland
Institute of Nuclear Physics PAN, Poland; Varian Medical Systems, USA

Fast Simulation of Yttrium-90 Braggstrahlung with Reduced Variance
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Experimental Evaluation of Image-Based Spectral Analysis Method for Multi Energy Window Photon Counting X-Ray CT
R. Carmi, A. Livne, A. Gringauz, Y. Berman, A. Fuksman, N. Wainer Philips Healthcare, Israel

Advanced Compton Camera System for Nuclear Medicine: Prototype System Study
R. Kohara, T. Shirahata, T. Nakazawa, O. Miyazaki, Hitachi Medical Corporation, Japan; S. Kabuki, S. Kuroswa, K. Miuchi, H. Kubo, T. Tanimori, Kyoto University, Japan; T. Nakahara, E. Kunieda, H. Fujii, A. Kubo, Keio University School of Medicine, Japan

Timing Characteristics of the Inorganic Scintillators Coupled with SiPMs for the PET Application
S. Kobayashi, Saga University, Japan; J. Sakamoto, T. Yamamoto, Konan University, Japan

Pin Photodiode Arrays for High Resolution Imaging Applications
A. O. Goushcha, B. Tabbert, SEMICOA, USA

Improving Light Extraction from Heavy Inorganic Scintillators by Photonic Crystals
M. Kronberger, E. Auffray, P. Lecoq, Crystal Clear Collaboration, CERN, Switzerland; X. Letarré, C. Seassal, J.-L. Leclercq, Institut des Nanotechnologies de Lyon (INL), France

Differential Multi-Channel Readout for Solid-State Photomultiplier Array
Y. Shao, University of Texas MD Anderson Cancer Center, USA; H. Li, State University of Buffalo, USA

A Cone Beam CT Scanner Without Moving Parts
H. Schomburg, R. Luhta, R. Pietig
Philips Research Europe, Germany; Philips Medical Systems, USA

Luminescence and Crystalline Structure of Vacuum Deposited CsI(Tl), ZnSe(Te) and Ca0.65RE0.35F2.35 (RE: Eu, Ce) Layers.
A. Fedorov, A. Lebedinsky, K. Katrunov, A. Layalants, V. Nesterkina, N. Shiran, S. Tretyak, Institute for Scintillation Materials NAS of Ukraine, Ukraine; A. Sipatov, National Technical University, Ukraine

Four-Layer DOI-PET Detector with a Silicon Photomultiplier Array
National Institute of Radiological Sciences, Japan; Shimadzu Corporation, Japan

Advantage of the Four-Layer DOI Information in the Time Resolution for a TOF-PET Detector

Computed Tomography with X-Ray Energy Weighting
P. M. Shikhaliyev, Louisiana State University, USA

Evaluation of Polycrystalline Films of Mercuric Halides Intended for Direct Lymphoscintigraphy
L. Fornaro, M. E. Pérez, N. Säsen, M. Rodríguez
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A Continuous Crystal Detector for TOF PET
T. Szczesniak, M. Moszynski, L. Swiderski, A. Nassalski, A. Syntfeld-Kazuch, Solon Institute for Nuclear Studies, Poland; P. Ojala, C. Bohm, Stockholm University, Sweden

TRIOP: an Intra-Operative Beta Probe Dedicated to Glioma Radioguided Surgery
F. Bogalhas, L. Menard, P. Palf, L. Pinot, F. Lefebvre, R. Siebert, M.-A. Duval, F. Jean, Y. Charon
Laboratoire IMNC - UMR 8165, France; Université Paris Diderot - Paris 7, France; URA CEA-CNRS 2210, France; CHU Henri Mondor, France; Université d’Evry Val d’Essonne, France

Simultaneous Imaging of Multi Nuclides Using the Electron Tracking Compton Gamma-Ray Camera Based on Small Animal and Phantom Experiments
Kyoto university, Japan; Hitachi Medical Corporation, Japan; Keio university, Japan; Hosei university, Japan
**M06-201** A DOI PET Detector With Scintillation Crystals Cut in Triangular Prism  
1 National Institute of Radiological Sciences, Japan; 2 Shimadzu, Japan; 3 Waseda University, Japan; 4 Chiba University, Japan

**M06-203** Crystal identification performance of the jPET detector depending on refractive index of optical cement between scintillators  
1 Waseda University, Japan; 2 National Institute of Radiological Sciences, Japan; 3 Chiba University, Japan

**M06-205** Evaluation of the Luminescence Efficiency of YAG:Ce Powder Scintillating Screens for Use in Digital Mammography Detectors  
S. David, C. Michail, M. Roussou, E. Nigrianaki, A. Toutountzis, N. Kalivas, I. Valais, G. Fountos, I. Kandarakis, G. Panagiotakis  
1 University of Patras, Greece; 2 Technological Educational Institute, Greece

**M06-207** Optimizing Time Resolution for TOF PET Detectors Based on Monolithic Scintillation Crystals Using Fast Photosensor Arrays  
1 KVI - University of Groningen, The Netherlands; 2 Delft University of Technology, The Netherlands; 3 University Medical Centre Utrecht, The Netherlands

**M06-209** Powder Scintillating Screens for Use in Digital Mammography Detectors  
S. David, C. Michail, M. Roussou, E. Nigrianaki, A. Toutountzis, N. Kalivas, I. Valais, G. Fountos, I. Kandarakis, G. Panagiotakis  
1 University of Patras, Greece; 2 Technological Educational Institute, Greece

**M06-211** Development of a Small Animal PET Detector Ring for Simultaneous PET/MRI Imaging Enabling Whole Body Mouse or Multi-Bed Rat Scans  
K. Lankes, M. S. Judenhofer, B. J. Pichler  
Laboratory for Preclinical Imaging and Imaging Technology of the Werner Siemens-Foundation, Department of Radiology, University of Tübingen, Germany

**M06-213** Simultaneous Acquisition of K-Edge Subtraction Images Using a pnCCD and Multilayer Mirror  
1 University of Siegen, Germany; 2 Max Planck Institute for Extraterrestrial Physics, Germany; 3 PNSensor GmbH, Germany; 4 University of Potsdam, Germany

**M06-215** Experimental Determination of Optical Scattering and Absorption in LaBr₃:Ce⁺  
H. T. van Dam, W. Drozdowski, S. Seifert, P. Dorenbos, F. J. Beekman, D. R. Schaart  
Delft University of Technology, The Netherlands

**M06-217** Enhancing X-Ray Source Characteristics via Ultra-Intense Laser Irradiation of Micro-Conical Targets  
J. Rassuchine, T. E. Cowan, E. d’Humieres, Y. Sentoku, S. Gaillard, S. Baron, M. Koenig, P. Audebert, K. Flippo  
1 Forschungszentrum Dresden-Rossendorf, Germany; 2 University of Nevada, Reno, USA; 3 LULI-L’Ecole Polytechnique, France; 4 LANL, USA

**M06-219** Parametrization of SiPM Dynamic Range Contribution to Energy Resolution of Scintillation Light Readout  
B. Couce, F. Gomez, A. Iglesias, P. Aguilar  
University of Santiago de Compostela, Spain

**M06-221** Feasibility Study for Photon Counting Detector for High Resolution Pre Clinical SPECT  
S. Tibbelin, A. Badano, M. Danielsson  
1 The Royal Institute of Technology, Sweden; 2 U.S. Food and Drug Administration, USA

**M06-223** Performance of a LYSO-SSPM PET Detector for Combined PET/MRI Applications  
P. Dokhale, Y. Wu, R. Robertson, C. Stapels, J. Christian, S. Cherry, K. Shah  
1 Radiation Monitoring Devices Inc., USA; 2 University of California-Davis, USA

**M06-225** Optimization of Silicon Detector Layout and Associated Front-End Electronics for Improved Performance of a Silicon PET Through Simulation  
A. Studen, N. H. Clinthorne, H. Kagan, M. Mikuć  
1 Jozef Stefan Institute, Slovenia; 2 University of Michigan, USA; 3 Ohio State University, USA; 4 University of Ljubljana, Slovenia

**M06-227** Energy Weighting on the 2D-MHSP X-Ray Single Photon Detector  
1 University of Aveiro, Portugal; 2 University of Coimbra, Portugal

**M06-229** First Experiments with LaBr₃:Ce Crystals Coupled Directly to Silicon Photomultipliers for PET Applications  
1 Delft University of Technology, The Netherlands; 2 University of Groningen, The Netherlands; 3 University Medical Centre Utrecht, The Netherlands

**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  
S. Fürst, J. Pulko, A. B. Mann, M. Hohberg, I. Konorov, S. Paul, V. C. Spanoudaki, S. I. Ziegler  
1 Technische Universität München, Germany

**M06-233** Monte Carlo Based Performance Assessment of Four Commercial GE Discovery PET/CT Scanners Using GATE  
1 Amir Kabir University of Technology, Iran; 2 Medical Sciences University of Tehran, Iran; 3 Technological Educational Institute of Athens, Greece; 4 Johns Hopkins University, USA
M06-235 Monte Carlo Simulation of Multi-Head Si/CdTe Compton Camera for Medical Imaging
M. Yamaguchi1,2, N. Kawachi3, S. Watanabe4, H. Odaka4, S. Takeda2,3, S. Ishikawa2,4, H. Aono2,4, T. Takahashi2,4, K. Arakawa1,3, T. Nakano1
1Gunma University, Japan; 2Japan Aerospace Exploration Agency, Japan; 3Japan Atomic Energy Agency, Japan; 4University of Tokyo, Japan

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
E. Mathy, O. Monnet, G. Montemont, L. Verger
MINATEC, France

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
D. C. Oxley, A. J. Boston, H. C. Boston, R. J. Cooper, M. R. Dimmock, L. J. Harkness, P. J. Nolan, D. P. Scraggs, The University of Liverpool, UK; I. H. Lazarus, STFC Daresbury Laboratory, UK; T. E. Beveridge, Monash University, UK

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
Q. M. Tieng, V. Vegh, I. M. Bremeron
University of Queensland, Australia

M06-257 Simulations and Measurements of the Modulation Transfer Function of Scintillator Arrays
S. Wiruth, B. Heismann, D. Niederlöchner, L. Bärz, W. Metzger, K. Pharm Gia
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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
J. De Smet, R. Van Holen, S. Staels, S. Vandenberghhe, I. Lemahieu
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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
Y. Lu, A. F. Chatziioannou, UCLA Crump Institute, USA

M06-273 Effect of Detector Energy Response on Image Quality of Myocardial Perfusion SPECT
L. Volokh1, J. Hugg2, I. Blevis3, E. Asma1, F. Jansen1, R. Manjeshwar2
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M06-275 An Analytic Model of the Cardiac Cycle
S. Zabic, D. Heuscher, Philips Medical Systems, USA; F. Noo, University of Utah, USA

M06-277 Monte Carlo Simulations of Respiratory Gated 18F-FDG PET for the Assessment of Volume Measurement Methods
S. Vauclain1,2, S. Hapdey1, C. Michel1, H. Rebani1, I. Buvat5, A. Edel-Sanson1,2, K. Doyeux1,2, I. Gardin1,3, P. Vera1,3
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M06-279 Uniform Cramer-Rao Bounds SPECT System Design
L.-J. Meng, N. Li
University of Illinois at Urbana-Champaign, USA
**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
P. D. Reynolds, P. D. Olcott, G. Pratx, F. W. Y. Lau, C. S. Levin
Stanford University, USA

