

2005 Conference Program



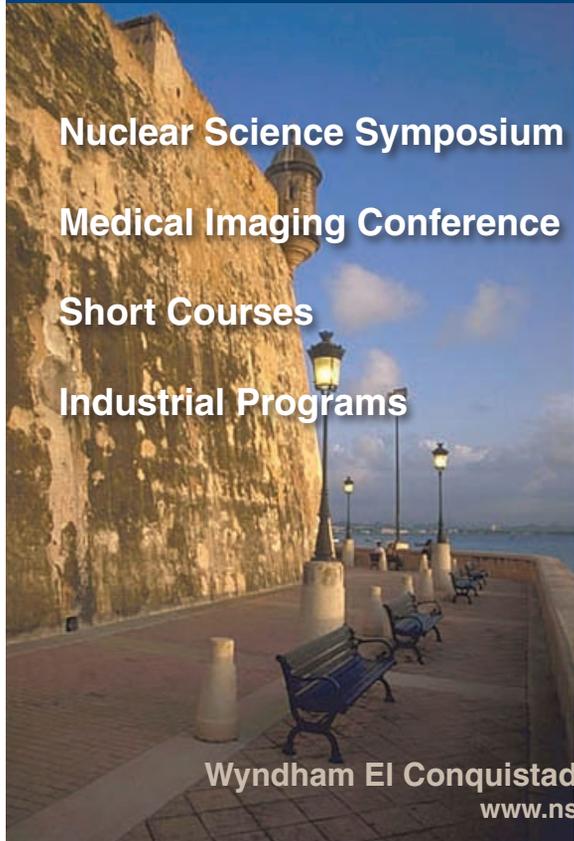
October 23-29, 2005
San Juan, Puerto Rico

Nuclear Science Symposium

Medical Imaging Conference

Short Courses

Industrial Programs

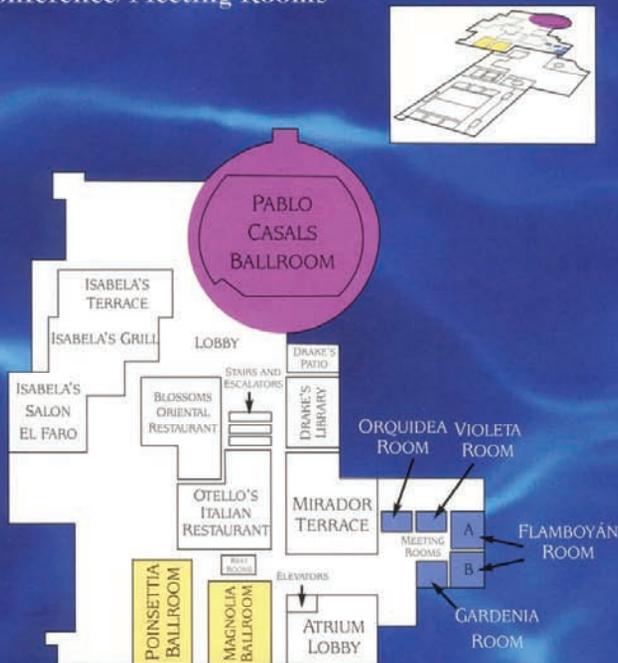


Wyndham El Conquistador Hotel
www.nss-mic.org

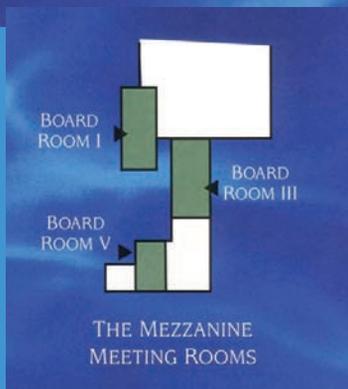
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ANNOUNCEMENT OF THE 2006 IEEE NSS-MIC-RTSD

Dear Colleagues,

The 2006 IEEE Nuclear Science Symposium (NSS), Medical Imaging Conference (MIC) and the 15th International Workshop on Room Temperature Semiconductor X- and Gamma-ray Detectors (RTSD) will be held in San Diego from October 29th to November 4th. The venue is the attractive Town and Country Resort & Convention Center, located in Mission Valley just a short distance from the downtown area.

The Town and Country provides an ideal setting for our annual meeting. It has ample lecture space, accommodation and restaurants on a gorgeous site that is also compact enough to permit attendees to stroll unhurriedly from one session to another. In addition to the regular oral and poster presentations, there will be a number of topical short courses and special interest workshops. An industrial exhibition featuring the most up-to-date products and services from a wide range of vendors will take place during the main part of the meeting.

The RTSD Workshop has a long history on its own. It is now becoming a tradition to hold it jointly with the NSS and MIC every other year (happening next in 2006), which is of mutual benefit to all attendees.

A companion program will provide daily tours to some of the many attractions in and around the San Diego area. The city has a historically diverse culture, and world-famous attractions such as its zoo, and its science and art museums; it is home to a key portion of the US Navy. Many exquisite dining options are available. Free parking will be available for hotel patrons, and there is light rail transportation from close by the hotel to much of the San Diego area, including the Mexican border.

On behalf of the organizing committee, I encourage you to make plans now to attend this stimulating meeting, and look forward to welcoming you to delightful San Diego.

Graham C. Smith, General Chair
Brookhaven National Laboratory

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WELCOME FROM THE GENERAL CHAIR

Dear Colleagues and Friends,

It's Fall and it's time for the NSS/MIC meeting again!

This year we again break new ground and hold the Nuclear Science Symposium and Medical Imaging Conference in the Caribbean at the El Conquistador Hotel in Puerto Rico. Of course the principal focus of the conference remains the same—to provide a unique opportunity for scientists and engineers from all over the world to participate and present their original works in many areas related to nuclear science and medical imaging. The Nuclear Science Symposium continues to provide an outstanding forum for scientist and engineers interested or actively working in the field of nuclear science, radiation instrumentation, software, and their applications. Similarly, the Medical Imaging Conference continues to be most productive international scientific meeting on the physics, engineering, and mathematical aspects of nuclear medicine based imaging. In addition to the normal sessions, we will have a workshop on the OpenGATE collaboration, a roundtable discussion on technology transfer, and several special afternoon interest sessions. Some of those sessions were still being organized as we sent this booklet to press, so do check the conference web site (<http://www.nss-mic.org/2005>) for updates. We will also have an afternoon seminar on new developments from several of our commercial vendors. This year, the Symposium on Nuclear Power Systems will not be held due to the retirement of Jay Foster and the lack of a new chair.

Our technical chairs have once again assembled a varied and outstanding program of presentations. Their task was particularly difficult this year. When the conference site was selected over four years ago, the maximum number of papers predicted was 850. This year we received over 1100 submissions and were only able to accept 980 papers due to the space limitations. In addition, the committee felt that more joint sessions were important—further challenging the layout of the program. While we were all disappointed that we could not accommodate a larger meeting, we also felt it important not to compress the space any more than we have already been forced to do.

To further enhance the intellectual exchange at the meeting, we are going to take full advantage of the venue and provide many areas where colleagues can hold relaxed conversations. We also recognize the value of family members traveling with the attendees and have set up the meeting with a 3.5 hour break in the middle of the day. That provides the time for informal meetings, family fun, and a few special sessions (e.g., the OpenGATE workshop and other special interest sessions).

The 2005 meeting promises to be a new experience in many ways and yet preserve the essence of the NSS/MIC conferences. I look forward to seeing you all in Puerto Rico.

Tom K. Lewellen
General Chair



PROGRAM OUTLINE

Monday, October 24

09:30-12:00	NP NSS Plenary, Pablo Casals Ballroom
16:00-18:00	N1 Instrumentation for Homeland Security I, Pablo Casals Ballroom
16:00-18:00	N2 Data Acquisition and Analysis Systems, Poinsettia Ballroom, Salon C
16:00-17:30	N3 Instrumentation for Medical and Biological Research, Magnolia Ballroom
16:00-18:00	N4 Solid State Tracking Detectors, Grand Caribbean Ballroom, Salons 1 & 2

Tuesday, October 25

08:00-09:30	N5 Scintillation Detectors I—Halides, Pablo Casals Ballroom
08:00-10:00	N6 Neutron Imaging and Radiography, Poinsettia Ballroom, Salon C
08:00-10:00	N7 Nuclear Techniques for Homeland Security, Magnolia Ballroom
08:00-10:00	N8 Computing and Software for Experiments I: Data Processing and Analysis, Grand Caribbean Ballroom, Salons 1 & 2
08:00-10:00	N9 Photodetectors and Radiation Imaging I, Grand Caribbean Ballroom, Salon 3
10:20-11:50	N10 Astrophysics and Space Instrumentation I, Poinsettia Ballroom, Salon C
10:20-11:50	N11 Data Acquisition and Analysis Systems II, Magnolia Ballroom
10:20-11:50	N13 Trigger and Front-End Systems, Grand Caribbean Ballroom, Salon 3
11:00-12:30	N12 Scintillation Detectors II—Materials & Applications, Grand Caribbean Ballroom, Salons 1 & 2
12:00-14:00	Industrial Exhibits, Grand Caribbean Ballroom, Salon 5
	NSS Lunch, Pablo Casals Ballroom
14:30-16:00	N14 NSS Poster I, Grand Caribbean Ballroom East & South Foyer
	Instrumentation for Homeland Security
	Nuclear Techniques for Homeland Security
	Analog and Digital Circuits
	Astrophysics and Space Instrumentation
	Environmental Health and Safety Instrumentation
	Synchrotron Radiation Instrumentation
	Accelerator and Beam Line Instrumentation
	Radiation Damage Effects
	Nuclear Measurements and Monitoring Techniques
	Nuclear Physics Instrumentation
	Trigger and Front-End Systems
	Neutron Imaging and Radiography
	Data Acquisition and Analysis Systems
	Photodetectors and Radiation Imaging
	High Energy Physics Detectors
	Computing and Software for Experiments

- 16:00-18:00 N15 Photodetectors and Radiation Imaging II, Magnolia Ballroom
- 16:00-18:00 N16 Analog and Digital Circuits I, Grand Caribbean Ballroom, Salons 1 & 2
- 16:00-18:00 N17 Gas Detectors: GEM-based Instruments and Studies, Grand Caribbean Ballroom, Salon 3
- 16:00-19:00 Industrial Exhibits, Grand Caribbean Ballroom, Salon 5
- 19:00-21:00 Exhibitor reception, Grand Caribbean Ballroom, Salon 5

Wednesday, October 26

- 08:00-10:00 J01 NSS-MIC Joint Session 1, Pablo Casals Ballroom
- 08:00-10:00 N18 Analog and Digital Circuits II, Magnolia Ballroom
- 08:00-10:00 N19 Computing and Software for Experiments II: Simulation, Grand Caribbean Ballroom, Salons 1 & 2
- 08:00-10:00 N20 Instrumentation for Homeland Security II, Grand Caribbean Ballroom, Salon 3
- 08:00-10:00 N21 High Energy Physics Detectors I, Poinsettia Ballroom, Salons A, B, C
- 09:00-13:00 Industrial Exhibits, Grand Caribbean Ballroom, Salon 5
- 10:20-11:35 N22 Accelerators and Beam Line Instrumentation, Magnolia Ballroom
- 10:20-11:35 N23 Nuclear Measurements and Monitoring Techniques II, Grand Caribbean Ballroom, Salons 1 & 2
- 10:20-11:50 N24 Astrophysics and Space Instrumentation II, Grand Caribbean Ballroom, Salon 3
- 10:20-10:50 W1 Computing for the LHC: Crunch Time!, Poinsettia Ballroom, Salons A, B, C
- 10:20-12:00 LHC Workshop, Poinsettia Ballroom, Salons A, B, C
- 10:30-12:00 J02 NSS-MIC Joint Session 2, Pablo Casals Ballroom
- 16:00-17:30 J03 NSS-MIC Joint Poster Session, Grand Caribbean East and South Foyer
- 16:00-20:00 Industrial Exhibits, Grand Caribbean Ballroom, Salon 5
- 16:00-18:00 N25 High Energy Physics Detectors I, Magnolia Ballroom
- 16:00-18:00 N26 Radiation Damage Effects, Grand Caribbean Ballroom, Salons 1 & 2
- 16:00-17:30 N27 Solid State Detectors I, Poinsettia Ballroom, Salons A, B, C
- 17:30-19:30 J04 NSS-MIC Joint Session 3, Pablo Casals Ballroom
- 19:30-21:00 Conference Reception, El Yunque Garden