**M06-285** Data Acquisition System for Multi Channel Silicon Drift Diode-Based Detector
Y. Kim¹, J. Moon², J. Lee³, K. Yoon², Y. Ahn³, H. Lee¹, K. Lee¹, J. Joung³
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**M06-287** Test and Optimisation of Timing Algorithms for PET Detectors with Digital Sampling Front-End
B. Joly, G. Montarou, N. Pauna, J. Lecoq, M. Brossard, M. Crouau, G. Bohner, S. Crampoon
LPCLR Clermont, France

**M06-289** Motion Estimation for Functional Medical Imaging Studies Using a Stereo Video Head Pose Tracking System
W. P. T. Ma, G. Hamarneh, G. Mori, Simon Fraser University, Canada; K. Dinelle, V. Sossi, University of British Columbia, Canada

**M06-291** An Adaptive Algorithm for Multimodal Focus Functions in Automated Fluorescence Microscopy
S. L. Brazdilova¹, M. Kozubek
Faculty of Informatics, Masaryk University, Czech Republic

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H. L. Durko¹, S. Shokouhi², B. S. McDonald², L. R. Furenlid¹, H. H. Barrett¹, T. E. Peterson¹
¹University of Arizona, USA; ²Vanderbilt University, USA

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S. K. Patch¹, D. Pachauri¹, T. Stiles¹, N. Purwar¹, P. Dey¹
¹UW-Milwaukee, USA; ²UW-Madison, USA

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J. M. Monzo¹, C. W. Lerche¹, J. D. Martinez¹, R. Esteve¹, J. Toledo¹, V. Herrero¹, N. Ferrando¹, R. J. Aliaga¹, R. J. Colon¹, R. Gadea¹, F. Sanchez¹, F. J. Mora¹, J. M. Benlloch², A. Sebastia¹
¹Universidad Politecnica de Valencia, Spain; ²Instituto de Fisica Corpuscular (IFIC), Spain

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R. J. Wiener, S. Surti, C. C. M. Kyba, F. M. Newcomer, R. Van Berg, J. S. Karp
University of Pennsylvania, USA

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J. Sperl, D. Beque, GE Global Research, Germany; B. Claus, B. De Man, GE Global Research, USA; B. Senzig, GE Healthcare, USA; M. Brokate, Technical University Munich, Germany

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J. Xu, B. M. W. Tsui, Johns Hopkins University, USA

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J. Zeinel¹, A. H. Vija², A. Yahil², X. Ding³, E. G. Hawman³, J. Hornegger¹, T. Kuwert¹
¹University of Erlangen, Germany; ²Siemens Medical Solutions, USA, Inc., USA

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University of Cambridge, UK

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G. Van Gompel¹, M. Defrise², J. Batenburg³
¹VisionLab, University of Antwerp, Belgium; ²Dept. of Nuclear Medicine, Vrije Universiteit Brussel, Belgium

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C. Comtat¹, F. C. Sureau¹,², M. Sibomana¹, I. K. Hong¹, R. Trébossen¹
¹CEA, France; ²Siemens Medical Solutions SAS, France; ³Righospitalet, Denmark; ⁴Korea Polytechnic University, South Korea

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F. Kreici¹, J. Jakubek, J. Dammer, D. Vavrik
Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic

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A. A. Isola¹,², A. Ziegler¹, T. Koehler¹, W. J. Niessen¹,², M. Graß¹
¹Philips Research Europe - Hamburg, Germany; ²Erasmus MC, University Medical Center Rotterdam, The Netherlands; ³Delft University of Technology, The Netherlands

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D. I. Kazantsev¹,², V. V. Pickalov¹
¹Institute of Computational Mathematics and Mathematical Geophysics of SB RAS, Russia; ²Khrisianovich Institute of Theoretical and Applied Mechanics, Russia

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D. Imperati¹,², I. Froio¹, M. Tittgemeyer², A. Borghese¹
¹University of Milan, Italy; ²Max-Plank-Institute for Neurological Research, Germany
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J. J. Schein, H. Herzog
Institute of Neuroscience and Biophysics (INB-3), Germany

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K. Erhard, Philips Research Europe, Germany

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T. Koehler, C. Bontus, R. Proksa
Philips Research Europe, Germany

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L. T. Hsiao¹,², H.-M. Huang¹
¹Chang Gung University, Taiwan; ²Chang Gung Memorial Hospital, Taiwan

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C. J. Park¹, C.-S. Shon¹, M. K. Cho², H.-K. Lee¹, B.-Y. Choe¹, T.-S. Suh¹, H. K. Kim²
¹The Catholic University of Korea, Korea; ²Pusan National University, Korea

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P. Forthmann, U. van Stevendaal, M. Graß, T. Köhler
Philips Research Europe - Hamburg, Germany

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University of Queensland, Australia

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Department of Engineering Physics, Tsinghua University, China

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M. S. Ould Mohamed¹, R. Clackdoyle¹,², C. Mennessier¹
¹Laboratoire Hubert Curien, France; ²University of Utah, USA

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Otto-von-Guericke University Magdeburg, Germany

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The university of Chicago, USA

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L. Hong, Korea Polytechnic University, Korea; Z. Burbar, S. Yan, S. Gleason, Siemens Molecular Imaging, USA

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University of Chicago, USA

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Université de Sherbrooke, Canada

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The University of British Columbia, Canada

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H. Zhao, CEAS, University of Manchester, UK

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T. Lasser¹, T. Wendler¹, S. I. Ziegler¹, N. Navab¹
¹CAMP, Technische Universität München, Germany; ²Klinikum rechts der Isar, Technische Universität München, Germany

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S. Liu, McMaster University, Canada; T. H. Farncombe, Hamilton Health Sciences, Canada

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Illinois Institute of Technology, USA

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J. D. Pack, J. J. Manak, GE Global Research Center, USA
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Y. Fan1,2, C. Jiao1, H. Lu1, Z. Liang1
1Fourth Military Medical University, China; 2State University of New York, Stony Brook, USA

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S. Nikolau1, S. Wittwar1, S. Viehöver1, A. Azmoudiche1, R. Larisch1, M. Beu1, C. Antke1, N. Schramm1, H.-W. Müller1
1University Hospital Düsseldorf, Germany; 2Clinic of Lüdenscheid, Germany; 3Research Center Jülich, Germany

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1CEA Grenoble, France; 2UMR 8165 CNRS, France

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1Sydney University, Australia; 2University of Sydney, Australia; 3Westmead Hospital, Australia

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T. Zeniya1,2, H. Watabe3, H. Kudo3, Y. Hirano3, K. Minato1, H. Iida1
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Politecnico S. Orsola-Malpighi, Italy

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1Chang Gung University, Taiwan; 2Chang Gung Memorial Hospital, Taiwan; 3National Tsing Hua University, Taiwan

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1Hospital General Universitario Gregorio Marañón, Spain; 2Universidad Rey Juan Carlos, Spain

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Lawrence Berkeley Laboratory, USA

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Johns Hopkins Medical Institution, U.S.

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1Brookhaven National Laboratory, USA; 2Stony Brook University, USA

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E. Hansi1,2, O. Dössel1, M. Graß1
1Philips Research Europe - Hamburg, Germany; 2University of Karlsruhe, Germany

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Johns Hopkins University, USA

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University Hospital of Münster, Germany

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1Johns Hopkins Medical Institutions, U.S.

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On behalf of the Magic-5 Collaboration

Detection

Fractional Anisotropy Maps

Automated Algorithm to Identify Damaged Brain Areas from the HRRT

Relevant Measures in High Resolution PET Brain Imaging Using M06-483

Toshiba Medical Research Institute USA, USA

A. M. Natarajan, A. A. Zamyatin, Y. Zou

SUNY at Stony Brook, USA

B. Liu, L. Zhou, S. Kulkarni, G. R. Gindi

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M06-479

Electrophoresis Gel Images

Liabes University, Algeria

Y. Bentoutou

S. Shokouhi

Center for Space Technology, Algeria

M06-473

Theoretical Studies on Plaque Burden Estimation in Alzheimer's Mouse Model Using SiliSPECT

S. Shokouhi

M. A. Kupinski

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M06-469

Cardiac PET Image Segmentation by a Deformable Model with Force Field Driven Speed Term

R. Dedic

M. Allili

R. Lecomte

A. Benchakroun

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M06-471

Histomorphometric Analysis of Complex Structures Using Synchrotron Radiation Computer Microtomography (SR-mCT)

C. G. Pinheiro

R. C. R. Barroso

L. F. Oliveira

G. Tromba

D. Drecosi

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Integrated Models for the Analysis of Two-Dimensional Electrophoresis Gel Images

G. De Nunzio

S. Maglio

A. Agrusti

R. Cataldo

I. De Mitri

M. Favetta

A. Massafrà

G. Marsella

M. Quarta

G. Mercurio

1Università del Salento, Italy; 2INFN Sezione di Lecce, Italy; 3CNR, Italy

M06-475

A Results Recapitulation of Image Registration Techniques in Digital Subtraction Angiography

Y. Bentoutou

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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

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M06-483

Effect of Data Processing on the Accuracy of Biologically Relevant Measures in High Resolution PET Brain Imaging Using the HRRT

V. Sossi

K. Dinelle

S. Blinder

S. Lidstone

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

C. Ciraci

M. Donativi

A. Castellano

S. Quarta

1Università del Salento, Italy; 2INFN, sezione di Lecce, Italy; 3Istituto Scientifico ed Universitario Vita–Salute San Raffaele, Italy; 4P.O. Vito Fazzi, Italy

M06-487

Lung Conformal Flattening for Juxta-Pleural Nodule Detection

A. Massafrà

Università del Salento, Italy

On behalf of the Magic-5 Collaboration

M06-489

A Noise Mechanism for Model Observers

N. F. Pereira

H. C. Gifford

M. A. King

1University of Massachusetts, USA; 2University of Massachusetts Medical School, USA

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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, Université de Savoie, Annecy, France

M08-1 Imaging Characteristics of a Commercial Positron Emission Mammography System: PEM Flex Solo II
L. MacDonald1, J. Edwards1,2, J. Rogers1,2, D. Haseley2, P. Kinahan1, T. Lewellen1
1University of Washington, USA; 2Swedish 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
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. Enghardt1,4
1Forschungszentrum Dresden-Rossendorf, Germany; 2Heidelberg Ion Therapy Center, Germany; 3CERN, Switzerland; 4TU 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. Richter1,4, N. Chaudhri2, W. Enghardt1,4, E. Rietzel1, C. Bert2
1Heidelberger Ionenstrahl-Therapiezentrum, Germany; 2Gesellschaft für Schwerionenforschung Darmstadt, Germany; 3OncoRay - Radiation Research in Oncology, Germany; 4Forschungszentrum Dresden-Rossendorf, Germany; 5Siemens 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. Michopoulou, L. Costaridou, R. Speller1, E. Panagiotopoulos2, A. Todd-Pokropek1
1University College London, UK; 2University 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
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. Wormes, 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. Butzer1,2, A. P. Butler1,4, N. J. Cook3, P. H. Butler1,5, 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
1Canterbury University, New Zealand; 2Karlsruhe Institute of Technology, Germany; 3European Organisation for Nuclear Research, Switzerland; 4Canterbury District Health Board, New Zealand; 5Christchurch 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
1Sunnybrook Health Sciences Centre / University of Toronto, Canada; 2State 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. Korevaar1,2, J. W. T. Heemsbergen3, F. J. Beeckman1,2,3
1Image sciences institute, The Netherlands; 2Radiation Detection and Matter, The Netherlands; 3Molecular Imaging Labs (MILABS), The Netherlands
M10-20 Thick, Continuous Detector Design for PET
M. Kaul, S. Surti, R. Wiener, J. S. Karp
University of Pennsylvania, USA

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
Université de Sherbrooke, Canada

M10-24 Optimizability of LogLikelihoods for the Estimation of Detector Efficiencies and Singles Rates in PET
M. W. Jacobson, Xoran Technologies, Inc., USA; K. Thieleman, Hammersmith Imant Ltd., UK

M10-28 A Comparison of Breast Lesion Imaging Capability of a Whole-Body PET Camera and a Brain/Breast PET Camera
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

M10-30 Improved Reconstructed Image Quality in a SPECT System with Slit-Slit Collimation by Combination of Multiplexed and Non-Multiplexed Data
S. T. Mahmood, K. Erlandsson, B. F. Hutton, UCL, UK

M10-32 Fully 4D Reconstruction of Dynamic SPECT Images Based on the Estimation of Spatiotemporal Basis Coefficients Directly from Projection Measurements
M. Abella, B. W. Reutter, J. J. Vaquero, M. Desco, G. T. Gullberg
1Hospital General Universitario Gregorio Maraño, Spain; 2Lawrence Berkeley National Laboratory, USA

M10-34 Evaluation of Local PMT Triggering Electronics for a TOF-PET Scanner
1University of Pennsylvania, USA; 2Philips Research, USA

M10-36 Quantitative I-123 SPECT Imaging Using Current Collimators and Optimized I-123 Collimator Design
B. M. W. Tsui, S. Chen, Johns Hopkins University, USA

M10-38 A Lower-Cost High-Resolution LYSO Detector Development for Positron Emission Mammography (PEM)
R. A. Ramirez, S. Liu, Y. Zhang, S. An, C. Wang, H. Li, H. Baghaei, W.-H. Wong
The University of Texas M.D. Anderson Cancer Center, USA

M10-40 Performance of Electronically Collimated SPECT Imaging System in the Energy Range from 140 keV to 511 keV
1The Ohio State University, USA; 2CERN, Switzerland; 3University of Michigan, USA; 4University of Valencia, Spain; 5University of Ljubljana, Slovenia

M10-10 Performance Comparison and System Modeling of a Compton Medical Imaging System and a Collimated Anger Camera
L. Han, N. Clinthorne, The University of Michigan, USA

M10-10 Performance Assessment of a Variable Field of View and Geometry PET Animal Scanner Based on CdTe Strip Detector Blocks
1INSERM U650, France; 2CEA-LETI, France; 3Biospace, France; 4SHFJ, France; 5LPSC, France

M10-10 MultipleCrystal Identification Algorithms for PET Block Detectors
X. Kang, Z. Gu, X. Sun, Tsinghua University, China

M10-12 PET-CT Co-Registration for In-Beam PET
E. Fiedler, M. Sobiella, W. Enghard
1Forschungszentrum Dresden-Rossendorf, Germany; 2Onconex, TU Dresden, Germany, Germany

M10-12 TOF-PET Scanner Using Position-Sensitive Detectors
Hamamatsu Photonics K. K., Japan

M10-16 Demonstrator of an Axial PET Camera
W. Lustermann, ETH Zurich, Institute for Particle Physics, Switzerland
On behalf of the AX-PET Collaboration

M10-18 Influence of Camera Defects on Gated Tc-99m Cardiac Perfusion SPECT
T. C. de Wit, H. W. A. M. de Jong
UMC Utrecht, the Netherlands
M10-05 MR Compatible Motor for Multi-Modality Imaging
O. Nalcioglu, W. W. Roeck, S.-H. Ha
Univ California-Irvine, USA

M10-06 Study of Compatibility of a SDD-Based Gamma Camera with a MRI System
C. Fiorini1,2, A. Longoni1,2, R. Peloso1,2, A. Laratta
1Politecnico di Milano, Italy; 2INFN, Italy

M10-07 An Image Based Method to Correct for Respiratory Motion Artifacts in Cardiac PET/CT Images
A. Pourmoghaddas1,2, G. Wells2
1Carleton University, Canada; 2University of Ottawa Heart Institute, Canada

M10-08 Can Large-Area Avalanche Photodiodes Be Used for a Clinical PET/MRI Block Detector?
H. Peng, P. D. Olcott, C. S. Levin
School of Medicine, Stanford University, USA

M10-09 Optimization of Rb-82 PET Acquisition and Reconstruction Protocol for Myocardial Perfusion Defect Detection
J. Tang, A. Rahimim, R. Laatamäki, M. Lodge, F. Bengel,
B. M. W. Tsui
Johns Hopkins University, USA

M10-10 Optimization of Crystal Length to Improve the Depth of Interaction Spatial Resolution in PET Imaging
S. Salvador, J. Wurtz, D. Huss, D. Brasse,
Radboud University Medical Centre, the Netherlands

M10-11 High-Resolution Cardiac Rat SPECT: Effect of Dose and Acquisition Time
C. Wu1,2, B. Vastenhouw1,2, F. van der Have1,2,3, R. A. Dierckx1, F. J. Beekman1,2,3
1University Medical Center Groningen, the Netherlands; 2University Medical Center Utrecht, the Netherlands; 3MILabs, the Netherlands

M10-12 Development of a High Spatial Resolution Whole-Body DOI PET System consisting of LSGO/GSO Crystals
Shimadzu Corporation, Japan

M10-13 Performance Evaluation and MR Compatibility Assessment of an Optical Fibre Based Pre-Clinical MR-Compatible PET Scanner
J. E. Mackewn1, D. Strul1, G. Charles-Edwards1, S. F. Keevil1,
T. Schaeffer1, W. A. Hallett2, P. Halsted1, R. A. Page1,
S. C. Williams1, D. Cash3, P. K. Marsden1
1Guy’s, King’s and St Thomas’ school of medicine and dentistry, UK; 2Imperial College, Hammersmith Hospital, UK; 3King’s College London, UK

M10-14 A Study on the Effect of Nuclear Collimators on MR Images
O. Nalcioglu, W. W. Roeck, S.-H. Ha, M. J. Hamamura, Univ of California-Irvine, USA;
D. J. Wagenaar, B. E. Patt, D. Mcier, Gamma Medica-Ideas, Inc., USA

M10-15 A Comparison of CT-Based Attenuation Correction Strategies for PET Data of Moving Structures
C. Richter1,2, U. Just1, F. Pönisch1,2, W. Enghardt1,2
1OncoRay, Medical Faculty C.G. Carus, Technische Universität Dresden, Germany; 2Forschungszentrum Dresden-Rossendorf, Germany; 3The University of Texas, M.D. Anderson Cancer Center, USA

M10-16 Preclinical Dual-Energy X-ray Computed Tomography Through Differential Filtration
R. Taschereau, A. F. Chatziioannou
University of California, USA

M10-17 Spatial Resolution and Sensitivity of the Siemens Inveon Small-Animal PET Scanner
E. P. Visser, J. A. Disselhorst, M. Brom, P. Laverman, M. Gotthardt, W. J. G. Oyen, O. C. Boerman
Radboud University Medical Centre, the Netherlands

M10-18 Optimization of Crystal Length to Improve the Depth of Interaction Spatial Resolution in PET Imaging
S. Salvador, J. Wurtz, D. Huss, D. Brasse, IPHC-DRS, France

M10-19 Design of a High Resolution, Monolithic Crystal, PET/MRI Detector with DOI Positioning Capability
R. S. Miyaoaka, X. Li, C. Lockhart, T. K. Lewellen
University of Washington, USA

M10-20 Study of Compatibility of a SDD-Based Gamma Camera with a MRI System
C. Fiorini1,2, A. Longoni1,2, R. Peloso1,2, A. Laratta1
1Politecnico di Milano, Italy; 2INFN, Italy

M10-21 VrPET/CT: Development and Initial Results of a Rotating PET/CT Scanner for Rodents Imaging
E. Lage1, J. J. Vaquero1, A. Sisniega1, S. España1, G. Tapias1,
A. Udias1, V. Garcia1, A. Rodriguez-Ruano1, M. Desco1
1Hospital General Universitario Gregorio Marañón, Spain; 2Facultad de Ciencias Físicas, Universidad Complutense de Madrid, Spain;
3Universidad Rey Juan Carlos, Spain

M10-22 Test of Geiger-Mode SSPM PET Modules for the Simultaneous PET and MRI Acquisition
J. S. Lee, I. C. Song1, S. I. Kwon1, M. Ito2, H. S. Yoon1, K.-S. Sim2,
J. T. Rhee1, G. S. Lee1, K. S. Park1, S. J. Hong1
1Seoul National University College of Medicine, Korea; 2Korea University, Korea; 3Konkuk University, Korea

M10-23 Can Large-Area Avalanche Photodiodes Be Used for a Clinical PET/MRI Block Detector?
H. Peng, P. D. Olcott, C. S. Levin
School of Medicine, Stanford University, USA

M10-24 An Image Based Method to Correct for Respiratory Motion Artifacts in Cardiac PET/CT Images
A. Pourmoghaddas1,2, G. Wells2
1Carleton University, Canada; 2University of Ottawa Heart Institute, Canada

M10-25 Preclinical Dual-Energy X-ray Computed Tomography Through Differential Filtration
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University of California, USA

M10-26 Spatial Resolution and Sensitivity of the Siemens Inveon Small-Animal PET Scanner
E. P. Visser, J. A. Disselhorst, M. Brom, P. Laverman, M. Gotthardt, W. J. G. Oyen, O. C. Boerman
Radboud University Medical Centre, the Netherlands

M10-27 Optimization of Crystal Length to Improve the Depth of Interaction Spatial Resolution in PET Imaging
S. Salvador, J. Wurtz, D. Huss, D. Brasse, IPHC-DRS, France

M10-28 Design of a High Resolution, Monolithic Crystal, PET/MRI Detector with DOI Positioning Capability
R. S. Miyaoaka, X. Li, C. Lockhart, T. K. Lewellen
University of Washington, USA

M10-29 High-Resolution Cardiac Rat SPECT: Effect of Dose and Acquisition Time
C. Wu1,2, B. Vastenhouw1,2, F. van der Have1,2,3, R. A. Dierckx1, F. J. Beekman1,2,3
1University Medical Center Groningen, the Netherlands; 2University Medical Center Utrecht, the Netherlands; 3MILabs, the Netherlands

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J. E. Mackewn1, D. Strul1, G. Charles-Edwards1, S. F. Keevil1,
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S. C. Williams1, D. Cash3, P. K. Marsden1
1Guy’s, King’s and St Thomas’ school of medicine and dentistry, UK; 2Imperial College, Hammersmith Hospital, UK; 3King’s College London, UK