Thursday, October 27

- 08:00-09:30 N29 Solid State Detectors II, Grand Caribbean Ballroom, Salons 1 & 2
- 08:00-09:30 N30 Nuclear Measurements and Monitoring Techniques, Grand Caribbean Ballroom, Salon 3
- 08:00-10:00 N28 Nuclear Physics Instrumentation, Magnolia Ballroom
- 08:00-10:00 N31 Gas Detectors: Basic Studies, Poinsettia Ball-

room, Salons A, B, C

- 08:00-10:00 M01 MIC Plenary Session, Pablo Casals Ballroom
- 09:00-13:00 Industrial Exhibits, Grand Caribbean Ballroom, Salon 5
- 10:20-11:20 N32 Environmental Health and Safety Instrumentation Magnolia Ballroom
- 10:20-11:20 N33 Synchrotron Radiation Instrumentation, Grand Caribbean Ballroom, Salon 3
- 10:20-11:50 N34 Solid State Detectors III, Poinsettia Ballroom, Salons A, B, C
- 10:30-12:00 M02 Breast Imaging, Pablo Casals Ballroom
- 14:30-16:00 N35 NSS Poster II, Grand Caribbean Ballroom East & South Foyer
- Gaseous Detectors
- Scintillation Detectors
- New Solid State Detectors
- Solid State Tracking Detectors
- Instrumentation for Medical and Biological Research
- 15:30-17:30 M03 Posters 1, Grand Caribbean East and South Foyer
- 16:00-18:00 N36 Gas Detectors: Applications in Large Experiments, Magnolia Ballroom
- 16:00-18:00 N37 High Energy Physics Detectors III, Grand Caribbean Ballroom, Salons 1 & 2
- 16:00-17:30 N38 Scintillation Detectors III, Poinsettia Ballroom, Salons A, B, C
- 16:00-20:00 Industrial Exhibits, Grand Caribbean Ballroom, Salon 5
- 17:30-19:30 M04 Whole Body PET & PET/CT, Pablo Casals Ballroom

Friday, October 28

- 08:00-10:00 M05 Image Reconstruction, Pablo Casals Ballroom
- 10:30-12:00 M06 Multimodality Imaging, Pablo Casals Ballroom
- 15:30-17:30 M07 Posters 2, Grand Caribbean East and South Foyer
- 17:30-19:30 M08 Cardiac Imaging, Pablo Casals Ballroom

Saturday, October 29

- 08:00-10:00 M09 Small Animal Imaging, Pablo Casals Ballroom
- 10:30-12:00 M10 Motion Compensation, Pablo Casals Ballroom
- 15:30-18:00 M11 Posters 3, Grand Caribbean East and South Foyer
- 19:00-22:00 MIC Dinner, Trellis Terrace and pool

CONTACT INFORMATION

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REGISTRATION INFORMATION

Pre-registration is highly recommended to save both time and money. A number of methods are available to allow everyone to register early. Pre-registration ensures that your registration packet will be ready for you when you arrive at the conference. You may pre-register by mail, using the registration form contained within this booklet, or electronically through the conference website. Electronic registration is highly recommended, as it places your registration directly into our database. When you register electronically, you may pay by credit card (VISA, MasterCard, American Express or Discover) through our secure web server. You may also mail a check or money order, made payable to IEEE 2005 NSS, directly to Travel Destinations Meeting Group, Inc. (TDMG). Checks or money orders must be drawn on or paid through U.S. banks and must be in U.S. dollars. Completed registration forms may also be mailed or faxed to TDMG with the appropriate form of payment. Additional copies of the registration form may be downloaded from the Registration link on the main conference website.

NOTE: Registration and payment must be received by October 7, 2005 in order to qualify for the lower registration, short course, luncheon/dinner and tour fees. See Companion Program section for the tour fees and Short Course Program for the short course fees.

For electronic registration, connect to the conference website at <http://www.nss-mic.org/2005>, click on the Registration link, and follow the instructions.

For registration by mail or FAX, send all registration information and payments (made payable to IEEE 2005 NSS/MIC) to:

IEEE 2005 NSS/MIC
c/o TDMG
110 Painters Mill Road, Suite 36
Owings Mills, MD 21117
USA

Phone: 800-437-4589 (US/Canada only)
or 410-363-1300

FAX: 410-559-0160 (Attn: IEEE 2005 NSS/MIC)

An acknowledgment will be sent upon receipt of your registration and payment. Questions regarding registration may be sent via email to IEEE@traveldest.com (Attn: IEEE 2005 NSS/ MIC), or by calling TDMG.

Christina G. Sanders
Registration Chair



Registration Hours at the Conference

Registration and general information will be available during the following times at the IEEE Registration Desk located in the Lobby of the Wyndham El Conquistador Hotel:

Sunday, October 23	07:30 – 09:30 17:30 – 20:00
Monday, October 24	07:30 – 12:00 16:00 – 20:00
Tuesday, October 25	07:30 – 18:00
Wednesday, October 26	07:30 – 18:00
Thursday, October 27	07:30 – 17:00
Friday, October 28	07:30 – 12:00
Saturday, October 29	07:30 – 10:00

Symposium Registration Fees

	By Oct. 7	On-Site
IEEE Member*	\$490	\$590
Non-IEEE Member	\$640	\$740
IEEE Student*^	\$200	\$250
Non-IEEE Student^	\$300	\$350
Retired/Unemployed IEEE Member*	\$100	\$150
One Day Only†	\$200	\$200

*IEEE member number required at registration

^Proof of student status required

†Valid for 1 occurrence only—if more than 1 day, full registration will be charged

Luncheon/Dinner Fees

	By Oct. 7	On-Site
NSS Luncheon (Tuesday, Oct. 25)	\$40	\$45
MIC Dinner (Saturday, Oct. 29)	\$60	\$65

The MIC dinner and NSS luncheon have limited seating and are expected to sell out before Oct. 7. Early registration is strongly encouraged.

Cancellation & Refund Policy

You are not officially registered until we received your completed registration form and payment. If your payment is not received by the October 7 deadline, your registration will be cancelled. In order to process refunds, cancellations must be received in writing by September 7, 2005 (less \$25 cancellation fee). **No refunds will be issued thereafter.**

GENERAL INFORMATION

IEEE Membership

An IEEE membership desk will be located in the Atrium near the registration desk. Staff will be available to answer questions and explain the benefits of IEEE membership. A portion of your non-member conference registration fee will be deducted from your new IEEE membership (not applicable to student memberships). By joining IEEE during the conference, you will also receive one year's free membership in the Nuclear Plasma Sciences Society, and also a subscription to either the Transactions on Nuclear Science or Transactions on Medical Imaging. Students may join at the conference and the membership fee will be covered if the students provide a statement from their professor that they are full-time students. They should be encouraged to join the IEEE and NPSS over the web prior to coming to the conference. If they do, they can qualify for the reduced student rate.

Message board

A message board will be located in the Atrium near the registration desk for posting messages and notifications.

Speaker's Preparation Room

Please note that only digital material will be allowed for oral presentations.

Bring your presentation on a CD, a floppy disk, or a USB flash drive. All presentations will be loaded into a central server, thus avoiding delays in switching laptops prior to each presentation. It is mandatory that the presentations are delivered to the computer room (Flamboy-an Room) four hours before the start of each session. Presenters will not be able to use their own laptop/notebook computers.

The Orquidea Room has been set-aside as a speaker's preparation room. The presentations can be in Microsoft Power Point or Adobe PDF format. Both Macintosh and Windows versions are supported and the computers will be loaded with the same versions of software as used in the presentation rooms.

The computer room and speaker preparation room will be open Monday through Saturday. During the week, the rooms will normally open at 8 am and close at 7 pm. Due to conference functions, there may be some changes in the operation hours (which will be posted outside both rooms).

Computer Access

The Flamboy-an Room will be setup with computers and printers and staffed with conference technical support experts for your use. The facility is intended for use by all attendees to perform last minute editing of papers and presentation materials and to retrieve email. Standard word processing, spreadsheet, and presentation software will be available. The computer room will also include areas for attendees to use their personal laptop computers. In addition, wireless hotspots will be active in the exhibit and poster areas as well as an adjacent outside terrace.

Parking

Parking is available at the hotel. \$8.00 per day for normal parking. \$15.00 per day for valet parking.

Smoking Policy

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

Transportation

The conference recommends the use of rental cars or the hotel supplied shuttle service to/from the airport. The hotel shuttle should be reserved (\$50 round trip) at the time of making hotel reservations. We anticipate the need to house some conference attendees at a second hotel due to the expected large attendance. In that event, a free shuttle service will make round trips daily to the conference hotel. The schedules will be posted at the hotels.

INDUSTRIAL PROGRAM

The IEEE NSS/MIC Industrial Program provides our conference attendees with ample opportunities to meet the different exhibitors on Tuesday 25, Wednesday 26, and Thursday 27 October. The opening hours will follow the hours of the conference, with a large lunch break in the middle of the day. More than 30 companies from all around the world will be present to meet conference attendees and to demonstrate their latest products. These represent the state-of-the-art in detectors, pulse processing instrumentation, imaging, software, and other associated areas. The exhibition area is located in Salon 4, Grand Caribbean Ballroom.

The three-day exhibition is complemented by a series of seminars and technical presentations in Boardroom IV which will allow an in-depth exchange of information between attendees and exhibitors on existing products, future developments and needs.

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.

The Exhibition opening hours are as follows:

Tuesday, October 25	12:00 – 14:00 and 16:00 – 21:00
Exhibitor Reception	19:00 – 21:00
Wednesday, October 26	09:00 – 13:00 and 16:00 – 20:00
Thursday, October 27	09:00 – 13:00 and 16:00 – 20:00

Industrial Seminar Program Schedule:

Wednesday, Oct. 26
12:00 ORTEC
13:00 Hammatsu
14:00 Saint-Gobain Crystals
15:00 FAST Comtec
16:00 XIA

A list of exhibitors as of August 8 is included at the end of this booklet. Check our website (<http://www.nss-mic.org/2005/nssmain.asp>) 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 Ronald Keyser, Industrial Program Chair, at ronkeyser@ieee.org.

Ron Keyser
Industrial Program Chair



PUBLICATIONS

The Conference Record

The *Conference Record (CR)* is the official repository for manuscripts presented at the 2005 Nuclear Science Symposium and Medical Imaging Conference and will be published on CD-ROM, complimentary to all registered conference attendees. All CR manuscripts will be made available online at <http://www.nss-mic.org/2005/ConferenceRecord> before the CD-ROMs are mailed out. The approved word processing templates, available in PDF, MS Word and LaTeX format can be downloaded from <http://www.nss-mic.org/2005/publications/templates.htm>.

Starting 2005, 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 CD.

In order to ensure a timely release of the CD-ROM, we are adapting a new procedure for the Conference Record manuscript submission this year:

- **Produce IEEE Xplore-compatible PDF file using PDF eXpress**
The IEEE PDF eXpress service will be available for the NSS-MIC authors between Sept. 26 and Nov. 11, 2005. You need to enter nss-mic05 as the conference ID, and set up an account on their system. You can either upload your word processor file to the web site and have it converted to PDF, or verify your own PDF file for Xplore-compatibility. 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. Detailed instructions on the PDF eXpress service are available at <http://www.nss-mic.org/2005/publications/PDFeXpress.html>.
- **Submit the Xplore-compatible PDF file and IEEE Copyright Form**
Log on to the conference web site and follow the menu "My Abstracts" 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.

The deadline for the Conference Record manuscript submission is November 11, 2005.

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:

1. Paper has been presented at the conference;
2. Manuscript conforms to the page layout requirements specified in the online templates;
3. Manuscript does not exceed the 5 page limit, unless approved by the Guest Editor;
4. PDF file is IEEE Xplore-compatible;
5. PDF file and the electronic copyright form are received no later than the Nov. 11 deadline.

The conference record CD-ROMs are planned to be mailed to the attendees at the end of December.

For further information regarding the Conference Record, contact:

Guest Editor for the Conference Record

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Transactions on Nuclear Science (TNS)

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 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://tns-ieee.manuscriptcentral.com>).

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

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Comparison of Requirements

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

	Conference Record (CR)	Transactions on Nuclear Science (TNS)
Page layout	Same as TNS, but without running headers and footers	Standard IEEE Transactions and Journal format
Copyright form	Required, electronic submission	Required, electronic submission
Deadline	Nov. 11, 2005	No
Peer reviewed	No	Yes
Color figures	Free and encouraged	At author's expense
Page limit	5	8 (suggested)
Availability	Online immediately, CD out at end of year to all attendees	Published throughout the year
Submission Site	http://www.nss-mic.org/2005/submissions	http://tns-ieee.manuscriptcentral.com

COMPANION PROGRAM

Puerto Rico and its surroundings offer a broad variety of cultural, historical, and natural attractions. The companion program will offer daily trips to places of interest during the entire conference, as well as family activities.

Please note that individual tours are subject to cancellation and refund of tour fees if an insufficient number of attendees reserve space for any given tour prior to the beginning of the conference.