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1University Medical Center Groningen, the Netherlands; 2University Medical Center Utrecht, the Netherlands; 3MILabs, the Netherlands

M10-35 Development of a High Spatial Resolution Whole-Body DOI PET System consisting of LSGO/GSO Crystals
Shimadzu Corporation, Japan
M10-84 Measured Imaging Performance of Photon Counting Hybrid-Pixel X-Ray Detectors
E Casol BRunner, J.-C. Clemens, C. Hemmer, C. Morel
CPPM (IN2P3-CNRS) and Aix-Marseille Université, France

M10-86 Pulse Train Multiplexing Method for Pixelated Gamma Detectors
K. Shimazoe, B. Shi, H. Takahashi, The University of Tokyo, Graduate School of Engineering, Japan; T. Furumiya, J. Ooi, Y. Kumazawa, Shimadzu Corporation, Japan

M10-88 Real-time awake animal motion tracking system for SPECT imaging
J. S. Goddard, J. S. Baba, S. J. Lee, Oak Ridge National Laboratory, USA; A. G. Weisenberger, A. Stolin, J. McKisson, Thomas Jefferson National Accelerator Facility, USA; M. F. Smith, University of Maryland, USA

M10-90 Transmission Measurements Using Iterative Conebeam Reconstruction on the Inveon DPET
M. W. Lenox1,2, J. Gregor2, S. B. Siegel3
1Lenox Engineering, USA; 2University of Tennessee, USA; 3Siemens Molecular Imaging, USA

M10-92 First Tomographic Results from the microPET System of the SIBI Project
H. Ala, A. Martinez-Dávalos, E. Moreno-Barbosa, B. Hernández-Reyes, T. Murrieta, C. Ruiz-Trejo, M. E. Brandan, M. Rodriguez-Villafuerte
Instituto de Física, UNAM, Mexico

M10-94 First Test Results of a Commercially-Available Clinical PET Scanner Using the NEMA NU 4–2008 Small Animal PET Standard
W. Luo, S. Yarnall, E. Anashkin, C. G. Matthews
Naviscan PET Systems, USA

M10-96 Analytic Calculation of Multi-Pinhole Collimator Sensitivity with Tilted Pinholes
H.-H. Hsieh1, I.-T. Hsiao1,2, C.-H. Hsu1, K.-J. Lin1,2
1Chang Gung University, Taiwan; 2Chang Gung Memorial Hospital, Taiwan; 3National Tsing Hua University, Taiwan

M10-98 Coincidence Identification in PET Using Neural Networks
E. Fuster-Garcia1, J. F. Oliver2, S. Tortajada1, M. Rafecas2
1Universitat Politècnica de València, Spain; 2Universidad de Valencia / CSIC, Spain

M10-100 Image Quality, Accuracy of Attenuation and Scatter Corrections of the microPET Focus 120 Using the NEMA NU4-2008 Phantom.
M. A. Bahri, A. Plenevaux, A. Seret
University of Liège, Belgium

M10-102 Comparison of Coincidence Identification Techniques for High Resolution PET
J. F. Oliver1, I. Torres-Espallardo2, R. Fontaine3, S. I. Ziegler2, M. Rafecas1
1CSIC/Universitat de València, Spain; 2Technische Universität München, Germany; 3Université de Sherbrooke, Canada

M10-104 A New Position Reconstruction Method for Position Sensitive Photomultipliers
M. Mikeli1, A. Polychronopoulou1, A. Gektin2, N. Giokaris1,3, A. Karabarbourinis1,3, D. Maintas4, V. Pedash, C. Papanicolaou1,3, D. Thanass1, E. Stiliaris1,3
1University of Athens, Greece; 2Institute for scintillation materials, Ukraine; 3Institute of Accelerating Systems & Applications (IASA), Greece; 4Institute of Isotopic Studies, Greece

M10-106 Optimized Multipinhole Design for Mouse Imaging
K. Vund1, J. Nuys1, B. Vanbilloen2, M. De Saint-Hubert3, D. Vanderghinste2, D. Rattat2, F. Mottaghy1, M. Defrise1
1Nuclear Medicine K.U.Leuven, Belgium; 2Radiopharmacy, K.U.Leuven, Belgium; 3Nuclear Medicine, V.U.Brussel, Belgium

M10-108 Statistical Three-Dimensional Positioning Algorithm for High-Resolution dMiCE PET Detector
K. M. Champley, T. K. Lewellen, L. R. MacDonald, R. S. Miyaoaka, P. E. Kinahan
University of Washington, USA

M10-110 A Super-Resolution Feasibility Study in Small Animal SPECT Imaging
J. L. Villena, E. Lage, A. De Carlo, G. Tapias, A. Sisniega, J. J. Vaquero, M. Desco
Hospital General Universitario Gregorio Marañon, Spain

M10-112 Real-Time X-Ray Micro-Imaging of Living Animals and Plants with Medipix2/TimePix Pixel Detectors
P. M. Frallicciardi1,2, J. Dammer1, J. Jakubek1, S. Pospisil1, D. Vavrik3, F. Weyda4
1Istituto Nazionale di Fisica Nucleare (INFN), Sezione di Napoli, Italy; 2Universita’ degli Studi di Napoli “Federico II”, Italy; 3Czech Technical University, Czech Republic; 4Biological center of the Academy of Sciences of the Czech Republic, Czech Republic

M10-114 Implementation of Physiological Gating on the High Resolution Research Tomograph
M. C. Huismans, C. E. van den Brom, F. L. Buijs, C. F. M. Molthoff, R. Boellaard, A. A. Lammertsma
VU University Medical Center, The Netherlands

M10-116 Automated CT-Based Attenuation Correction for Preclinical Multimodality PET/CT
M. Chen, D. Osborne, S. Gleason
Siemens Molecular Imaging, USA

M10-118 Performance Comparison of Two Commercial Small Animal PET Scanners: ClearPET™ and rPET-1™
M. Cañadas1, M. Embid1, E. Lage2, M. Desco3, J. J. Vaquero2, J. M. Perez1
1CIEMAT, Spain; 2Hospital General Universitario Gregorio Marañon, Spain

M10-120 Verification of a FPGA-Based Coincidence Detection Module for a 3-Layer Animal PET
J. S. Lee1, S. I. Kwon1, I. T. Hsiao1, M. Ito1, G. S. Lee1, K.-S. Sim1, J. T. Rhee1, K. S. Park1, S. J. Hong2
1Seoul National University College of Medicine, Korea; 2Korea University, Korea; 3Konkuk University, Korea
M10-122 Optimizing Crystal Length of Each Layer for Four-Layer Animal PET System with a Relative Offset Configuration
M. Ito1, S. J. Hong2, J. S. Lee3, S. I. Kwon3, H. S. Yoon3, B. Hong1, K. S. Lee3, 1, S. J. Lee3, J. T. Rhee3
1Department of Physics, Korea University, Korea; 2Institute of Radiation Medicine, Medical Research Center, College of Medicine, Korea; 3Department of Nuclear Medicine, Seoul National University College of Medicine, Korea; 4Department of Biomedical Engineering, Seonam University, Korea; 5Department of Physics, Konkuk University, Korea

M10-124 Pinhole Aperture Optimization for Quantitation of Lesion Activity in Micro-SPECT Imaging
S. C. Moore1, 2, M. A. Park1, 2, R. E. Zimmerman1, 2
1Brigham & Women’s Hospital, USA; 2Harvard Medical School, USA

M10-126 Whole Body Animal SPECT Imaging on an Animal PET Scanner
R. Yao1, T. Ma1, 2, Y. Shao1, A. S. Panse1
1State University of New York at Buffalo, USA; 2Tsinghua University, China; 3University of Texas M.D. Anderson Cancer Center, USA

M10-128 Imaging Performance of a Four-Head Single Photon Emission Microscope System
L.-J. Meng, G. Fu, E. J. Roy, University of Illinois at urbana-champaign, USA; C.-T. Chen, University of Chicago, USA

M10-130 Small Animal Imaging Using Reflective X-Ray and Gamma-Ray Optics
M. J. Pivovaroff, Lawrence Livermore National Laboratory, USA; B. H. Hasegawa, University of California, San Francisco, USA; K. Kilaru, B. D. Ramsey, NASA Marshall Space Flight Center, USA; S. E. Romaine, Harvard Smithsonian Center for Astrophysics, USA

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
F. Boisson1, V. Beketaev2, Z. El Bitar2, J. Steibel1, D. Huss1, D. Brasse1
1IPHC-DRS, France; 2LINC, France

M10-136 Dynamic Laser-Guided Contouring for Dedicated Emission Mammotomography
S. J. Cutler1, 2, D. J. Croddy1, 2, M. P. Tornai1, 2
1Duke University Medical Center, USA; 2Duke University, USA

Y. Zhang, R. Ramirez, H. Li, S. Liu, S. An, C. Wang, H. Baghaei, W.-H. Wong, Univ. of Texas, M. D. Anderson Cancer Center, USA; M.-L. Jan, Institute of Nuclear Energy Research, Taiwan

M10-140 Characterization of Biological Tissues Using X-Ray Attenuation Data
G. Baldazzi1, 2, P. L. Rossi1, S. Masetti1, M. Fiaschetti1, A. Turco1, N. Lanconelli1, 2, D. Bianchini1, L. Roma1, G. Nicolletti1, P. L. Lollini1
1University of Bologna, Italy; 2INFN, Italy; 3S. Oriola - malpighi University Hospital, Italy; 4I.O.R., Italy

M10-142 X-Ray Cone-Beam Breast Computed Tomography: Phantom Studies
G. Mettivier, A. Lauria, M. C. Montesi, P. Russo
INFN and University of Napoli, Italy

M10-144 The Effect of Energy on Scintillation Camera Intrinsic Spatial Resolution
M. Holstensson, M. Partridge, S. E. Buckley, G. D. Flux
Institute of Cancer Research & The Royal Marsden NHS Trust, UK

M10-146 Real-Time Viewer for Positron Emission Mammography Image Guided Intervention
X. Lu, E. Anashkin, C. G. Matthews, W. Luo
Naviscan PET Systems, USA

M10-148 Prostate-Bladder Phantom for Radionuclide Imaging Research
Y. Sen, University of California, USA

M10-150 A Dedicated ASIC Front-End Readout for the Monolithic Detector Blocks of the BrainPET Prototype
L. Sarasola Martin, J. Navarrete, P. Rato Mendes, J. M. Perez, C. Willmott
CIEMAT, Spain

M10-152 Comparison of Dual-kVp and Dual-Layer CT in Simulations and Real CT System Measurements
S. Kappler, S. Wirth, Siemens AG, Germany

M10-154 Spirometry Based Respiratory Gating Method for Cardiac PET and MRI Imaging
T. Noponen1, T. Kokki1, V. Lepomaki1, S. Kajander1, N. Durand-Schaefer2, M. Teras1, J. Kuuni2
1Tartu University Central Hospital, Finland; 2GE Medical Systems, France

M10-156 A New Algorithm for the Continuous Quantitative Monitoring of Leakage During Chemotherapeutic Limb Perfusion
University Medical Center Groningen, The Netherlands