Tour Name	Date & Time	Adv. Reg.	On-site
Ponce City Excursion	Sunday 8:30 AM–6:00 PM	\$70	\$80
Old City Historical Walking Tour with Shopping	Monday 8:30 AM–4:30 PM	\$45	\$55
Catamaran Snorkeling	Tuesday 9:00 AM–1:00 PM	\$70	\$80
Camuy Caves and The Arecibo Observatory	Wednesday 8:30 AM–6:00 PM	\$75	\$85
Eco Kayaking / Rio Grande	Thursday 8:30 AM–1:00 PM	\$30	\$40
Old San Juan and Bacardi Rum Distillery	Friday 8:30 AM–4:30 PM	\$48	\$58
El Yunque Rainforest Excursion	Saturday 8:30 AM–1:00 PM	\$35	\$45

Conference Arranged Tours

Sunday: Pre-registration \$70, at conference \$80

Ponce City Excursion—All day, 8:30 AM to 6:00 PM, including 2.5 hours each way on the bus, box lunch and bottle water is included. Participants are asked to arrive in the lobby 20 minutes early.

Puerto Rico's second largest city is located on the southern coast and easily accessible by highway. The Pearl of the South," Ponce was named after Loiza Ponce de Leon, great-grandson of Juan Ponce de Leon. Founded in 1692, Ponce is today Puerto Rico's principal shipping port on the Caribbean. The city is well kept and attractive. A suggestion of a provincial Mediterranean town lingers in the air. The streets are lit with gas lamps and lined with neoclassical buildings, just as they were a century ago. Horse-drawn carriages clop by, and strollers walk along sidewalks edged with pink marble. Thanks to the restoration, Ponce now recalls the turn of the 20th century, when it rivaled San Juan as a wealthy business and cultural center. The all day group excursions, with knowledgeable step-aboard guides, will include a visit to the Ponce Art Museum. With more than 3,000 works of the European and American schools, from the 14th to the 20th centuries, the museum's collection is known worldwide for its superb selection of Italian Baroque and British Pre-Raphaelite works as well as French Academy and 17th century Spanish (Golden Age) schools. The Museum also exhibits Puerto Rican and contemporary

Latin American art. Visit Musarte, the museum shop, for interesting gift & souvenirs. On a high hill overlooking the city of Ponce is the Serralles Castle, once the baronial estate of one of Puerto Rico's most powerful rum-producing families. It is not really a castle but poncenos gave it that name because its elegant clay-tile capped tower, its graceful arches, its long galleries and landscaped terraces suggest a medieval castle. Its rooms now delight visitors with their preservation of an elegant era and their exhibits of artifacts from the rum and sugarcane trade.

The Serralles Castle is a magnificent example of Spanish Revival architecture, popular in the 1920's. It was designed by architect Pedro de Castro and was completed in the early 1930's. It occupies three levels in the hillside. Minute detailing characterizes the windows, roofs, ironwork and mosaics. Authentic furnishings include the original Serralles dining room with its reminiscence of Medieval Spain.

A permanent exhibition chronicles the sugar cane and rum industries, including information on the role of the Serralles family in the founding Central Mercedita and Don Q, Ponce's world-famous rum. There is a cafe and arts and crafts shop on the grounds. Most people also visit nearby La Cruceta del Vigia and climb the 100-foot observation tower to gaze at the city, the islands and the sea. A box lunch and beverages will be provided.

Monday: Pre-registration \$45, at conference \$55

Old City Historical Walking Tour with Shopping—All day, 8:30 AM to 4:30 PM. Participants are asked to arrive in the lobby 20 minutes early.

This tour is designed for culture and history enthusiasts who like to get up close to the sites and examine the past first-hand. Knowledgeable step-aboard guides will take your party to Old San Juan—the oldest city in the U.S. There, they'll be able to stroll through Old Spanish cathedrals and forts such as San Cristobal, where they'll see and learn how the Spanish built and defended their city. Afterwards, they'll have an opportunity to do some shopping and have lunch on their own. We highly recommend comfortable walking shoes, hat and sunscreen. Traveling time is approximately one hour and 15 minutes each way. Duration is 6 hours including transfer time.



Activity Level: Low Impact

Recommended Attire: We highly recommend comfortable walking shoes, hat and sunscreen.

Tuesday: Pre-registration \$70, at conference \$80

Catamaran Snorkeling—3 hours. Participants are asked to arrive in the lobby 20 minutes early.

These excursions have always had strong participation from groups visiting Puerto Rico, as they show off some of our best assets. The typical excursion entails a transfer to the marina where the guests will board one of our state of the art catamarans, to begin a leisurely sail

to one of the off shore coral reefs. After anchoring near the reef the captain and crew will inform our guest as to the safety rules & procedures and pass out the snorkeling equipment and safety gear. Guests typically have between one and two hours to snorkel, swim, or relax at the beach. Box lunches and beverages will be provided.

Wednesday: Pre-registration \$75, at conference \$85

Camuy Caves and Arecibo—All day (9 hours, including 2.5 hours each way on the bus). Box lunch and bottle water is included. Participants are asked to arrive in the lobby 20 minutes early.

The Camuy Caves System—For those who love natural wonders and rock formations you will visit the third largest underground river system in the world, which has taken millions of years to carve out the spectacular 300-acre network of subterranean chambers known as the Rio Camuy Caves. Today the underground cave system is part of a natural reserve that is recognized as one of the world's most impressive natural wonders. Developed and operated by the Puerto Rico Land Administration, the park provides visitors the opportunity to visit three of the system's most remarkable sinkholes and caves in safety and comfort. The Visitors will board trolleys for guided tours that carry them down the spiraling enplaned sinkhole, into one of the system's largest caves. After a walk through the 170-foot Cueva Clara, another shuttle takes them to a platform overlooking the 65-foot wide and 400 feet deep Tres Pueblos Sinkhole.

The Arecibo Observatory—The Arecibo Observatory is part of the National Astronomy and Ionosphere Center (NAIC), a national research center operated by Cornell University under a cooperative agreement with the National Science Foundation (NSF). The NSF is an independent federal agency whose aim is to promote scientific and engineering progress in the United States. The National Aeronautics and Space Administration (NASA) provide additional support. As the site of the world's largest single-dish radio telescope, the Observatory is recognized as one of the most important national centers for research in radio astronomy, planetary radar, and terrestrial aeronomy. Use of the Arecibo Observatory is available on an equal, competitive basis to all scientists from throughout the world. Observing time is granted on the basis of the most promising research as ascertained by a panel of independent referees who review the proposals sent to the Observatory by interested scientists. Box lunches and beverages will be provided.

Thursday: Pre-registration \$30, at conference \$40

Eco Kayaking, Rio Grande Nature Reserve—Snacks and beverages are included. 1:00 PM to 5:00 PM, 4 hours. Participants are asked to arrive in the lobby 20 minutes early.

Kayaking brings to the traveler the opportunity to explore remote areas inaccessible to most forms of marine transportation. The Mangrove river labyrinths that wind their way into salt lagoons sustain a wide variety of wild life, land and sea dwellers alike. Upon arrival at each site you will be given a brief safety and kayak lesson before teaming up in a tandem kayak.



Our sturdy kayaks and knowledgeable tour guides will assure a safe and fun experience for beginners and advanced sportsmen.

Friday: Pre-registration \$48, at conference \$58

Old San Juan and Bacardi Rum Distillery—Group Activity Participants are asked to arrive in the lobby 20 minutes early.

Visitors to Casa BACARDI will be guided through seven exquisitely designed and historically accurate rooms created to engage visitors as



they experience the sight, smell and taste of BACARDI rum. Nosing booths invite visitors to take in the delicious smells of eight BACARDI rums. Learning of the secrets of the Bacardi rum making, including the secret strain of yeast isolated in 1862 and still used today.

Demonstrations by professional bartenders making BACARDI classics such as the Cuba Libre, Mojito and Daiquiri from the Company's "Golden Cocktail Age," which occurred during prohibition when visitors flocked to Cuba to enjoy a then-American taboo. State-of-the-art technology allowing visitors to send e-video messages to their friends from Puerto Rico against a backdrop of a tower composed of more than 375 bottles of BACARDI rum amid a five-screen presentation of the brand's current commercials from around the world.



After our tour of the Bacardi Facilities, we will depart for Old San Juan. We've designed this tour for culture and history enthusiasts who like to get up close to the sites and examine the past first-hand. Knowledgeable step-a-board guides will take your party to Old San Juan—the oldest city in the U.S. There, they'll be able to stroll through Old Spanish cathedrals and forts such as "San Cristobal", where they'll see and learn how the Spanish built and defended their city. Afterwards, they'll have an opportunity to do some shopping and have lunch on their own.

Saturday: Pre-registration \$35, at conference \$45

El Yunque Rainforest Excursion—4 hours. Participants are asked to arrive in the lobby 20 minutes early.

El Yunque Rainforest is the perfect place to spend some quiet time, take unique photos and enjoy the vistas from your mountaintop location.

The Caribe Indians spent some 200 years living in their 28,000 acre tropical paradise while here on earth and when you explore their mountain named after their "Good Indian Spirit, Yuquiyu", you can imagine the serene life they must have lead. The 3,624 foot mountain is home to 240 different species of trees and with over 120 inches of rain each year you couldn't conceive of the lush ground cover of vines, tubers, ginger and orchids.



Waterfalls into cool pools abound, blending sounds with those of

tropical creatures such as the birds and frogs in this sanctuary. Observatories, walking trails, and great places to sit and contemplate make this tour a special one.

Duration of this step into nature is 3.5 to 5.5 hours depending on departure point.

Individually Arranged Activities

In addition to the conference organized tours listed above, there are many activities that can be booked at the hotel by individuals. We list here descriptions of the Kid's Klub and scuba diving offerings. Other activities are listed at the hotel web site and include a variety of beach related activities, horseback riding at the hotel's private island, and numerous aquatic activities. The hotel also offers several swimming pools, tennis courts, golf course, and general activity rooms. We have two companion program chairs this year, and they will be available during the conference to help with hotel-based programs that are not part of the conference arranged tours.

Kid's Klub

The Kid's Klub is a five star recreational supervised program designed for kids from 4 to 15 years old. Our goal is to enhance the child's experience through the provision of recreational indoor & outdoor fun-educational activities during their stay at Wyndham El Conquistador Resort & Golden Door Spa. Children should bring with them a swim suit under casual clothes (T-shirt, shorts, and sneakers) as well as extra sun block. The children must be completely potty trained, no training pants are accepted.

The registration takes place every morning at 9:00 a.m. to 10:00 a.m. at the Kids' Klub House located at the Main North Pool and the parents pick them up at 4:00 p.m. at the same place. Parents must come with the kids to the registration to sign a regulation and release form before 10:00 a.m.

The Kid's Klub House is equipped with a wide variety of games to entertain the children. We have available: board games, Playstations 2, TVs, computers, mini theater, arts & craft, balls, hula hoops, toys, kid's tables, bean bags, fun rugs, kitchen, snacks, popcorn machine, refrigerator, vending machines, sound system, dance-revolution systems, and much more. Some of the outdoor activities included on the program are: swimming, basketball, volleyball, kayaking snorkeling, soccer, treasure hunts, and sand sculpting.

The counselors are highly motivated professionals that have over 5 years of experience working with kids as elementary & junior high school teachers, babysitters & physical education instructors.

The program offers different activities programs for different age groups: 4-8 years, 9-12 years & 13-15 years. For more information see the daily activities program.

Personalized Underwater Adventures —Scuba diving from the hotel

Patch reefs, mini-walls, and small grottoes punctuate the sandy sea floor. Shallow like camouflaged stealth bomber. Visibility often soars to 100 feet, with most days around 50. Winter water temperatures never drop below the mid-70's and bathe you in the mid-80's during the summer months.

Complementary bottled water, soft drinks, snacks, fresh fruit, and fresh towels are available throughout your trip. And if you desire, and ice-cold beer will be waiting for you after your last dive during the trip back to the marina.

Dive to Culebra

Twenty miles off Fajardo, the Island of Culebra rises from the shallows to form the only landfall between Puerto Rico and the U.S. Virgin Islands, just 15 miles east. You'll find thick schools of grunts, Creole wrasse, and angelfish. Grouper—rare are more common here.

Take the plunge? Try Discover Scuba

If you've always wanted to try scuba and experience the thrill of breathing underwater for the first time, this is your perfect opportunity. Learn the basics in just an hour with our professional instructors in the pool. Then hop on our boat for a guided shallow dive on the local coral reef.

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SHORT COURSE PROGRAM

An excellent set of short courses will be given at the start of the NSS/MIC 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.

Course Name	Date	Adv. Reg.*	On-Site*
1. Radiation Detection and Measurement (2 days)†	Oct. 23-24	\$375	\$425
2. Nuclear Science for Homeland Security (1 day)	Oct. 23	\$275	\$325
3. Integrated Circuit Front Ends for Nuclear Pulse Processing (1 day)	Oct. 23	\$275	\$325
4. Medical Imaging Fundamentals (1 day)	Oct. 24	\$275	\$325
5. Molecular Imaging Basics (1/2 day)	Oct. 25	\$180	\$230
6. Statistical Methods for Image Reconstruction (1/2 day)	Oct. 25	\$180	\$230

* IEEE Member qualify for a \$25 discount.

† Textbook included.

1. Radiation Detection and Measurement (2 days) Glenn Knoll

This 2-day course provides a short 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 both of established applications and recent developments are drawn from areas including particle physics, nuclear medicine, 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 textbook (G.F. Knoll, "Radiation Detection and Measurement", Third Ed., 2000, Wiley) will be included in the course materials.

Glenn Frederick Knoll is Professor Emeritus of Nuclear Engineering and Radiological Sciences at The University of Michigan. He joined the Michigan faculty in 1962, and served as Chairman of the Department of Nuclear Engineering from 1979 to 1990, and as Interim Dean of the College of Engineering in 1995-96. 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. In 1999 he was inducted to membership in the National Academy of Engineering. In 2000 he received the highest faculty award from the College of Engineering of the University of Michigan, the Stephen E. Attwood Award. He has served as consultant to over 30 industrial and governmental organizations in technical areas related to radiation measurements. He is a Fellow of IEEE, and in 2000 was a recipient of the Third Millennium Medal of the Society.

Stephen E. Derenzo is Senior Scientist at the Lawrence Berkeley National Laboratory and Professor-in-Residence in the Electrical Engineering and Computer Science Department at UC Berkeley. He is deputy head of the Center for Functional Imaging in the Life Sciences Division and has been responsible for the construction of two positron tomographs. He is currently involved in developing advanced detector designs for PET that provide high spatial resolution, depth-of-interaction and time-of-flight. For the past 17 years he has lead a search for new heavy scintillators, found several that are in common use, and is currently exploring fast, efficient room-temperature scintillation from doped direct-gap semiconductors. He has authored or co-authored over 150 technical publications and five 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 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 and the James McGroddy Prize for New Materials of the American Physical Society in March 1999. 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 has been 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."

Graham C. Smith is a physicist in the Instrumentation Division at Brookhaven National Laboratory. He received a Ph.D in Physics from Durham University, England in 1974, followed by postdoctoral work in nuclear electronics and detector instrumentation for X-ray Astronomy at Leicester University. In 1982 he joined Brookhaven's Instrumentation Division to participate in development of high accuracy position-sensitive detectors and electronics, becoming a tenured staff member in 1994. He received Brookhaven's Research and Development Award in 1996, and the IEEE Long Island Regional Award for Contributions to High Energy Physics in 1998. He has an active research program in development of detectors, particularly gas-based detectors, for ionizing radiation measurement in synchrotron, neutron and particle physics experiments.

2. Nuclear Science for Homeland Security (1 day) Tony Peurrung

This one day course will cover the application of nuclear science generally and radiation detection methods specifically in the area of homeland security. This course is intended primarily for those who have some familiarity with nuclear science and radiation detection and would like to better understand homeland security applications and the science and technology issues unique to them. This course will therefore focus on relevant scientific concepts and technology development and deployment issues. The course will touch on, but not focus on, existing commercial instruments and systems deployed for homeland security applications. Prospective students with a general physics or engineering background but little preparation in the area of nuclear science are welcome but are very strongly encouraged to study the book *Radiation Detection and Measurement* (3rd Edition, John Wiley and Sons, New York, 2000) by Professor Glenn Knoll prior to the course.

The course will start by defining what is meant by homeland security and discuss the general areas in which nuclear science expertise and technology comes into play for homeland security applications. A discussion of the operational environments typically encountered along with specific examples will be provided. A generic discussion of threat classes and their associated measurement methods will be given.

The course will describe the basic classes of gamma-ray and neutron detection instrumentation considered for deployment and help students understand how decisions are made with respect to their use. The critical topic of “backgrounds” will be described including both natural radiation background and naturally occurring radioactive materials (NORM). Approaches for data collection, analysis, and decision-making for various applied scenarios will be discussed. The role of advanced materials development, particularly the development of room temperature high resolution gamma ray spectrometers, in aiding homeland security applications will be described. The application of a variety of advanced radiation detection methods including imaging, collimation, pulse shape discrimination, and alternative signatures will be covered. Active methods and their role in homeland security will be described.

Dr. Anthony Peurrung has a BS degree in Electrical Engineering from Rice University and a Ph.D. degree in Physics from the University of California, Berkeley. His research has entailed contributions to a variety of fields within fundamental and applied physics including fluid mechanics, plasma physics, medical physics, separations science, environmental remediation, nuclear physics, and radiation detection methods and applications. Since 1994, Anthony has worked in the National Security Directorate of Pacific Northwest National Laboratory as a staff scientist, technical group manager, and most recently as director of the Physical and Chemical Sciences Division. His research interests include such topics as special nuclear material detection and characterization and fundamental advances in the areas of neutron detection and spectrometry. Anthony is a long standing member of the DOE’s Radiation Detection Panel and held the senior non-federal leadership role representing the DOE laboratory complex during the standup of DHS’s radiological/nuclear countermeasures science and technology program.

Dr. Eric Smith is a Senior Scientist at Pacific Northwest National Laboratory (PNNL) working in applied radiation detection for homeland and national security. He is the technical lead for PNNL’s program in Department of Homeland Security Science and Technology, Radiological and Nuclear Countermeasures, and supports the US Customs and Border Protection’s radioactive material interdiction program. Eric also serves as PNNL’s representative to DOE’s Nonproliferation Research and Engineering Radiation Detection Panel, and is the principal investigator on several DOE research projects, specifically in novel radiation sensors, trace radionuclide detection methods, and spent fuel assay. As the Deputy Technical Lead for PNNL’s Radiation Detection and Analysis Laboratories, Eric helps to coordinate the Lab’s nuclear science capabilities for various programmatic areas. Prior to joining PNNL, he was a staff member at Argonne National Laboratory working in the areas of nondestructive assay and waste characterization. Eric received a B.S. in Nuclear Engineering from Oregon State University, and his M.S. and Ph.D. in Nuclear and Radiological Sciences from the University of Michigan.

3. Integrated Circuit Front Ends for Nuclear Pulse Processing (1 day)

Paul O’Connor

This one-day course is intended to introduce physicists and detector specialists to the fundamentals of integrated circuit front end design. The class begins with a discussion of low-noise signal processing and semiconductor devices and then delves into the details of implementing practical circuits in modern CMOS technology. A basic knowledge of detectors and electronics is assumed.

Course Outline

1. Pulse Processing Fundamentals
 - Signal formation in detectors
 - Noise and gain mechanisms
 - Pulse processing for amplitude and timing extraction
2. Semiconductor Technology for Integrated Circuit Front Ends
 - Operation and characteristics of MOS and bipolar transistors
 - Sub-micron CMOS and BICMOS technology
 - Feature size scaling
 - Radiation effects and reliability
 - Mixed-signal circuits
3. Analog circuit design
 - The IC design process and CAD tools
 - Foundry access, multiproject services
 - Building blocks for the analog channel: charge-sensitive and pulse-shaping amplifiers, baseline stabilizers, peak detectors, track/hold, multiplexers, output stages
 - Analog-to-digital and time-to-digital converters (ADC and TDC)
4. Packaging and Interconnect
5. Application examples

Course registration fee includes lunch and refreshments, a copy of the lecture notes, and a certificate of completion.

Veljko Radeka, Senior Scientist and Head of Instrumentation Division at Brookhaven National Laboratory. His interests have been in scientific instruments, radiation detectors, noise and signal processing, and low noise electronics. He authored or co-authored about 170 publications. He is a Life Fellow of IEEE and a Fellow of APS.

Paul O'Connor is associate Head of the Instrumentation Division at Brookhaven National Laboratory. He has a Ph.D. degree in solid-state physics from Brown University and worked from 1980-1990 at AT&T Bell Laboratories prior to joining BNL. His research interests are in the field of instrumentation systems for radiation detection, particularly low noise analog CMOS front-end circuits. He is author and co-author of about 50 publications and has been an IEEE member since 1980.

Giovanni Anelli was born in Piacenza (Italy) in 1970. He received the M.S. degree in electronic engineering from the Polytechnic of Milan (Italy) in 1997 and the Ph.D. degree in electronic engineering (with highest honors) from the Polytechnic of Grenoble (France) in 2000. His Ph.D. thesis research work was on techniques to design radiation tolerant integrated circuits in deep submicron CMOS technologies, an approach which is now employed by the large majority of the integrated circuits of the Large Hadron Collider (LHC) at CERN. Dr. Anelli has been working from October 1995 to December 1996 and from July 1998 in the Microelectronics Group of CERN. His research interests deal with radiation effects on submicron CMOS technologies and design of low-noise low-power analog and mixed signal VLSI circuits for High-Energy Physics applications. Dr. Anelli is author and co-author of more than 40 publications in international journals and international conference proceedings. Dr. Anelli is a member of the IEEE from 1998 and is member of the Circuits and Systems, Solid-State Circuits, Electron Devices and Nuclear and Plasma Sciences Societies.

4. Medical Imaging Fundamentals (1 day) Todd Peterson

This full-day course is intended to introduce the fundamentals of tomographic imaging with ionizing radiation to engineers and physicists that have no experience in this field. The class begins with an introduction to the various technologies used to obtain medical images and the applications for which they are used. Following brief overviews of the principles of optical, ultrasound, and magnetic resonance imaging, the focus then shifts to in-depth descriptions of individual techniques that utilize ionizing radiation. The fundamentals of tomographic reconstruction are presented, and this is followed by discussions of the medical imaging modalities of X-ray CT, single-photon emission computed tomography (SPECT), and positron emission tomography (PET). Emphasis is placed on the underlying physical principles, method of image formation, instrument design, performance criteria, and both clinical and pre-clinical applications.

No prior knowledge of medical imaging techniques or computed tomography is assumed; however, the course does assume an understanding of physics, elementary radiation detection and measurement techniques, and a basic understanding of Fourier analysis.

Todd Peterson is currently an Assistant Professor in the Department of Radiology and Radiological Sciences and the Department of Physics at Vanderbilt University and serves as the Director of Nuclear Imaging for the Vanderbilt University Institute of Imaging Science. After receiving his Ph.D. from Indiana University in the field of experimental nuclear physics, he conducted postdoctoral research under the guidance of Dr. Harrison Barrett at the Center for Gamma-Ray Imaging at the University of Arizona. A major focus of his research has been the application of semiconductor detectors to small-animal SPECT. His current research also includes imaging studies using microPET and microCT.

Yuan-Chuan Tai, Washington University in St. Louis. Tai is an Assistant Professor in the Department of Radiology. His primary research focus is on the development of high resolution PET systems for human and animal applications.

Jiang Hsieh, a Chief Scientist in the Applied Science Laboratory of GE Healthcare Technologies. He has over 20 years of experience on medical imaging. His primary research interests include pre-processing, image reconstruction, post-processing, and advanced clinical applications of x-ray CT. His research interests also cover various aspects of SPECT imaging.

5. Molecular Imaging Basics (1/2 day) Arion Chatzioannou

Molecular Imaging, defined as imaging of molecular markers and their interactions inside living organisms, has attracted significant level of attention in recent years. Especially at the preclinical level, molecular imaging holds the promise to elucidate disease pathways as well as physiological processes that might lead to improved diagnostics and therapeutics. This course will introduce the attendees to (1) the identification of molecular markers, (2) strategies and limitations of labeling methodologies and (3) non-invasive imaging instrumentation technologies.

Special focus will be given to preclinical technologies like high resolution small animal PET and SPECT, optical bioluminescence and x-ray microCT imaging.

Course outline:

The first session will introduce attendees to elements of basic molecular biology, cell metabolism and cell signaling pathways. It will focus on the identification of unique features of cell biology that can possibly be used with imaging methods.

The second session will discuss the use of radiopharmaceuticals, bioluminescence optical signaling probes and x-ray contrast agents, with emphasis on their inherent characteristics of signal generation, signal propagation in tissues and background levels.

The third session will discuss the instrumentation technology for the design of small animal PET/SPECT, bioluminescence and x-ray CT imaging systems, with emphasis on the issue of sensitivity and spatial resolution limits.

Dr. Chatzioannou is currently with the faculty at the Department of Medical & Molecular Pharmacology, David Geffen School of Medicine at UCLA. He also is a member of the Crump Institute for Molecular Imaging and the Institute for Molecular Medicine, UCLA

DOE Lab. He received his B.S. degree in Physics from the University of Athens, Greece and his Ph.D. degree in Biomedical Physics from the University of California at Los Angeles. After the completion of his degree, he joined the research group of Dr. Simon Cherry on the development of the high-resolution microPET technology. His current research interests are in the development of instrumentation and technology for dedicated small animal imaging systems. He is especially interested in multimodality approaches for quantitative imaging including x-ray micro computed tomography, microPET and optical imaging. Dr. Chatziioannou has authored or coauthored more than 40 journal articles, reviews and book chapters. In addition, he has been invited to speak at many national and international symposia.