M10-158 Banding Artifact Reduction for Cardiac CT
Z. Sun1, 2, W. P. Segars4, E. K. Fishman1, J. A. Brinker1, K. Taguchi1
1Johns Hopkins University School of Medicine, USA; 2Johns Hopkins University, USA; 3Duke University, USA

M10-160 Multimodality High Resolution Wrist Imaging for Monitoring Response to Therapy in Rheumatoid Arthritis: Instrumentation and Techniques
1University of California-Davis, USA; 2UC Davis Medical Center, USA

M10-162 Tracking System Enhanced Ultrasound-Guided Biopsy and Visualization
M. E. Roberts, Carnegie-Mellon University, USA; M. J. DesPenza, Carnegie-Mellon University, USA

M10-164 Dual Modality Planar PET/optical Scanner for Imaging of Surgical Margins in Extracted Tissue Samples
A. V. Stolin, C. Freeman, J. McKisson, B. Kross, J. Proffitt, S. Majewski, Thomas Jefferson National Accelerator Facility, USA; S. Falen, Northern California PET Imaging Center, USA; B. Welch, Dilon Technologies, USA
M10-166 Comparison of CT contrast blood pool agents for in-vivo 3D Angiography using C. Wietholt, The University of Chicago, USA
On behalf of the Christian Wietholt

M10-168 Adaptation of megavoltage cone beam CT for treatment planning H. M. T. Thomas, D. Devakumar, P. Sadhananathan, P. B. Ravindran
Christian Medical College, India

M10-170 New Methods of X-Ray Medical Imaging and Radiation Therapy Based on Nanocrystalline Scintillators O. Krivko1, N. Klassen1, V. Loschenov2, V. Volkov2, V. Kedrov1, I. Shmyt’ko1, S. Shmurak1, E. Kudrenko1
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M10-172 In-Beam PET Simulations with the FLUKA Code F. Cerutti1, W. Enghardt2, A. Ferrari2, A. Mairani3,4, H. Paganetti5, K. Parodi1, E. Sommerer1
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M10-174 First Experimental Results from a Prototype Rotating Slit-Slat Collimator S. D. Metzler1, R. Accorsi1,2, A. S. Ayan1, R. J. Ott2, N. Evans1, P. Evans1
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M10-176 Light Output Analyzes of Scintillator Crystal Pins and Array for PET Detector Moduls E. Lőrincz, G. Erdei, I. Péczeli, C. Steinbach, F. Ujhelyi, Budapest University of Technology and Economics, Hungary; T. Bükki, I. Müller, MEDISO Ltd, Hungary

M10-178 Preliminary Evaluation of a Silicon Drift Diode Based Gamma Detector J. Joung1, J. Lee2, J. Kang3, J. Moon3, K. Lee3, D. Henseler1, M. Schmand1, M. Andreaco1
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M10-180 Properties of an LSO:Ce-LSO:Ce,Ca Phoswich Detector C. L. Melcher1, L. Eriksson1,2,3,4, M. A. Spurrier5, F. Bauer2
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M10-182 DOI-Block Detectors Using LGSOs with Different Decay Times S. Yamamoto, Kobe City College of Technology, Japan; H. Ishibashi, Hitachi Chemical, Japan

M10-184 Comparison of Spectral and Scintillation Properties of LuAP:Ce and LuAP:Ce,Sc Single Crystals A. G. Petrovyan1, M. V. Derdzyan2, K. L. Ovanesyan2, G. O. Shirinyan1, Instituto de la facultad de Fisica, Armenia; P. Lecoq, E. Auffray, M. Kronberger, B. Frish, CERN, Switzerland; C. Pedrini, C. Dujardin, Université Claude Bernard Lyon1, France

M10-186 Active Pixel Sensors in Nuclear Medicine Imaging R. J. Ort, N. Evans, P. Evans
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M10-188 A Comparative Investigation of Ce3+ Doped Single Crystal Scintillators Covering Radiotherapy and PET/CT Imaging Conditions I. G. Valais1,2, C. M. Michail1, S. L. David1, A. E. Toutouznits1, G. P. Fountos2, G. S. Panayiotakis1, I. S. Kandarakis2
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M10-190 Development of a Back-Contact, Scalable Silicon Photomultiplier Array for Positron Emission Tomography W. Zhao1, A. R. Lubinsky1, D. Zheng1, K. Zhao2, R. Shaflilha3, X. Clairardin1, M. Asghari1, A. Reznik1, J. A. Rowlands3, V. Saveliev4, C. C. Kung4, J. Fong4
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M10-192 YAO3:Ce Detector Array for Gamma Cameras J. Benlloch, Instituto de Física Corpuscular (IFIC), Spain; A. Fedorov, M. Korzhik, O. Missevitch, Institute for Nuclear Problems, Belarus

M10-194 Obtaining and Parameters of the Scintillators on the Base of ZnSe(O) and ZnSe(AlO) Crystals for Medical Computer Tomography L. A. Rybalka, V. D. Ryzhikov, S. N. Galkin, B. V. Grynyov, S. V. Naydenov
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M10-196 Performance Evaluation of Diffraction Enhanced Imaging Based on Polycrystalline X-Ray Optics A. Bjeoumikov1, A. Castoldi1,2,3, C. Guazzoni1,2, J. Griffiths4, R. Hartmann5,6, C. Ozkan5,7, G. Royle4
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M10-198 Uniformity Correction in Photon-counting X-ray Detector Based on Basis Material Decomposition X. Wang1, X. He1, K. Taguchi1, B. E. Patrè2, D. Wagenaar2, E. C. Frey3
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M10-200 CZT Pixel Scaling for Improved Spatial Resolution in Medical Imaging K. Iniewski1, C. Seiffert2, F. Harris1, S. Awadallah1, H. Chen1, G. Bindley1
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M10-202 Solid State Photomultiplier Electrical Model K. A. Wangerin1,2, C. Wang, C. Kim, GE Global Research, USA; Y. Danon, Rensselaer Polytechnic Institute, USA

M10-204 Study of Scintillation Crystal Array Parameters for an Advanced PET Scanner Dedicated to Breast Cancer Imaging A. Vandenbroucke, C. S. Levin, Stanford University, USA

M10-206 Evaluation of Monolithic Scintillator Bock Detectors Using Silicon PMTs P. Bruyndonckx1, Z. Li2, K. Ziemons2, S. Tavernier1
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M10-208 Precision Synchrotron Radiation Imaging - a Novel Tool for Cardiovascular Research
A. H. Walenta, M. Böhm, A. Bravin, E. Esteve, R. Erbel, S. Fiedler, O. Kalthoff, J. Mieblehaker, S. Miehlenkamp, B. Scheller, W. Schenck, K. Walenta
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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
L. Sihver, D. Mancusi
Chalmers University of Technology, Sweden

M10-256 Nuclear Processes in Hadrontherapy, a Parameterization of the Low Energy Nucleus-Nucleus Cross Sections.
M. Boutemeur, Université de Savoie, Annecy, France; M. C. Ricol, Université Lyon 1, France

M10-258 Evaluation of Different X-Ray Tube Concepts with the Simulation Package ROSI
A. B. Loehr, F. Sukowski, J. R. Durst, G. Anton, T. Michel, J. Fürst, Siemens Medical Solutions Russland, Germany

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
R. L. Harrison, S. B. Gillispie, R. E. Schmitz, L. R. MacDonald, W. C. J. Hunter, T. K. Lewellen
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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
S. K. Patch, L. Yang, UW-Milwaukee, USA

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 TiBr, 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
W. F. Jones, E. Breeding, J. Everman, J. H. Reed
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M10-294 A 40-Channel Readout ASIC for ToF-PET
M. Ritzert, P. Fischer, I. Peric, University of Heidelberg, Germany; T. Solf, Philips Research, Germany

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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 HOOK 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
L. Li, K. Kang, Z. Chen, L. Zhang, Y. Xing, Tsinghua University, China; R. Xu, Chinese Academy of Science, China

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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M10-332 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
Y. Xiao, Z. Chen, L. Zhang, Tsinghua University, China

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 Prior
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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
P. J. La Riviere, P. Vargas, The University of Chicago, USA

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
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M10-382 Model Based Factor-Analysis Improves Quantification of Cardiac Function with PET
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¹University of Ottawa Heart Institute, Canada; ²University of Ottawa, Canada; ³Carleton University, Canada

M10-384 Partial Scan Artifact Reduction (PSAR) for the Assessment of Cardiac Perfusion in Dynamic Phase-Correlated 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. Wittrwar¹, 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. Potesil¹, G. Platsch³, 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. Zeniya¹,², H. Watabe², H. Kudo³, Y. Hirano³, 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
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. Zanonico¹, J. Humm¹
¹Memorial Sloan-Kettering Cancer Center, USA; ²Siemens Medical Solutions USA, USA

**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. Vanderwrooth¹,², S. Blinder¹, V. Sossi¹
¹University of British Columbia, Canada; ²The Ottawa Hospital Cancer Centre, Canada

**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. Dittrich, E. Will, J. van den Hoff
Institute of Radiopharmacy, Forschungszentrum Dresden-Rosendorf, 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
University College London Hospital, UK

**M10-420** Evaluation of Deconvolution-Based Methods for the Correction of Partial Volume Effect in PET
F. Monev¹, N. Boussien², D. Visvikis³, J. Nuys³, N. Costes⁴, J. Tohka⁵, A. Reilhac²
¹CERMEP - imagerie du vivant, France; ²LATIM, France; ³University Hospital Gasthuisberg, Belgium; ⁴Montreal Neurological Institute, Canada; ⁵Tampere University of Technology, Finland

**M10-422** Correction of Respiratory Motion in Dual Gated Cardiac Imaging in PET/CT
F. Lamare¹, M. Teras², T. Kokki³, H. Fayad⁴, O. Rimoldi⁴, P. G. Camici¹, J. Knuuti³, D. Visvikis³
¹MRC Clinical Sciences Centre, Imperial College, UK; ²Turku PET Centre, Turku University Central Hospital, Finland; ³U650 INSERM, LATIM, Universite de Bretagne occidentale, France

**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
M10-440 List-Mode Detector Scatter Estimation Method with Potential for Real-Time Implementation in High Resolution PET Imaging
L. Ortega Maynez1,2, T. Kösters3, V. Uhlenendorf, F. Wübbeling3, K. Schäfers3, A. J. Reader3
1 University of Manchester, UK; 2 University of Cd. Juarez, Mexico; 3 University of Münster, Germany; Institute for Pharmaceutical Sciences, Switzerland; 3McGill University, Canada

M10-442 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
1 Worcester Polytechnic Institute, USA; 2 University of Massachusetts Medical School, USA

M10-443 Image-Based Correction for Mismatched Attenuation in PET Images
K. Thielemans1, E. Asma2, R. M. Manjeshwar2, A. Ganin3, T. J. Spinks1
1 Hammersmith Imanet Ltd, part of GE Healthcare, UK; 2GE Global Research, USA; 3GE Healthcare, USA

M10-446 Fast Motion Correction Using the Characteristic of Motion in Rigid Body
K. Lee1, D. Keator1, S. Potkin1, I. Hong3
1 University of California, Irvine, USA; 2 Korea Polytechnic University, Korea