Dr. George Alexandrakis received his undergraduate degree in Physics from Oxford University and obtained both his Masters' and PhD degrees from McMaster University, Canada. He performed his doctoral work in the area of near infrared reflectance imaging under the supervision of Prof. Michael Patterson. Since his graduation he has been a postdoctoral fellow at Massachusetts General Hospital / Harvard Medical School and more recently at UCLA. His research time in Prof. Rakesh Jain's lab in Boston was invested in developing quantitative intravital microscopy methodologies for the analysis of barriers to drug delivery in tumor-bearing mice. His present research interests in Prof. Arion Chatziioannou's lab at UCLA are focused on computational feasibility studies of bioluminescence tomography, as part of developing a combined optical/PET mouse imaging system. He is also pursuing some training in clinical PET/CT methodologies.

6. Statistical Methods for Image Reconstruction (1/2 day) Jinyi Qi

Statistical methods for image reconstruction has attracted growing interests with the advances in instrumentation, computer technologies, fast reconstruction algorithms, and emerging biomedical applications demanding for high-resolution images. The recent commercial adoption of iterative algorithms in clinical and animal scanners also facilitates its wide spread. This course will provide an orderly overview of statistical reconstruction methods with applications to PET, SPECT, and X-ray CT. The course will start with fundamental issues of statistical reconstruction, including the choice of objective functions, regularization, and optimization algorithms, and how each affects the image quality. It will then covers the specific topics in modeling photon transport in PET, SPECT, X-ray CT and the compensation of the imperfectness in different imaging systems. In all cases, numerous examples will be presented.

Prerequisite knowledge includes basics knowledge of the physics of medical imaging systems, statistics, and elementary linear algebra.

Jinyi Qi received his Ph.D. degree in Electrical Engineering from the University of Southern California (USC) in 1998. Since 1999 he has been with the Department of Functional Imaging at the Lawrence Berkeley National Laboratory. He is currently an Assistant Professor in the Department of Biomedical Engineering at the University of California, Davis, and a Faculty Scientist in the Department of Functional Imaging at the Lawrence Berkeley National Laboratory. His research interests include statistical image reconstruction, image quality evaluation, system modeling and optimization.

Freek Beekman (physicist, Ph.D.'95, associate professor at the Image Science Institute, Utrecht University), authored more than 40 journal peer reviewed journal papers, several book chapters and patent applications. His research interests include image reconstruction (in particular emission CT and X-ray CT), Monte Carlo and analytic modelling, and instrumentation.

Bruno De Man received the BSEE and MSEE degree from the University of Leuven in 1995. From 1995 to 2001 he was a research assistant at the University of Leuven, where he earned a Ph.D. in Electrical Engineering. Since 2001 he has been an researcher at the CT Systems and Applications Laboratory at GE Global Research, and since 2004 he has been project leader for CT reconstruction. He is currently an Associate Editor for Medical Physics. His research interests include CT physics, CT iterative reconstruction, and CT cone-beam reconstruction.

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The Nuclear Science Symposium has a long tradition, which has made it the single most important conference in the field of radiation detectors and their many applications. The Symposium traces its roots back to the Scintillation Counter meetings of the 50's which gradually expanded to include what was then known as *Nucleonics*, the combination of radiation detectors and electronics. One characteristic of the meeting has been the way in which it has grown to accommodate the myriad applications and interests of the members and how they have evolved over time. The other part of the meeting, the Medical Imaging Conference also had its origins in the NSS as successive meetings included more and more papers on radiation imaging for medicine.

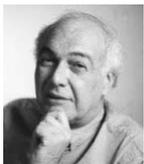
This year, we have added sessions on Homeland Security technologies, reflecting new interest in this area, which has developed worldwide. Another new session has been added in the area of neutron imaging, a field which has grown to reflect the new techniques which have been developed in the last few years.

We of course will not overlook the exciting developments in High Energy Detectors, Scintillators, Gas Detectors, Data Acquisition, Analog and Digital Circuits, Computing and Software. There are a total of 36 oral sessions and two poster sessions. In addition, we have four joint sessions, three oral and one poster, with the MIC presenting new ideas in the combination of radiation and imaging which has been so important in the development of new imaging modalities for medicine and biology. The sessions are scheduled for mornings and late afternoons, giving participants ample time for discussions outside of the formal presentations.

The NSS starts on Monday morning, October 24 and continues through October 27, overlapping the MIC, which starts on the 26th. There are also Short Courses in radiation detection, nuclear science for Homeland Security, integrated circuit design for nuclear sciences, medical imaging, molecular imaging and image reconstruction, which start on Sunday, Monday and Tuesday.

The symposium would not have been possible without the efforts of Topic Conveners, who organized the sessions for each of the topics, and the many reviewers who carefully read the abstracts and summaries which were submitted. We received, in the NSS alone, about 600 presentations from more than 40 countries.

We welcome all of the participants in the NSS and the MIC and hope that each of you will act as teachers and as learners when attending the many presentations in Puerto Rico.



Richard Lanza
NSS Program Chair



Lorenzo Fabris
NSS Deputy Program Chair

Quantum Computing: Progress and Outlook

Marco Pravia
BAE Systems, Inc



Dr. Marco Pravia recently moved to the Advanced Information Technology (AIT) unit of BAE Systems, Inc. At AIT, Dr. Pravia is a lead engineer and supports the development of the All SourceTrack and Identity Fuser (ATIF), a software component that fuses diverse intelligence sources into a coherent and operationally-relevant picture. Dr. Pravia is also working on the design of next-generation software architectures for the Department of Defense.

Before starting at AIT, Dr. Pravia was an Assistant Professor of computer science at the University of Puerto Rico, Rio Piedras (UPR- RP). At UPR-RP, Dr. Pravia started a research program on quantum information processing, incorporating parallel computing tools into the development of control pulses for quantum gates. Dr. Pravia also served as the Deputy Director of Division of Administrative and Academic Technology, a new organizational unit that was tasked with coordinating technology resources on campus.

Dr. Pravia received his doctorate in Nuclear Science and Engineering at the Massachusetts Institute of Technology, where he worked with Prof. David Cory on aspects of quantum computation and magnetic resonance. As a graduate student, Dr. Pravia developed improved quantum control methods based on strong modulation of a system's Hamiltonian. The results from this work advanced the complexity and accuracy of experimentally realizable NMR quantum gates. The improved gates were used in explorations of quantum measurements on entangled states, in the creation of the first noiseless subsystem, and in an implementation of the quantum Fourier transform. Dr. Pravia also completed the first physical realization of a parallel array of quantum computers connected via classical channels. As the proof-of-concept demonstration, the novel architecture executed a quantum lattice-gas algorithm that solves a discrete diffusion equation.

Science and Technology Challenges in Screening for Radiological and Nuclear Materials

Michael Carter

Department of Homeland Security

Dr. Michael R. Carter was appointed Deputy Director and Chief Scientist in the Domestic Nuclear Detection Office in 2005. Previously Dr. Carter served as Chief Scientist in the Office of Plans, Programs and Budget in the Science and Technology Directorate of the Department of Homeland Security and as Director of the Radiological and Nuclear Countermeasures Portfolio in the Department of Homeland Security.



Prior to the start of the Department of Homeland Security, Dr. Carter served as a Technical Advisor to the Homeland Security Transition Planning Office with emphasis on Radiological and Nuclear Countermeasures.

Dr. Carter has been involved in research and development activities in support of National Security since 1987. Prior to his assignment in Washington, Dr. Carter served as Associate Division Leader for Proliferation Detection Systems at Lawrence Livermore National Laboratory (LLNL). At LLNL, Dr. Carter lead and managed programs in emerging technologies including nuclear, chemical and biological sensors, active and passive remote sensing systems, reconnaissance and surveillance systems, data exploitation and signal processing, high-bandwidth communications and distributed sensor systems. Previous experience at LLNL includes high-energy-density plasma physics research, x-ray lasers, nuclear test experimental physics and controlled thermonuclear fusion.

Dr. Carter received his Ph.D. in Applied Science from the University of California, Davis in 1987.

Indirect Dark Matter Searches Using Antimatter

Charles Hailey

Columbia University

Abstract:

Most of the known matter in the universe is composed of a mysterious dark matter whose precise nature continues to elude us. This dark matter interacts only weakly with conventional matter and thus is very difficult to directly detect. Moreover, since the nature of dark matter is uncertain, we cannot even be sure how or with what precise strength dark matter interacts with conventional matter. Consequently a variety of techniques need to be employed for dark matter searches to both enhance the probability of detecting it and to constrain the myriad theories about it. I briefly review the current status of dark matter. Then I describe a large class of dark matter search techniques which do not attempt to detect dark matter directly, but rather to detect the antimatter produced in the annihilation and decay of dark matter. The current and future prospects for this approach are summarized.



Biography:

Charles Hailey is a Professor of Physics at Columbia University. His current interests are development of new experimental techniques for high energy and particle astrophysics, with emphasis on the detection of antimatter and the fabrication of high energy X-ray optics. He is the principal investigator of several NASA projects in these areas. In his previous position he was Associate V- Division Leader (atomic and high temperature physics) at Lawrence Livermore National Laboratory, where he performed astrophysics research and precision quantum electrodynamic measurements at heavy-ion accelerators. In 1993 he was appointed Associate Program Leader for Intelligence and National Security Technology in the Non-Proliferation, Arms Control and International Security Directorate at Livermore, with responsibility for radiation detection technologies.

NP NSS Plenary

Monday, Oct. 24 09:30-09:30, Pablo Casals Ballroom
 Session Chairs: **Richard Lanza**, *MIT*
Lorenzo Fabris, *Lawrence Livermore National Laboratory*

NP-1: Science and Technology Challenges in Screening for Radiological and Nuclear Materials, Michael Carter, *Department of Homeland Security*

NP-2: Dark Matter Searches Using Antimatter. Charles Hailey, *Columbia University*.

N1: Instrumentation for Homeland Security I

Monday, Oct. 24 16:00-18:00, Pablo Casals Ballroom
 Session Chair: **Sonya Bowyer**, *Pacific Northwest National Laboratory*

N1-1: A Silicon Compton Imager
 E. A. Wulf, B. F. Philips, J. D. Kurfess, E. I. Novikova, *Naval Research Laboratory, USA*; C. Rowland-Fitzgerald, *Naval Research Lab/ National Research Council, USA*

N1-2: Performance of the Los Alamos Compton Gamma-Ray Imager
 A. S. Hoover, J. P. Sullivan, M. W. Rawool-Sullivan, R. M. Kippen, W. Baird, E. B. Sorensen, S. P. Brumby
Los Alamos National Laboratory, USA

N1-3: Physics-Limited Point Spread Function in a Combined Silicon/Germanium Compton Telescope
 M. Burks, C. Cork, M. Cunningham, L. Fabris, E. Hull, D. Lange, L. Mihailescu, K. Nelson, T. Niedermayr, J. Valentine, K. Vetter, D. Wright
Lawrence Livermore National Laboratory, USA

N1-4: Nuclear Resonance Fluorescence Imaging in Non-Intrusive Cargo Inspection
 W. Bertozzi, *MIT/ Passport Systems, Inc., USA*; R. J. Ledoux, *Passport Systems, Inc., USA*

N1-5: The Challenges of Information Extraction for Muon Radiography.
 N. W. Hengartner, K. Borozdin, A. Klimenko, L. Shultz, W. Priedhorsky
Los Alamos National Laboratory, USA

N1-6: Development of a Directional Gamma Ray Probe
 C. L. Larsson, *Defence R&D Canada Ottawa, Canada*; S. Djefal, *Bubble Technology Industries, Inc., Canada*

N1-7: Multifunctional Pulse Width Analysis in a LED-Stabilized Digital NaI(Tl) Spectrometer
 G. Pausch, J. Stein, A. Kreuels, F. Lueck, N. Teofilov
target Systemelectronic GmbH, Germany

N1-8: Handheld High-Resolution Gamma/Neutron Instrument Utilizing Mercuric Iodide
 K. R. Pohl, *Constellation Technology Corporation, USA*

N2 Data Acquisition and Analysis Systems

Monday, Oct. 24 16:00-18:00, Poinsettia Ballroom, Salon C
 Session Chair: **Nathaniel Bowden**, *Sandia National Laboratories*

N2-1: The Data Acquisition System of the MAGIC-II Telescope
 R. Paoletti^{1,2}, ¹*University of Siena, Italy*; ²*INFN Sezione di Pisa, Italy*
 On behalf of the MAGIC Collaboration

N2-2: The Data Acquisition System of the Compact Muon Solenoid Electromagnetic Calorimeter Test Beam of 2004.
 R. Alemany-Fernandez, *LIP-Lisbon, Portugal*
 On behalf of the CMS Collaboration