M10-448 A 3D Multi Resolution Local Analysis Approach for Correction of Partial Volume Effects in Emission Tomography
A. Le Pogam1, N. Boussion1, M. Hatt2, G. Fahd3, C. Prunier-aesch1, D. Guillouret1, J.-L. Baulieu1, D. Visvikis2
1 INSERM U930, France; 2 INSERM U650, France

M10-440 Discontinuity Preserving Regularization for Modeling Sliding Effects in Medical Image Registration
D. Ruan, J. A. Fessler, S. Esedoğlu
University of Michigan, USA

M10-442 Discontinuity Preserving Regularization to Account for Sliding Effects in Medical Image Registration
D. Ruan, J. A. Fessler, S. Esedoğlu
University of Michigan, USA

M10-444 Modeling and Parameterization of down-Scatter Photons Distribution in Myocardial Perfusion SPECT
F. Kalantarí, H. Rajabi, Tarbiat Modares 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. Oliveira1
1 COPPE/UFRJ, Brazil; 2 UERJ, Brazil

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. Larrizien
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. Whitaker, 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
1 Friedrich-Alexander-University Erlangen-Nuremberg, Germany; 2 Siemens 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, Taipei; 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. Eisner1, J. Declerck1
1 Siemens Molecular Imaging, UK; 2 Emory 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. Lass1, J. M. Górriz1, J. Ramírez1, E. W. Lang2, C. G. Puntonet1, D. Salas-Gonzalez2, M. Gómez3
1 University, Spain; 2 University, Germany; 3 University Hospital Virgen de las Nieves, Spain

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, D. D. Feng1, S. Eberl1,2,3, M. Fulham1,2,3
1 University of Sydney, Australia; 2 Hong Kong Polytechnic University, China; 3 Royal 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. Larrue1,2, Z. Peter1, A. Rattner1, L. Vico1, F. Peyrin1,2
1 ESRF, France; 2 CREATIS, France; 3 LBTO, France
M10-476 Virtual MRI-Derived SPECT for the Visual Analysis of the Early Stage of Parkinson's Disease  
S. Chauvie1, M. M. Obertino1, A. Papaleo1, M. Ruspa2, A. Solano3, G. Perno1, A. Biggi1  
1Santa Croce e Carlo Hospital, Italy; 2University of Piemonte Orientale, Italy; 3University of Torino, Italy  

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. Detoric, 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. Zeint1, A. Kriplani1  
1Siemens Medical Solutions USA, Inc, USA; 2University 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  
1University of Surrey, UK; 2Science 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. L. Markiewicz1, J. C. Matthews1, J. Declerck1, K. Herholz1  
1University of Manchester, UK; 2Siemens 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. Hatz1, N. Boussion, F. Turkheimer1, C. Prunier-aesch1, D. Guilloteau1, J.-L. Baulieu1, D. Visvikis1  
1INSERM U930, France; 2INSERM U950, France; 3Imperial College, UK  

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. Herraz, E. Herranz, J. M. Udas, Universidad Complutense de Madrid, Sapin; M. Desco, J. J. Vaquero, Hospital General Universitario Gregorio Marañón, Spain  

M10-498 Automatic Skeletonization for 3D Hepatic Portal Vein in CT Angiography  
J. Liu1, Z. Zhang1, P. Song1, E. Song1, D. Hu1, Q. Xie1  
1Huabei Provincial Key Laboratory of Bioinformatics and Molecular Imaging, China; 2Huazhong University of Science and Technology, China  

M10-500 Partial Quantification of PET Neurotransmitter Model Using Nonlinear System Identification  
C. Deng1, P. Shi1, 2  
1Hong Kong University of Science and Technology, China; 2Rochester Institute of Technology, USA  

M10-502 Simultaneous Dual Tracer PET Using Generalized Factor Analysis of Dynamic Sequences (GFADS)  
G. El Fakhri1, C. M. Trott1, B. Guérin1, A. Sitek2, A. A. Bonab3, A. J. Fischman1  
1Harvard Medical School and Massachusetts General Hospital, USA; 2Brigham and Women's Hospital, USA  

M10-504 Performance of a Modified Supervised Cluster Algorithm for Extracting Reference Tissue Input Functions from (R)-[11C]PK11195 PET Studies  
R. Boellaard1, F. Turkheimer1, R. Hinz1, A. Schuitemaker1, P. Scheltens1, B. van Berckel1, A. Lammertsma1  
1VU University Medical Centre, The Netherlands; 2Imperial College London, UK; 3University 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  
1University of British Columbia, Canada; 2University 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'Sullivan1, 2, M. Muzi1, A. M. Spence3, D. A. Mankoff2, J. N. O'Sullivan1, N. Fitzgerald1, K. A. Krohn2  
1University College Cork, Ireland; 2University 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  
University of Piemonte Orientale, Italy; INSERM U930, France; 3University College Cork, Ireland; 2Science and Technology Facilities Council, UK  

M10-514 Design and Development of a Co-Planar Fluorescence and X-Ray Tomograph  
J. Aguirre1, A. Sisniega1, J. Ripoll1, M. Desco1, J. J. Vaquero1  
1Hospital General Universitario Gregorio Marañon, Spain; 2Foundation 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. Elsloo³, M. Kachelriess⁴  
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. Zamytin, Toshiba Medical Research Institute USA, USA;  A. Katsevich, University of Central Florida, USA

M11-3 Hyperfast General-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. Klinger¹,², C. Lorenz¹, T. Köhler³  
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  
²Lawrence Berkeley National Lab, USA; ¹Johns 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  
Washington University in St. Louis, USA

M12-2 A New PET Scanner for Functional Brain Imaging Based on 2-mm Straw Detectors  
A. Athanasides, 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. Farrell¹, P. A. Dokhale², K. S. Shah³, 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. Iro², H. S. Yoon³, 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  
V. W. Zhou¹, A. Z. Kyme¹, S. R. Meikle¹, W. Lehnert¹, R. R. Fulton¹,²  
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. Béard¹, M. Bergeron¹, C. M. Pepin¹, J. Cadorette¹, M.-A. Tétrauld¹, N. Viscogliosi¹, H. Dautet¹, 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

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. Blume¹,², M. Rafecas¹, S. Ziegler¹, N. Navab²  
¹Universidad de Valencia / CSIC, Spain; ²Technische Universität München, Germany
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 Scattering/Trues Detection Efficiency Compensation in Scattering 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. Viel1,2, R. Boisgard1,2, R. Trebesson1, B. Tavitian1,2
1CEA, France; 2INSERM, France

M14-3 High Definition PET for Cardiac Imaging: Preliminary Results
L. Le Meunier1, P. J. Slomka2,3, J. Fermin2, D. Dey2,3, S. W. Hayes2,3, J. D. Friedman2,3, G. Germaine2,3, D. S. Berman2,3
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. Hofmann1,2,3, F. Steinke1, P. Aschoff1, M. Lichy1, M. Brady3, B. Schoellkopf1, 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. Hamill1, M. Casey1, G. Platsch1, D. Burckhardt2, R. Eisner3, N. Kaustubh4
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. Jaszczak, 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. Vuncle, J. Nuysts
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. Furenlt1, 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
Yonsei university, Korea

M15-5 3-D Discrete Ridgelet Transform for Emission Tomography Denoising
A. Le Pogam1, N. Boussion1, M. Hart2, C. Prunier-aesch1, D. Guillotseau1, J.-L. Baulieu1, D. Visvikis2
1INSERM U930, France; 2INSERM U650, France

M15-6 Assessment of Spatial Resolution Micro-CT
R. Grimmer1, J. Krause1, M. Kachelrieß1, P. J. Slomka2,3, G. Germano2,3, S. W. Hayes2
1University of Erlangen-Nurnberg, Germany; 2VAMP GmbH, Germany

M15-7 Accurate Functional Volume Definition in PET for Radiotherapy Treatment Planning
M. Hart1, A. Dekker1, D. De Ruyssscher2, M. Oellers2, P. Lambin2, C. Roux1,3, 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. Acton1,2, F. Jansen1, B. H. Hasegawa1
1GE Global Research, USA; 2Thomas Jefferson University, USA; 3Johnson & Johnson Pharmaceutical Research and Development, USA; 4UCSF, USA

G. S. Mitchell, S. R. Cherry, UC Davis, USA
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 Scalloping 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$_x$Te (0.1 ≤ $x$ ≤ 0.2) for Radiation Detectors and Medical Imaging Applications

EIC Laboratories, Inc., USA

**R01-4** (15:00, invited) Influence of thermal enviroments in the growth of large bulk CZT Crystals

V. Carcelén$^1$, J. Rodríguez-Fernández$^{1,2}$, P. Hidalgo$^3$, J. Piqueras$^3$, N. V. Sochinskii$^4$, J. M. Perez$^5$, E. Diéguez$^6$  
$^1$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

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**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 DNDO

A. Janos, Department of Homeland Security, USA

**R02-2** (16:50, invited) The Influence of Space Charge and Trapping on Charge Transport in CdZnTe

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. Hlídek, 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$_1$-xZn$_x$Te 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

Northwestern Polytechnical University, China

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**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. Henseler$^3$, P. Hackenschmied$^4$, M. Strassburg$^5$, D. Niederlöhrer$^6$, S. Jansen$^7$, S. Wirth$^1$  
$^1$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. Caroli$^1$, R. M. Curado da Silva$^2$, J. B. Stephen$^3$, A. Pisa$^4$, N. Auricchio$^5$, S. del Sordo$^6$, A. Donati$^7$, F. Schiavone$^8$, G. Landini$^9$, V. Honkimäki$^1$, F. Frontera$^5$  
$^1$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. Rigon, F. Arfelli, A. Bergamaschi, D. Dreossi, R. Longo, R. H. Menk, B. Schmitt, E. Vallazza, E. Castelli  
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 Timpix Type and Their Possible Biomedical Applications  
P. Popsilj, 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  
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 Pixelated CdZnTe Detectors for Use in a Portable Gamma-Ray Spectrometer (PorGamRayS)  
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

**R05 Crystal Growth 1**

Tuesday, Oct. 21  
16:00-17:50  
Hall 1

Session Chair: Andrzej Mycielski, Institute of Physics, Polish Academy of Sciences, Warsaw, Poland

**R05-1** (16:00, invited) Boron Oxide Encapsulated Vertical Bridgman Grown CdZnTe Crystals as X-Ray Detector Material  
A. Zappettini, M. Zha, L. Marchini, R. Calestani, R. Mosca, E. Gombia, M. Zanichelli, M. Pavesi, N. Auricchio, E. Caroli  
1IMEM-CNRR, Italy; 2University of Parma, Italy; 3INAF/IASF-Bo, Italy; 4University of Ferrara, Italy

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. L. Derby, D. Gasperino, N. Zhang, A. Yeckel  
University of Minnesota, USA

**R05-4** (17:00, invited) Growth, Nanostructures, and Heat Treatment of High Resistivity Cd1-xZnxTe 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-Ludwig-Universität Freiburg, Germany; T. Duffar, Sciences et Ingénierie des Matériaux et Procédés, France; E. Dieguez, Universidad Autonoma de Madrid, Spain; L. Zanotti, 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. Chen1, Y. Cui1, A. Hossain1, H. Jackson1, J. James1, J. MacKenzie1, 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 Cd0.9Zn0.1Te  
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. Fochuck2, E. Belas1, J. Franc1, P. Höschl1, Y. Obedzynska2, Y. Verzhak2, A. E. Bolotnikov1, B. Nahlovskyy1, P. Moravec1, O. Panchuk1, R. B. James1  
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  
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  

R07-6 (11:55) Growth of High Crystalline Quality CdTe Layers on 100 Mm Diameter Ge Substrates for Room Temperature Radiation Detection  

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. Li3, V. Buliga1, A. Burger2, H. Krawczynski1  
1Washington University in St. Louis, USA; 2Fisk University, USA

R08-4 (14:20) Surface Passivation Effects on CdZnTe Pixelated 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. Montagna\(^1\), A. M. Mancini\(^1\), A. Cola\(^1\)
\(^1\)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. Dubecký\(^1\), P. Hubík\(^1\), E. Gombia\(^1\), B. Zaťko\(^1\), P. Boháček\(^1\), J. Huran\(^1\)
\(^1\)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. Iwanczyk\(^1\), W. C. Barber\(^1\), N. E. Hartsough\(^1\), 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
Acorrod 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. Quadrini\(^1\), E. Caroli\(^1\), M. Alderighi\(^1\), F. Casini\(^1\), M. Fiorini\(^1\), M. Uslenghi\(^1\), F. Schiavone\(^1\), A. Donati\(^1\), L. Natalucci\(^1\), P. Ubertini\(^1\), S. del Sordo\(^1\), N. Auricchio\(^1\), P. Bastia\(^1\), A. Zappettini\(^1\)
\(^1\)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 Merciric Iodide (HgI\(_2\))
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. Kim\(^1\), G. Ciampi\(^1\), L. Cirignano\(^1\), W. Higgins\(^1\), F. Olschner\(^1\), K. Shah\(^1\)
\(^1\)Tohoku Institute of Technology, Japan; \(^2\)Tohoku University, Japan

**R10-4** (08:55) Thallium Bromide Nuclear Radiation Detector Development
A. Churilov\(^1\), H. Kim\(^1\), G. Ciampi\(^1\), L. Cirignano\(^1\), W. Higgins\(^1\), F. Olschner\(^1\), K. Shah\(^1\)
\(^1\)Radiation Monitoring Devices Inc., USA; \(^2\)Cremat Inc., USA

**R10-5** (09:10) Defect Engineering of AlSb for Improved Room-Temperature Gamma Radiation Detection
P. Erhart, D. Aberg, K. J. Wu, V. Lordi
*Lawrence Livermore National Laboratory, USA*

A. Galbiati, S. Lynn, K. Oliver, *Research Laboratory, U.K.*; F. Schirru, T. Nowak, B. Marczewska, *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
R12-2 (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. Kochanowska³, M. Wiktowska-Baran³, R. Jakiela³, J. Domagala³, Y. Cui³, R. James³, R. Sobolewski¹
¹University of Rochester, USA; ²Polish Academy of Sciences, Poland; ³Brookhaven National Laboratory, USA

R12-3 (11:05) Optical and Electrical Characterisation of Single Crystal CdMnTe for X-Ray Detection
J. M. Parking, 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; D. Burger, M. Groza, Fisk University, USA

R12-4 (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. Wiktowska, Institute of Physics PAS, Poland

R12-5 (11:35) Information-Based Strategies for Candidate Identification in Ternary Semiconductors
K. Ferris, B.-J. M. Webb-Robertson, Pacific NW National Laboratory, USA; D. M. Jones, Proximate Technologies, LLC, 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. Bugář
Institute of Physics, Charles University, Czech Republic

R12-8 Relation Between the A-Center and the Resistivity of In-Doped CdZnTe Crystals
J. Rodriguez-Fernández¹,², V. Carcelsen¹, P. Hidalgo¹, J. Piqueras¹, N. V. Sochinski¹², J. M. Perez¹, 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. Abashinin², O. N. Chugai³, A. S. Gerasimenko¹, V. M. Puzikov¹, S. V. Sulima¹, I. S. Terzin³
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. Rodriguez-Fernández¹,², V. Carcelsen¹, P. Hidalgo¹, J. Piqueras¹, N. V. Sochinski¹², J. M. Perez¹, 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. Golyshin, 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. Zanichelli¹,², M. Pavesi¹,², L. Marchini², A. Zappettini²
¹University of Parma, Italy; ²IMEM-CNR, Italy

R12-13 Electromigration of Fast Diffused Elements in CdTe
E. Belas, M. Bugář, R. Grill, J. Franc, P. Hlidelk, 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. Kaminska², R. Kozolowski², F. Dierre¹, A. T. G. Pym¹, J. T. Mullins¹, A. Owens¹, 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
R12-16 Defect Measurements of CdZnTe Detectors Using I-DLTS, TCT, I-V, C-V and γ-ray Spectroscopy
R. Guı̈l1,2, Z. Li1, R. Rodriguez2, K. Keeter3, 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. Spirti, 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 Seminsulating CdTe by Photoconductivity and TEES
J. Kubář, 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

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. Mycielski1, 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-Fernández2,3, P. Hidalgo1, J. Piqueras1, N. V. Sochinski2, J. M. Perez3, 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. Shorohov1,2, M. Kouznetsov3, I. Lisitsky1, V. Goštilo1, 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. Linterreur, W. Qiu, J. C. Nino, J. E. Bacciak
University of Florida, USA

R12-26 Photodetection Properties of Heavy Metal Iodides Heterostructures
M. E. Pèrez Barhaburu, N. Sasen, S. Kröger, I. Águia, A. L. Nogueira, L. Fornaro
Faculty of Chemistry, Uruguay

R12-27 Lead Borate Glass for Direct Radiation Detection
M. Rodríguez, I. Nogueir, 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. Ohno1, A. Higa1
1University of the Ryukyu, Japan; 2Acrord 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. Caroli1, A. Donati2, L. Marchini3, M. Zanichelli4, A. Zappettini1, M. Quadrini2
1University of Ferrara, Italy; 2INFN - Section Roma Tre, Italy; 3University 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. Kitis1, S. Gastélum1, C. Furetta1, R. Meléndrez1, 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. Goštilo4, P. Seller1, J. M. Perez3
1CIEMAT, Spain; 2Bruker Baltic, Latvia; 3RAL, UK

R12-34 Experimental setup for various detection tests of radiation semiconductor detectors
T. Slavicek, V. Lihart, 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. Petukhov, V. Krop
Center of radiation and nuclear safety (RNIIRP), Latvia

R12-39 Radiation Resistant CVD-Diamond Detector
NSC KIPT, Ukraine

R12-40 Simulation Studies of CdTe Pixel Detectors
K. E. Karafasoulis, C. P. L gambropoulos, Technological Educational Institute of Halkis, Greece, V. A. Gniatyk, S. Levitskyi, 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 Pixelated 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
Kyungpook National University, Korea

R12-44 Fabrication and Performance Test of Silicon Stripixel Sensors
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. Kreider, 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 Re&D, Inc., USA

R12-51 Investigation of Pixelled 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
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. Kelton2, M. Clajus1, S. Hayakawa1, J. L. Matteson1, R. E. Rothschild1, T. O. Tumer1, A. Volkovskii1
1NOVA Re&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
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. Zwerger3, M. Mix3, 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. Autricchio1,2, E. Caroli2, S. del Sordo2, L. Abbene2, R. Ambrosi2, A. F. Abbey3, C. Brown4
1University of Ferrara, Italy; 2INA, 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-Resistance (Cd,Mn)Te Crystals
M. Witkowska-Baran,1 A. Mycielski,1 D. M. Kochanowska,1 A. J. Szadkowski,1 B. Wiktowska,1 W. Kaliszek,1 E. Łusakowska,1 R. Jakieła,1 V. Domukhowski1

1Institute of Physics Polish Academy of Sciences, Poland; 2University of Catania, Italy

**R12-65** Prototype of Si(Li) Detector for EXL Experiment of FAIR Project at GSI
*Laboratory for Nuclear Science, Tohoku University, Japan*

**R12-66** Higher Voltage X- and γ-Ray Schottky Diode Detectors with Low Leakage Current
L. A. Kosyachenko, V. M. Skyarchuk, O. F. Skyarchuk, O. L. Maslyanchuk, Yuri Fedkovich 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. Karenko, V. M. Skyarchuk, O. F. Skyarchuk, Yuri Fedkovich 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. Marchinì1, A. Zappettini1, E. Gombia1, R. Mosca1, M. Pavesi2,4
1IMEM-CNR, Italy; 2University of Parma, Italy

**R12-69** Pockels Effect in Pixelated CdTe Detectors
A. Cola1, I. Farella1,2
1Institute for Microelectronics and Microsystems (IMM/CNR), Italy; 2University of Salento, Italy

**R12-70** Determination of Compositional Profiles and Thicknesses of the Etched Surfaces of CdTe and Cd0.9Zn0.1Te by Spectroscopic Ellipsometry
I. E. Karmakov, A. A. Konova
*Sofia University, Faculty of Physics, Bulgaria*

**R12-71** Performance of GaN Ionizing Detector and Its Radiation Hardness
S. Narita1, Y. Chiba1, D. Ichinosue1, T. Hitora2, E. Yamaguchi2,3, Y. Sakemi1, M. Itoh1, H. Yoshida1, J. Kasagi1
1Iwate University, Japan; 2ALGK K.K., Japan; 3Doshisha University, Japan; 4Cyclotron and Radioisotope Center, Tohoku University, Japan; 5Laboratory for Nuclear Science, Tohoku University, Japan

**R12-72** Temperature Dependence in the Long Term Stability of the TIbR 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

**R12-74** Investigation of Swift Heavy Ion Irradiation Effect on Au/CdZnTe/In Detector
P. Veeramani1, M. Haris1, D. Kanjilal1, K. Asokan1, S. Moorby Babu1
1Anna University, India; 2Nuclear Science Centre, India

**R12-75** Amorphous DLC Films as Constructive Elements for Medical Radiation Detectors
D. Adliene1, I. Cibulskaite1, J. Laurikaitiene1, A. Guobiene1, S. Meekins2
1Kaunas University of Technology, Lithuania

**R12-76** A Silicon Pixel Detector System as an Imaging Tool for Proton Beam Characterization
M. G. Bisogni1,2, G. A. P. Cirrone3, G. Cuttone3, A. Del Guerra1,2, P. Lojacono2,4, M. A. Piliero2,3, N. Randazzo2, F. Romano2,4, V. Rosso1,2, V. Sipala3, A. Stefanini1,2, S. Vecchio1,2
1University of Pisa, Italy; 2Sezione di Pisa, Italy; 3Laboratori Nazionali di Frascati, Italy; 4University of Catania, Italy; 5University of Torino, Italy

**R12-77** Experimental Measurements for the SiliPET Project: a Small Animal PET Scanner Based on Stacks of Silicon Detectors
N. Autricchio1,2, G. Di Domenico1,2, R. Malaguti1, L. Milano1,2, G. Zavattini1,2, M. Ionica3, E. Fiandrini1,2, N. Zorzi4, M. Boscardin1
1University of Ferrara, Italy; 2INFN, Italy; 3University of Perugia, Italy; 4INFN, Italy; 5University of Catania, 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
*DrxRay, Inc., USA*