N2-3: New Signal Conditioning Architecture for Optimal A/D Conversion in Digital Spectroscopy Setups
 A. Geraci, R. Abbiati, E. Gatti, G. Ripamonti
Politecnico di Milano, Italy

N2-4: A New Statistical Approach for Digital Triggering of Events from Radiation Detectors
 R. Abbiati, S. Scarpaci, A. Geraci, E. Gatti, G. Ripamonti
Politecnico di Milano, Italy

N2-5: High Resolution Digital on-Line Linear Procedure for Timing of Detected Events
 E. Gatti, R. Abbiati, A. Geraci, L. Bertossi, G. Ripamonti
Politecnico di Milano, Italy

N2-6: Verification of the GREAT Total Data Readout System Using a Pseudo Random Pattern Generator.
 P. J. Coleman-Smith, *CCLRC Daresbury Laboratory, United Kingdom*
 On behalf of the GREAT Collaboration

N2-7: Inverse Filter Techniques in Digital Nuclear Signal Processing
 J. Stein^{1,2}, A. Gueorguiev¹, G. Pausch²
¹*target Instruments, Inc., U.S.A.*; ²*target Systemelectronic GmbH, Germany*

N2-8: Estimation of Ballistic Deficits for Ionization Chamber Pulses in Pulse Shaping Amplifiers
 G. A. Kumar, S. L. Sharma, *Indian Institute of Technology, India*; R. K. Choudhury, *Institute of Physics, India*

N3 Instrumentation for Medical and Biological Research

Monday, Oct. 24 16:00-17:30, Magnolia Ballroom
 Session Chair: **James Christian**, *Radiation Monitoring Devices, Inc.*

N3-1: CROSS STRIP HPGc IMAGING DETECTOR – PROCESSING ELECTRONICS for OPERATIONS at 10⁶ CPS
 W. K. Warburton, A. P. Fallu-Labruyere, Y. X. Chu, W. G. Hennig, H. Tan
XIA LLC, USA

N3-2: Prototype Tracking Studies for Proton CT
 H. F. Sadrozinski, J. Feldt, J. Heimann, A. Seiden, D. C. Williams, *Univ. of California Santa Cruz, USA*; V. Bashkirov, R. W. Schulte, *Loma Linda University Medical Center, USA*; M. Bruzzi, D. Menichelli, M. M. Scaringella, *Univ. of Florence, Italy*; G. A. P. Cirrone, G. Cuttone, *INFN Lab. Nat. Sud,*

Italy; N. Randazzo, V. Sipala, D. Lo Presti, *INFN Sezione di Catania, Italy*

N3-3: Results from a First Demonstrator Prototype of a Compton Prostate Probe

C. Lacasta¹, J. Bernabeu¹, G. Llosa¹, P. Modesto¹, N. H. Clinthorne², W. L. Rogers², Y. Dewaraja², L. Zhang², A. Studen³, M. Mikuz³, D. Zontar³, E. Chesi^{4,5}, K. Honscheid⁴, H. Kagan⁴, P. Weilhammer¹
¹*IFIC, CSIC-UVEG, Valencia, Spain*; ²*University of Michigan, USA*; ³*Jozef Stefan Institut, Slovenia*; ⁴*Ohio State University, USA*; ⁵*CERN, Switzerland*

N3-4: Photon-Counting Versus an Integrating CCD-Based Gamma Camera: Important Consequences for Spatial Resolution

F. J. Beekman, G. A. de Vree
University Medical Center Utrecht, The Netherlands

N3-5: Response of a SOI Microdosimeter to a PuBe Neutron Source

M. I. Reinhard¹, I. Cornelius², D. A. Prokopovich¹, A. J. Wroe², A. B. Rosenfeld², V. Pisacane³, J. F. Ziegler³, M. E. Nelson³, F. Cucinotta⁴, M. Zaidler⁵, J. Dicello⁶
¹*Australian Nuclear Science and Technology Organisation, Australia*; ²*University of Wollongong, Australia*; ³*United States Naval Academy, USA*; ⁴*National Aeronautics and Space Administration, USA*; ⁵*Memorial Sloan Kettering Cancer Care Centre, USA*; ⁶*The Johns Hopkins University, USA*

N3-6: The Solid-State Photomultiplier for an Improved Gamma-Ray Detector

C. J. Stapels¹, G. Entine¹, M. R. Squillante¹, F. L. Augustine², J. Christian¹, W. G. Lawrence¹
¹*Radiation Monitoring Devices, USA*; ²*Augustine Engineering, USA*

N4 Solid State Tracking Detectors

Monday, Oct. 24 16:00-18:00, Grand Caribbean Ballroom, Salons 1 & 2
Session Chair: **Ronald Lipton, Fermilab**

N4-1: New Effects Observed in the BaBar Silicon Vertex Tracker: Interpretation and Estimate of Their Impact on the Future Performance of the Detector

S. Majewski, *Stanford University, USA*
On behalf of the BaBar Silicon Vertex Tracker Group

N4-2: The NA60 Vertex Telescope for Particle Tracking in Heavy-Ion and Proton-Nucleus Collisions

E. W. K. Radermacher¹, R. Atzeni², K. Banicz¹, A. David³, M. Floris², J. M. Heuser⁴, M. Keil¹, C. Lourenço³, H. Onishi⁴, R. Shahoyan³, G. Usai²
¹*CERN, Switzerland*; ²*Università di Cagliari and INFN, Italy*; ³*CFIF-Instituto Superior Técnico, Portugal*; ⁴*RIKEN-Institute of Physical and Chemical Research, Japan*

N4-3: The MOS-Type DEPFET Pixel Sensor for the ILC Environment

L. Andricek¹, P. Fischer², F. Giesen², M. Haerter², M. Karagounis³, R. Kohrs³, H. Krueger³, G. Lutz¹, H. G. Moser¹, I. Peric², L. Reuen³, R. H. Richter¹, C. Sandow³, M. Trimpl³, N. Wermes³
¹*MPI fuer Physik, Germany*; ²*University Mannheim, Germany*; ³*University Bonn, Germany*

N4-4: Performance of a DEPFET Prototype Module for the ILC Vertex Detector

N. Wermes¹, L. Andricek², P. Fischer², F. Giesen², M. Haerter², M. Karagounis¹, R. Kohrs¹, H. Krueger¹, G. Lutz³, H.-G. Moser³, I. Peric², L. Reuen¹, R. H. Richter³, C. Sandow¹, M. Trimpl¹
¹*Bonn University, Germany*; ²*Mannheim University, Germany*; ³*MPI Munich, Germany*

N4-5: First Prototype of Planar Edgeless Detectors for the TOTEM Experiment

G. Ruggiero, *CERN, Switzerland*
On behalf of the TOTEM Collaboration

N4-6: Radiation Tolerant Sensing Diodes for CMOS Monolithic Active Pixel Sensors

W. Dulinski, A. Besson, G. Claus, C. Colledani, M. Deveaux, A. Dorokhov, M. Goffe, D. Grandjean, F. Guilloux, S. Heini, A. Himmi, C. Hu, M. Pelliccioli, E. Scopelli, A. Shabetai, M. Szelezniak, I. Valin, M. Winter
IREs, France

N4-7: Performance of a Fast Programmable Active Pixel Sensor Chip Designed for Charged Particle Detection

N. Fourches¹, Y. Degerli¹, G. Deptuch^{2,3}, A. Himmi², Y. Li¹, F. Orsini¹, M. Szelezniak², M. Besançon¹, P. Lutz¹
¹*CEA-Saclay, France*; ²*IN2P3/ULP, France*; ³*Brookhaven National Laboratory, USA*

N4-8: Development of a Full-Size B-Factory Monolithic Active Pixel Detector: the CAP3

M. B. Barbero, *Department of Physics and Astronomy, University of Hawaii, USA*
On behalf of the Belle Pixel Group

N5 Scintillation Detectors I - Halides

Tuesday, Oct. 25 08:00-09:30, Pablo Casals Ballroom
Session Chairs: **Karel Van Eijk, Delft University of Technology**
Kanai Shah, RMD

N5-1, invited: Recent Developments on La-Halide Scintillators

P. Dorenbos, G. Bizarri, C. W. E. van Eijk, J. T. M. de Haas
Delft University of Technology, The Netherlands

N5-2: Contamination Studies of Lanthanum Halide Scintillators

B. D. Milbrath, R. C. Runkle, T. W. Hossbach, W. R. Kaye, E. A. Lepel, B. S. McDonald, J. I. McIntyre, E. Smith
Pacific Northwest National Laboratory, USA

N5-3: Novel High-Performance Lanthanum Halide-Based Solid Solution Scintillators for Gamma Radiation Detection

L. Clarke, J. Williams, S. J. Duclos, A. M. Srivastava, H. Comanzo, M. C. Hill, S. M. Loureiro
General Electric, USA

N5-4: LaBr₃:Pr³⁺ - a New Red-Emitting Scintillator

J. Glodo, E. V. D. van Loef, W. M. Higgins, K. S. Shah
Radiation Monitoring Devices, Inc., USA

N5-5: Cerium Doped Lutetium Iodide Scintillators

K. S. Shah¹, J. Glodo¹, W. Higgins¹, E. van Loef¹, W. W. Moses², S. E. Derenzo², M. R. Squillante¹, G. Entine¹

¹RMD, USA; ²E. O. Lawrence Berkeley National Laboratory, USA

N5-6: Comparison of a Large Volume CdZnTe Detector with a LaBr-3 Scintillation Detector

A. Syntfeld¹, R. Arlt², P. Dvornyak², V. Gostilo³, Z. He⁴, A. Loupilov³, M. Morszynski¹, M. Swoboda²

¹Soltan Institute for Nuclear Studies, Poland; ²International Atomic Energy Agency, Austria; ³Baltic Scientific Instruments, Latvia; ⁴University of Michigan, USA

N6 Neutron Imaging and Radiography

Tuesday, Oct. 25 08:00-10:00, Poinsettia Ballroom, Salon C

Session Chair: **R. Downing**, *National Institute of Standards and Technology*

N6-1: Design and Expected Performance of a Thermal Neutron Imaging Facility at the NC State University PULSTAR Reactor

K. K. Mishra, A. I. Hawari, V. H. Gillette

North Carolina State University, USA

N6-2: High-Energy Neutron Imaging Development at LLNL

J. Hall, B. Rusnak, S. Shen

Lawrence Livermore National Laboratory, USA

N6-3: Development of the Fast Neutron Imaging Telescope (FNIT)

U. Bravar¹, P. J. Bruillard¹, E. O. Flueckiger², J. R. Macri¹, M. L. McConnell¹, M. R. Moser², J. M. Ryan¹

¹University of New Hampshire, USA; ²University of Bern, Switzerland

N6-4: A New Ceramic Scintillator for Neutron Detection: CaF₂:Eu²⁺/6LiF

J. Glodo¹, H. Lingertar², C. Brecher², K. S. Shah¹, A. Lempicki²

¹Radiation Monitoring Devices, Inc., USA; ²Alem Associates, USA

N6-5: Demonstration of a Directional Fast Neutron Detector*

P. E. Vanier, *Brookhaven National Laboratory, USA*; L. Forman, *Ion Focus Technology, USA*

N6-6: Neutron Collimation with Microchannel Plates: Calibration of Existing Technology and near Future Possibilities

A. S. Tremsin¹, R. G. Downing², D. F. R. Mildner³, W. B. Feller³, D. S. Hussey², D. L. Jacobson²

¹UC Berkeley, USA; ²Institute of Standards and Technology, USA; ³NOVA Scientific, Inc., USA

N6-7: Thermal Neutron Detection with a High Pressure Gas Electron Multiplier

C. W. E. van Eijk, R. W. Hollander, R. Kreuger, T. L. van Vuure
Delft University of Technology, Netherlands

N6-8: Neutron Tomography of Ginseng Root in Soil at HANARO

S. W. Lee, C. M. Sim, *Korea Atomic Energy Research Institute, South Korea*; H. H. Kim, B. J. Seong, *Geumsan Agricultural Development and Technology Center, South Korea*

N7 Nuclear Techniques for Homeland Security

Tuesday, Oct. 25 08:00-10:00, Magnolia Ballroom

Session Chair: **Anthony Peurrung**, *Pacific Northwest National Laboratory*

N7-1: Analysis of Spectroscopic Radiation Portal Monitor Data Using Principle Component Analysis

R. C. Runkle, M. F. Tardiff, L. E. Smith

Pacific Northwest National Laboratory, USA

N7-2: Signatures and Detection Algorithms for Identification of Point Source Signatures.