**R12-79** Improved Readout IC for Multi-Energy X-Ray Imaging with Linear CZT Pixel Arrays
M. Clauys, V. B. Caipe, 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*

**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. Zwerg3, M. Fiederle2, U. Stöhler2
1Freesburger Materialforschungszentrum, Germany; 2Physikalisches Institut, Germany; 3Bundesamt 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
R13-83 Portable 8 Channel DAQ System for Cd(Zn)Te Sensors
D. S. Hatzistratis, C. P. Lambropoulos, Technological Educational
Institute of Halkis, Greece; V. A. Gnattyuk, National Academy of Science
of Ukraine, Ukraine; C. PotiriaDias, Greek Atomic Energy Commission,
Greece

R13-84 Comparison of Different Gamma-Ray Detectors with
Respect to Energy Resolution and Performance
E. Hamana1, M. Dambacher1, A. Zwerger2, M. Fiederle1,
U. Stöhlker3
1Freiburger Materialforschungszentrum, Germany; 2Physikalisches
Institut, Germany; 3Bundesamt für Strahlenschutz, Germany

R13-85 Nuclear Spent Fuel Verification with Using of Miniature
CdZnTe Detectors
V. Ivanov, L. Aleksejeva, P. Dorogov, A. Loutchanski
ZRF RITEC SIA, Latvia

R12-88 Multiple Energies Passive Computer γ Tomography of
Nuclear Fuel
O. V. Maslov, M. V. Maksimov, V. O. Davydov
Odesa National Polytechnic University, Ukraine

R12-87 The Improved CdZnTe Dose Rate Probe
O. V. Maslov, M. V. Maksimov, L. L. Kalnev
Odesa National Polytechnic University, Ukraine

Detector/ASIC Hybridization, Interconnects and Electronics

R12-86 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. Panteleev, 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. Caijpe1, M. A. Capote1, G. Cardoso1, M. Clajus1, S. Hayakawa1,
M. Lee2, T. O. Tumer2, A. Volkovskii1
1NOVA RE&D, Inc., USA; 2Aguila Technologies, USA

Scintillator/Semiconductor Array Hybrids

R12-92 Test of PDE Enhanced SiPM with Micro-Lens for PET-MRI
Applications
Korea advanced institute of science and technology, Korea

R13 CZT Detectors

Thursday, Oct. 23 16:30-18:30  Hall 1

Session Chair: Michael Fiederle, Freiburger Materialforschungszentrum, Germany

R13-1 (16:30, invited) Electric Charge Collection inCdZnTe
Detectors
A. Burger, Fisk University, USA

R13-2 (16:50, invited) X-Ray Irradiation Effects on the Trapping
Properties of Cd1-xZnxTe 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 Pixelated CdZnTe Gamma
Ray Spectrometer
Y. Eisen, A. Shot, Soreq NRC, Israel

R13-4 (17:25) Solder Mask Encapsulation on CdZnTe Surface for
Radiation Detector Applications
P. H. Lu, H. Chen, G. Bindley, Redlen 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
E. 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, B,C 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. Jakubek3, C. Leroy3
1Institute of Experimental and Applied Physics, Czech Technical
University in Prague, Czech Republic; 2Albert-Ludwigs-Universitat
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. Väihäenen1, S. Eränen1, M. Fiederle1
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 μm
M. Fiederle, A. Fauler, A. Zweeger
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

D. S. McGregor, Kansas State University, USA

R15-3 (11:10) Development of Radiation Detectors Based on Semi-Insulating Silicon Carbide  

R15-4 (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. Stoeckl, 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. Khushainov, 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

R17-2 (16:20) HEXIS Module Performance with RENA-3 ASIC Readout  

R17-3 (16:35) Investigation on Pixelated CZT Detectors Coupled with a Low Power Readout ASIC  
L. Abbene1, S. Del Sordo2, G. Ageneta1, B. Biondo2, A. Mangano2, F. Russo2, E. Caroli2, J. B. Stephen3, G. Ventura3, G. Bertuccio3, G. Raso1  
1DiFTr Università di Palermo, Italy; 2IASF-INAF, Italy; 3Politecnico di Milano, Italy

R17-4 (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. Jung1, M. Groza1, A. Burger1, G. De Geronimo4, H. Krawczynski1  
1Washington University in St. Louis, USA; 2Universität Erlangen-Nürnberg, Germany; 3Fisk University, USA; 4Brookhaven National Laboratory, USA

R17-5 (17:05) Two-Dimensional Detector Arrays for Gamma Spectroscopy  
M. Clajus, V. B. Cajipe, T. O. Tumer, A. Volkovskii  
NOVA R&D, Inc., USA

R17-6 (17:20) Energy Resolution Limiting Factors of Multi-Pixel Events in 3-D Position Sensitive CZT Gamma-Ray Spectrometer  
W. Li, Y. Du, B. D. Yanoff, J. S. Gordon  
GE Global Research, USA

R17-7 (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. Gu1, C. S. Levin1  
1University of California, San Diego, USA; 2Stanford University School of Medicine, USA; 3Stanford 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).

**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 García, 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 $10^{16}$ particles/cm$^2$; 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 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
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
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
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
18:00-21:00 Dinner

**Sunday October 19, 2008**

08:30-10:00 Contributed Papers Session 1
   ACTA-1: xTCA for a Large Accelerator
   K. Rehlich, DESY
   ACTA-2: Digital LLRF Control System for the Linear Accelerator
   W. Jalmuzna, Univ. Lodz
   ACTA-3: Low Level RF Controls for the European XFEL
   T. Jezynski, Univ Lodz

**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 Dû, IRFU CEA Saclay, France
Ray Larsen, SLAC, Stanford, USA
Vincent Pavlíček, 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 instrumenta-
tion 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 avail-
bility (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 avail-
bility 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 economi-
cally by scaling back speed and redundancy as required for both the
ATCA full carrier and µTCA cards.
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”

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
Debra Ikeda, MD (Stanford University) – “Current Methods of Percutanous 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’Otél, Dresden

Chair: Prof. Tilo Baumbach, ANKA, Karlsruhe Institute of Technology, Karlsruhe, Germany

Co-Chair: Dr. Randolf 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 (incl. 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, Deft, The Netherlands
- Michael Maisl, Fraunhofer IZFP, Dresden, Germany
- Philip J. Withers, University of Manchester, UK
- Ehrenfried Zschech, AMD Saxony LLC & Co. KG, Dresden

**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. Kieling, 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 Sarrut, 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.

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**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.

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**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. Phlips, 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. Vetter2,3
1Lawrence Berkeley National Laboratory, USA; 2UC 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. Ianakiev5, M. V. Hynes1, B. A. Harris1
1Raytheon Integrated Defense Systems, USA; 2Idaho National Laboratory, USA; 3Oak Ridge National Laboratory, USA; 4Los 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

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

SD3-3 Utilization of Intense Pulsed Characteristic Gamma-Ray Sources for Detection of Fissile Materials*
J. W. Schumer, R. J. Comisso, 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

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**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. Dioszegi³, 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 µvCT Scanning Algorithm for High-Speed in Vivo Imaging.**

M. A. Brockmann¹, S. J. Schambach¹, A. Lechner², J.-P. Steffen², L. Schilling³, C. Groden¹

¹University of Heidelberg, Medical Faculty Mannheim, Germany; ²YXLON International GmbH, Germany

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### 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
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.

Please register for this satellite workshop at www.mr-pet-juelich.de.
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
General:

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.

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 III

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


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.

European Commission Representative:

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:

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**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

Organizing committee:

Seamus Hegarty, seamus.hegarty@cern.ch
Erik Heijne, erik.heijne@cern.ch
Mike Letheren, mike.letheren@cern.ch
Winnie Wong, winnie.wong@cern.ch
ACKNOWLEDGEMENTS

The 2008 Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC) is made possible through the sponsorship of the IEEE Nuclear and Plasma Sciences Society (NPSS), and through the support and generosity of the cooperating institutions and organizations listed on the inside front cover. We especially thank our East European colleagues for showing their strong support of this conference through their participation as authors and attendees. To organize a conference of this magnitude and duration requires that all members of the conference committee demonstrate team spirit, hard work, compromise, and personal sacrifice. We are truly fortunate to have worked with an outstanding group of volunteers that displayed these critically important attributes. We extend our heartfelt thanks to all of the members of the committee. It is nearly impossible to articulate how deeply and sincerely we appreciate their efforts. These volunteers devoted countless hours and immense effort in ensuring that all conference tasks were completed in a timely manner, and that all conference components would come together to form a scientifically rewarding, technically synergistic, and socially enjoyable experience for the attendees. Perhaps most importantly, we express our gratitude to the authors and co-authors for electing to submit the results of their intellectual pursuits to the 2008 NSS/MIC. Without their contributions, and the participation of the all of the attendees, this conference would never exist. It has been exciting to see how this meeting has grown over the years, and how it has become a premier international conference in the field. We are confident that our NPSS colleagues will continue to maintain and enhance this tradition in the future.

Uwe Bratzler
General Chair

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<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>07:30-08:15</td>
<td>Workshop 6: X-ray Micro-Imaging</td>
</tr>
<tr>
<td>08:00-10:00</td>
<td>Workshop 9: Hadron Therapy</td>
</tr>
<tr>
<td>10:30-12:30</td>
<td>Workshop 10: SD2 Gamma Ray Detection</td>
</tr>
<tr>
<td>15:00-16:00</td>
<td>Workshop 10: SD2 Neutron Gamma</td>
</tr>
<tr>
<td>16:00-18:00</td>
<td>Workshop 6: Compact Camera</td>
</tr>
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</table>

**Conference Timetable (Thursday, October 23 through Saturday, October 25)**

**Thursday, Oct 23**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>07:30-08:15</td>
<td>NIM Refresher Course I</td>
</tr>
<tr>
<td>08:00-10:00</td>
<td>R10: Alternative Detectors and Monitors</td>
</tr>
<tr>
<td>10:30-12:30</td>
<td>R11: Cold Tools</td>
</tr>
<tr>
<td>12:45-15:00</td>
<td>RTSD Luncheon (Welcome Hotel)</td>
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**Friday, Oct 24**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>07:30-08:15</td>
<td>NIM Refresher Course II</td>
</tr>
<tr>
<td>08:00-10:00</td>
<td>R14: Pixel Detectors (Café)</td>
</tr>
<tr>
<td>10:30-12:30</td>
<td>R15: Silicon and Neutron Detection</td>
</tr>
<tr>
<td>13:30-15:30</td>
<td>R16: Spectroscopists</td>
</tr>
<tr>
<td>15:00-16:00</td>
<td>R17: Pixel Detectors (Café)</td>
</tr>
<tr>
<td>18:00-21:00</td>
<td>MIC Dinner (Welsh Hotel)</td>
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**Saturday, Oct 25**

<table>
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<th>Time</th>
<th>Event</th>
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<tr>
<td>07:30-08:15</td>
<td>MIC Refresher Course III</td>
</tr>
<tr>
<td>08:30-10:30</td>
<td>M3: Image Reconstruction and Analysis</td>
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<tr>
<td>10:30-12:30</td>
<td>M4: Quantitative Imaging</td>
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<tr>
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<tr>
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