D. L. Stephens, Jr., A. J. Peurrung, R. C. Runkle, D. K. Carlson, A. Seifert, T. Mercier

Pacific Northwest National Laboratory, USA

N7-3: Neutron Interrogation for Threat Interdiction: Technical Challenges

W. L. Raas, B. W. Blackburn, E. M. Boyd, G. Kohse, R. C. Lanza
Massachusetts Institute of Technology, USA

N7-4: Development of a System to Detect Fissile Material Utilizing Accelerator-Generated Low Energy Neutrons

B. W. Blackburn¹, J. A. Bernard¹, D. Dietrich², L.-W. Hu¹, G. E. Kohse¹, R. C. Lanza¹, W. Stoeffl²

¹Massachusetts Institute of Technology, US; ²Lawrence Livermore National Laboratory, USA

N7-5: The Nuclear Car Wash: Recent Results with 7 MeV Neutron Interrogation of Cargo Containers to Detect SNM

D. Slaughter, M. Accatino, A. Bernstein, J. Church, M.-A. Descalle, T. Gosnell, J. Hall, A. Loshak, D. Manatt, J. MaugerEric, T. Moore, E. Norman, B. Pohl, D. Petersen, J. Pruet, S. Prussin, R. Walling, S. Asztalos

Lawrence Livermore National Laboratory, US

N7-6: Gamma Ray Interrogation for SNM: Fluorescence and Photofission

D. K. Wehe, H. Yang, *University of Michigan, USA*

N7-7: The Use of Tagged 14 MeV Neutron Beams for the Detection of Illicit Materials in Land and Sea Transportation

G. Nebbia, M. Lunardon, S. Pesente, S. Moretto, G. Viesti, *Istituto Nazionale di Fisica Nucleare, Italy*; A. Fontana, A. Zenoni, M. Cinausero, *I.N.F.N., Italy*; S. Blagus, K. Nad, D. Sudac, J. Obodhas, V. Valkovic, *I.R.B., Croatia*

N7-8: Using the Method of Neutron Back Scattering Imaging to Detect Hidden Explosives and Land Mines

V. R. Bom, C. W. van Eijk

Delft University of Technology, Netherlands

N8 Computing and Software for Experiments I: Data Processing and Analysis

Tuesday, Oct. 25 08:00-10:00, Grand Caribbean Ballroom, Salons 1 & 2

Session Chair: **Paolo Calafiura**, *Lawrence Berkeley National Laboratory*

N8-1, invited: The ROOT System: Status and Perspectives

R. Brun, *CERN, Switzerland*

N8-2: High Energy Physics Data Analysis with Gene Expression Programming

L. Teodorescu, *Brunel University, UK*

N8-3: Identification and Reconstruction of Muons in the ATLAS Detector

S. M. Goldfarb, *University of Michigan, USA*

On behalf of the ATLAS Collaboration

N8-4: Reconstruction of Electrons with the Gaussian-Sum Filter in the ATLAS Inner Detector

T. M. Atkinson, *The University of Melbourne, Australia*

On behalf of the ATLAS Collaboration

N8-5: Calibration Software for the Atlas Monitored Drift Tube Chambers

D. Orestano, *Universita di Roma Tre, Italia*

On behalf of the ATLAS Collaboration

N8-6: Experience with ATLAS Offline Software to Analyze Real Data from the Combined Test Beam

A. Farilla, *I.N.F.N. Roma III, Italy*; M. Gallas, *CERN, Switzerland*

N8-7: The CMS Trigger Supervisor

I. Magrans

Institute for High Energy Physics, Austrian Academy of Sciences, Austria

N8-8: Overview of the High-Level Trigger Electron and Photon Selection for the ATLAS Experiment at the LHC

R. Goncalo, *Royal Holloway University of London, UK*

On behalf of the ATLAS High-Level-Trigger Group

N9 Photodetectors and Radiation Imaging I

Tuesday, Oct. 25 08:00-10:00, Grand Caribbean Ballroom, Salon 3

Session Chair: Klaus Ziock, *LLNL*

N9-1: Silicon Photomultiplier (SiPM), Recent Development and Study

V. Saveliev, *Obninsk State University, Russia*

N9-2: The Silicon Photomultiplier: Status of the Front-Illuminated and Back-Illuminated Developments of a Novel Photon Detector

R. Mirzoyan¹, N. Otte¹, D. Boris², H.-G. Moser^{1,3}, M. Teshima¹

¹Max-Planck-Institute for Physics, Germany; ²Moscow Engineering and Physics Institute, Russia; ³Semiconductor Laboratory at MPI for Physics and MPI for Extraterrestrial Physics, Germany

N9-3: A Study of Silicon Photomultipliers

N. Pavlov, G. Maehlum, D. Meier, *Ideas ASA, Norway*

N9-4: High Efficiency Detection of Argon Scintillation Light of 128nm Using LAAPDs

R. Chandrasekharan, *ETH Zurich, Switzerland*

On behalf of the ArDM liquid argon

N9-5: Production of HPDs for the LHCb Experiment

F. Muheim, *University of Edinburgh, United Kingdom*

On behalf of the LHCb RICH Collaboration

N9-6: 18mm Diameter HPDs with GaAsP Photocathode from Hamamatsu for the MAGIC-II Air Cherenkov Imaging Gamma Ray Telescope

R. Mirzoyan, M. Hayashida, E. Lorenz, M. Teshima

Max-Planck-Institute for Physics, Germany

N9-7: MicroHole & Strip Plate Based Photosensor Operating in Ar-Xe Mixtures

E. D. Freitas¹, J. F. Veloso^{1,2}, A. Breskin³, R. Chechik³,

J. M. dos Santos¹

¹Universidade de Coimbra, Portugal; ²Universidade de Aveiro, Portugal;

³The Weizmann Institute of Science, Israel

N9-8: R&D of a New 1-Dimensional Gamma-Ray Position Sensor Using Scintillators Coupled to a Si Strip Detector

T. Itoh, I. Takahashi, M. Kokubun, S. Hirakuri, H. Takahashi,

T. Yanagida, R. Miyawaki, K. Makishima, *The University of Tokyo,*

Japan; T. Takahashi, T. Tanaka, K. Nakazawa, T. Takahashi, *Institute*

of Space and Astronautical Science, Japan; T. Honda, *Ohyo Koken*

Kogyo Co., Ltd, Japan

N10 Astrophysics and Space Instrumentation I

Tuesday, Oct. 25 10:20-11:50, Poinsettia Ballroom, Salon C

Session Chairs: Natalie Roe, *Lawrence Berkeley National Laboratory*

William Craig, *Lawrence Livermore National Laboratory*

N10-1: The Gamma Ray Large Area Space Telescope:an Astroparticle Mission to Explore the High Energy Sky

R. Bellazzini, *INFN Pisa, Italy*

On behalf of the GLAST collaboration

N10-2: The GLAST Tracker Front End Electronics

M. G. Ziegler, *Santa Cruz Institute for Particle Physics, US*

On behalf of the GLAST LAT Collaboration

N10-3: Production, Calibration and Environmental Testing of GLAST CsI Calorimeter Flight Modules

A. Chekhtman^{1,2}, J. Ampe³, P. V. Dizon⁴, J. E. Grove¹,

W. N. Johnson¹, B. E. Leas⁵, W. C. Raynor⁴, D. P. Sandora¹,

M. S. Strickman¹

¹NRL, USA; ²George Mason University, USA; ³Praxis, USA; ⁴Swales

Aerospace, USA; ⁵Interface Control Systems, USA

N10-4: High Resolution CdTe Pixel Detectors for Hard X-Ray and Gamma-Ray Observations

T. Takahashi^{1,2}, T. Kishishita^{1,2}, T. Mitani^{1,2}, K. Nakazawa¹,

K. Oonuki^{1,2}, G. Sato^{1,2}, T. Tanaka^{1,2}, S. Watanabe¹, H. Tajima³,

Y. Fukazawa⁴, M. Nomachi⁵, M. Kokubun¹, Y. Terada⁶, Y. Kuroda⁷

¹Institute of Space and Astronautical Science, JAXA, Japan; ²University

of Tokyo, Japan; ³Stanford Linear Accelerator Center, USA; ⁴Hiroshima

University, Japan; ⁵Osaka University, Japan; ⁶RIKEN, Japan;

⁷Mitsubishi Heavy Industries, Japan

N10-5: Test of Thick CZT Detectors with and Without Steering Grids

I. V. Jung¹, J. Perkins¹, A. B. Garson¹, H. Krawczynski¹, M. Groza²,

A. Burger², J. L. Matteson³, M. R. Pelling³, R. T. Skelton³,

S. Komarov¹, L. Sobotka¹

¹Washington University, USA; ²Fisk University, USA; ³UCSD, USA

N10-6: CZT Detectors Read Out with the RENA-2 ASIC

J. L. Matteson, R. T. Skelton, M. R. Pelling, S. Suchy, *University of California, San Diego, CA*; V. Cajipe, M. Clajus, S. Hayakawa, T. Tümay, *NOVA R&D, Inc., CA*

N11 Data Acquisition and Analysis Systems II

Tuesday, Oct. 25 10:20-11:50, Magnolia Ballroom

Session Chair: **Nicholas Mascarenhas**, *Sandia National Laboratories, California*

N11-1: Radiation Spectroscopy Using Seeded Localized Averaging (“SLA”)

V. T. Jordanov, *Yantel, LLC, USA*

N11-2: The Performance of the Online System of the PHENIX Experiment in the RHIC Run 5

M. L. Purschke, *Brookhaven National Lab, USA*

On behalf of the PHENIX Collaboration

N11-3: Performance of the Distributed Central Analysis in BaBar

R. K. Mommsen¹, W. Gradl², A. Khan³, W. Roethel¹, D. Smith⁴

¹University of California at Irvine, US; ²University of Edinburgh, UK; ³Brunel University, UK; ⁴SLAC, US

N11-4: Data Compression for Silicon Detectors in Real Time

A. Y. Sukhanov, *Brookhaven National Laboratory, USA*

N11-5, invited: The ALICE Data Challenge

P. Vande Vyvre¹, T. Anticic², W. Carena¹, F. Carena¹, S. Chapeland¹, O. Cobanoglu^{3,4}, E. Denes⁵, R. Divia¹, U. Fuchs¹, T. Kiss⁵, J.-C. Marin¹, I. Makhlyueva¹, F. Ozok³, K. Schossmaier¹, C. Soos¹, A. Vascotto¹, S. Vergara⁶

¹CERN, Switzerland; ²Ruder Boskovic Institute, Croatia; ³Istanbul University, Turkey; ⁴INFN, Italy; ⁵KFKI-RMKI, Hungary; ⁶Benemerita Universidad Autonoma de Puebla, Mexico

N11-6: The FINUDA Data Acquisition System

S. Piano, *INFN, ITALY*

On behalf of the FINUDA collaboration

N12 Scintillation Detectors II - Materials & Applications

Tuesday, Oct. 25 11:00-12:30, Grand Caribbean Ballroom, Salons 1 & 2

Session Chairs: **Marek Moszynski**, *Soltan Institute for Nuclear Studies*
Pieter Dorenbos, *Delft University of Technology*

N12-1: Gamma-Ray Spectroscopy with LaBr3:Ce Scintillator Readout by a Silicon Drift Detector

C. Fiorini^{1,2}, A. Gola^{1,2}, M. Zanchi^{1,2}, P. Lechner³, H. Soltau³

¹Politecnico di Milano, Italy; ²INFN, Italy; ³PN Sensor GmbH, Germany

N12-2: Improving Energy Resolution of Scintillation Detectors

G. Chen

L-3 Communications, Security & Detection Systems, USA

N12-3: Development of Inorganic Thermal-Neutron Scintillators

C. W. E. Van Eijk, J. T. M. De Haas, P. Dorenbos, *Delft University*

of Technology, The Netherlands; K. W. Kraemer, H. U. Guedel, *University of Bern, Switzerland*

N12-4: High Resolution Calorimetry with PWO-II

R. W. Novotny, K. Makonyi, M. Thiel, W. Döring, C. Salz, *2nd Physics Institute, University Giessen, Germany*; M. Steinacher, *University Basel, Switzerland*; A. Reiter, *University Mainz, Germany*; D. Melnichuk, B. Zwieglinski, *SINS, Poland*

N12-5: A Damage and Recovery Study for Lead Tungstate Crystal Samples from BTCP and SIC

J. Chen, L. Zhang, R.-Y. Zhu
California Institute of Technology, USA

N12-6: A Further Study on Large Size LSO and LYSO Crystal Samples

R.-Y. Zhu, J. Chen, L. Zhang, *Caltech, USA*

N13 Trigger and Front-End Systems

Tuesday, Oct. 25 10:20-11:50, Grand Caribbean Ballroom, Salon 3

Session Chairs: **Friedrich Wulf**, *Hahn-Meitner-Institut Berlin*
Yasuo Arai, *KEK, High Energy Accelerator Research Organization*

N13-1: A VLSI Processor for Fast Track Finding Based on Content Addressable Memories

A. Annovi^{1,2}, A. Bardi², M. Bitossi^{1,2}, R. Carosi², S. Chiozzi^{3,4}, C. Damiani^{3,4}, M. Dell’Orso^{1,2}, P. Giannetti², P. Giovacchini^{1,2}, G. Marchiori⁴, I. Pedron^{3,5}, M. Piendibene², L. Sartori^{3,4}, F. Schifano^{3,4}, B. Simoni¹, F. Spinella², S. Torre², R. Tripiccion^{3,4}
¹University of Pisa, Italy; ²INFN Sezione di Pisa, Italy; ³University of Ferrara, Italy; ⁴INFN Sezione di Ferrara, Italy; ⁵Atmel Roma, Italy

N13-2: Track Clustering and Vertexing Algorithm for L1 Trigger

G. I. Cancelo, *Fermilab, USA*

N13-3: An Integrated Front-End Readout and Feature Extraction System for the BaBar Drift Chamber

J. Zhang, *Physics Dept., University of Colorado, Boulder, CO, USA*
On behalf of the BaBar Collaboration

N13-4: Design and Performance of the Front-End Electronics of the LHCb Muon Detector

W. Bonivento¹, A. Lai¹, S. Cadeddu¹, V. Deleo¹, C. Deplano¹, P. Jarron², F. Anghinolfi², W. Riegler², B. Schmid², A. Katchouck³, F. VinciDosSantos², D. Moraes², N. Pelloux², D. Rodeigues², V. Bocci¹, R. Nobrega¹

¹I.N.F.N., Italy; ²CERN, CH; ³P.N.P.I., Russia

N13-5: The Electromagnetic Calorimeter Trigger System for the AMS-2 Experiment

F. Spinella, C. Vannini, F. Pilo, M. Piendibene, E. Pedreschi, C. Magazzu, M. Incagli, S. Galeotti, S. Di Falco, F. Cervelli, *italian institute for nuclear physics - section of Pisa, italy*; J. P. Vialle, S. Rosier-Lees, J. Pochon, R. Kossakowski, R. Hermel, C. Goy, G. Cougolat, G. Coignet, F. Cadoux, C. Adloff, *Laboratoire d’Annecy-le-Vieux de Physique des Particules, LAPP, france*; H. L. Zhuang, Z. Q. Z. Q. Yu, M. Yang, C. G. Yang, X. W. Tang, Y. S. Lu, Z. H. Li, G. M. Chen, H. S. Chen, *Institute of High Energy Physics, IHEP, Chinese Academy of Sciences, China*

N13-6: A VLSI Full Custom ASIC Front End for the Optical Module of NEMO Underwater Neutrino Detector

D. Lo Presti, *Università degli Studi di Catania, Italy*
On behalf of the NEMO collaboration

N14 NSS Poster I

Tuesday, Oct. 25 14:30-16:00, Grand Caribbean East & South Foyer
Session Chairs: **Ethan Hull**, *PHDs Co.*

Morgan Burks, *Lawrence Livermore National Laboratory*

Instrumentation for Homeland Security

N14-1: Comparison of LaBr₃ and NaI(Tl) Scintillators for Radioactive Isotope Identification Devices

B. D. Milbrath, R. T. Kouzes, J. I. McIntyre, M. L. Woodring
Pacific Northwest National Laboratory, USA

N14-2: Low Cost Neutron Detector Based on ⁶Li Ionization Chamber with Integrated Body-Moderator

K. D. Ianakiev, K. Chung, M. F. Makela, M. D. Swinhoe
Los Alamos National Laboratory, USA

N14-3: Radiation Detection Evaluation: RadAssessor Characterizes Integrated Findings

S. L. Seitz, J. M. Blackadar, S. K. Almecci, M. A. Nelson, G. H. Gardner, M. Rawool-Sullivan, B. G. Rees, J. A. Bounds, W. H. Casson, S. E. Garner, C. J. Sullivan
Los Alamos National Laboratory, USA

N14-4: Spectroscopic Portal Monitor Prototype

K. McCormick, D. Stromswold, J. Ely, J. Schweppe, R. Kouzes
Pacific Northwest National Lab, USA

N14-5: Validation of Computer Models for Homeland Security Purposes

J. E. Schweppe, J. H. Ely, R. T. Kouzes, R. J. McConn, Jr., R. T. Pagh, S. M. Robinson, E. R. Siciliano
Pacific Northwest National Laboratory, USA

N14-6: Wavelet Analysis of Sodium Iodide Spectra

C. J. Sullivan, M. E. Martinez, S. E. Garner
Los Alamos National Laboratory, USA

N14-7: Fusing Signatures of Different Physical Processes in Muon Tomography

A. V. Klimenko, *Los Alamos National Laboratory, USA*

N14-8: Temperature Behavior of Doped NaI(Tl) Scintillators and Its Impact on Pulse Height Analysis Instrumentation

K. D. Ianakiev, M. E. Abhold, B. S. Alexandrov, J. M. Audia, M. C. Browne, H. Nguyen
Los Alamos National Laboratory, USA

N14-9: Advanced Large-Area Plastic Scintillators (ALPS)

D. V. Jordan, B. D. Geelhood, P. L. Reeder, D. L. Stephens, G. A. Warren
Pacific Northwest National Laboratory, USA

N14-10: First-Generation Hybrid Compact Compton Imager

M. F. Cunningham¹, M. Burks¹, C. Cork¹, L. Fabris¹, D. Lange¹,

T. Krings², E. Hull¹, L. Mihailescu¹, K. Nelson¹, T. Niedermayr¹, D. Protic², J. Valentine¹, K. Vetter¹, D. Wright¹

¹*Lawrence Livermore National Laboratory, USA*; ²*Forschungszentrum Jlich GmbH, Germany*

N14-11: Deuteron-Induced Gamma Production in Gas Targets and the Design of a High Pressure Gas Target for Fast Neutron Resonance Radiography

W. L. Raas, B. W. Blackburn, E. M. Boyd, G. Kohse, R. C. Lanza
Massachusetts Institute of Technology, USA

Nuclear Techniques for Homeland Security

N14-12: Spectroscopic and Non-Spectroscopic Radiation Portal Applications to Border Security

R. T. Kouzes, J. H. Ely, B. D. Milbrath, J. E. Schweppe, D. C. Stromswold, E. R. Siciliano
Pacific Northwest National Laboratory, USA

N14-13: H-L Curve Method for Material Discrimination of Dual Energy X-Ray Inspection System

G. W. Zhang, L. Zhang, Z. Q. Chen
Tsinghua University, China

N14-14: Comparison of Active Interrogation Techniques

C. E. Moss, C. L. Hollas, G. W. McKinney, W. L. Myers
Los Alamos National Laboratory, USA

N14-15: Cosmic Ray Muon Tomography for Shielded Nuclear Contraband Detection

L. J. Schultz, *Los Alamos National Laboratory, USA*
On behalf of the Muon Tomography Collaboration

N14-16: An Associated Particle Imaging System in a Field-Deployable Form Factor

M. Y. Lee¹, G. W. Carriveau¹, G. M. Clements¹, E. Furman¹, J. P. Hurley², J. S. Kocher¹, D. T. Kuo¹, R. Logsdon¹, S. Thordarson¹, J. R. Tinsley¹, L. K. Warman¹
¹*Dynamics Technology, Inc., USA*; ²*Special Technologies Lab, USA*

N14-17: Evaluation Framework for Search Instruments

G. Warren, L. E. Smith, M. W. Cooper, W. Kaye
Pacific Northwest National Lab, USA

N14-18: Development of a Tagged Neutron Beams for the EURITRACK (EUROpean Illicit TRAfficking Countermeasures Kit) Project

G. Nebbia, D. Fabris, M. Lunardon, S. Moretto, S. Pesente, G. Viesti, *Istituto Nazionale di Fisica Nucleare, Italy*; M. Cinausero, *INFN Lab. Naz. di Legnaro, Italy*

N14-19: A Comparison of Techniques for Boosting Point Sources Using Imaging and Non-Imaging Drive-Around Gamma-Ray Detectors

R. Wurtz, K. P. Ziock, L. Fabris, K. E. Nelson, D. Dietrich
Lawrence Livermore National Laboratory, USA

N14-20: Spectra Observed Following Cargo Irradiation

J. Pruet¹, M.-A. Descalle¹, S. G. Prussin², J. Hall¹
¹*Lawrence Livermore National Laboratory, U.S.A.*; ²*UC Berkeley, U.S.A.*

N14-21: Development of Delayed-Neutron Activation Analysis at NIST

R. M. Lindstrom, R. G. Downing

National Institute of Standards and Technology, U.S.A.

Analog and Digital Circuits

N14-22: A Programmable Clock Distribution Chip for LHCb Calorimeter

V. Tocut, D. Breton, C. Beigbeder Beau

CNRS - IN2P3 - LAL Orsay, France

N14-23: Fast Front-End Electronics for the Readout of CdZnTe Sensors

D. Moraes¹, E. Nygard², P. Weilhammer^{1,3}, A. Rudge^{1,4}

¹CERN, Switzerland; ²Interon AS, Norway; ³University of Perugia, Italy;

⁴Ohio State University, USA

N14-24: A 100Ms/s 10 Bits Two Step Flash ADC with Auto Zero CMOS Input Comparators

V. Tocut, C. de la Taille, G. Martin chassard, L. Raux, R. Chiche

CNRS - IN2P3 - LAL, France

N14-25: Development of a Pipeline ADC Chip for Gas Electron Multiplier Readout

T. Fusayasu, Y. Tanaka, *Nagasaki Institute of Applied Science,*

Japan; H. Hamagaki, Y. Yamaguchi, *The University of Tokyo, Japan*

N14-26: High Stability Measurement System for the Olimpo IR Calibration Source

M. Fesquet, P. Abbon, D. Yvon, A. Delbart

CEA/Saclay, France

N14-27: Step Response Preamplifier for Scintillation and Proportional Detectors

K. D. Ianakiev, M. B. Abhold, B. S. Alexandrov, J. Audia,

M. C. Browne, H. Nguyen

Los Alamos National Laboratory, USA

N14-28: A Method of a Repetitive Sampling Measurement for OTDR Considering a Ghost Effect to a Short-Range Measurement with a Short-Length Fiber

T. Lee, E. Kim, J. Park, *Seoul National University, Korea*

N14-29: Development and EQ Test of KNICS RPS Prototype

J.-H. Park, D.-Y. Lee, C.-H. Kim

Korea Atomic Energy Research Institute, Korea

N14-30: High-Speed Position Encoding System for the TPC with Micro Pixel Chamber Readout

H. Kubo¹, K. Hattori¹, K. Miuchi¹, T. Nagayoshi², H. Nishimura¹,

Y. Okada¹, R. Orito³, H. Sekiya¹, A. Takada¹, T. Tanimori¹, K. Ueno¹

¹Kyoto University, Japan; ²Waseda University, Japan; ³Kobe University, Japan

N14-31: Initial Performance of the Two-Dimensional 4096-Channel Amplifier Array

H. Ikeda¹, T. Hiruta^{1,2}, K. Tamura^{1,2}, K. Nakazawa¹, T. Takashima¹,

T. Takahashi^{1,2}, T. Kiyuna³, M. Yamamoto³, R. Ohno³

¹ISAS, JAXA, Japan; ²The University of Tokyo, Japan; ³Acronad Co., Ltd., Japan

N14-32: A Mixed Continuous-Pulsed Reset Technique for Digitized Preamplifiers of Radiation Signals

F. Zocca^{1,2}, A. Pullia^{1,2}, C. Boiano², R. Bassini²

¹University of Milano, Italy; ²INFN, Italy

N14-33: Single-Transistor Option for High-Resolution γ -Ray Spectroscopy in Hostile Environments

A. Pullia^{1,2}, F. Zocca^{1,2}, C. Cattadori²

¹University of Milano, Italy; ²INFN, Italy

N14-34: A 12-Channel CMOS Preamplifier-Shaper-Discriminator ASIC for APD and Gas Counters

J. Y. Yeom¹, I. Defendi², H. Takahashi¹, K. Zeitelhack², K. Fujita¹,

M. Nakazawa¹, H. Murayama³

¹The University of Tokyo, Japan; ²FRM², Germany; ³National Institute of Radiological Sciences, Japan

N14-35: A Compact Calibration Circuit for Multi-Channel Detector Front-Ends

A. Rivetti, *Istituto Nazionale di Fisica Nucleare, Italy*

N14-36: Cryogenic Behaviour of Optoelectronic Devices for the Transmission of Analogue Signals via Fiber Optics

V. Grassi, D. V. Camin, *University and INFN, Italy*

N14-37: Ultra-Fast Low-Noise Preamplifier for Bulky HPGe γ -Ray Sensors

A. Pullia^{1,2}, F. Zocca^{1,2}, G. Pascovici³, C. Boiano², R. Bassini²

¹University of Milano, Italy; ²INFN, Italy; ³University of Koeln, Germany

N14-38: Time-Multiplexing of Signals Using Highly Integrated Digital Delay: an FPGA Implementation

V. Bocci, G. Chiodi, F. Iacoangeli, W. Rinaldi, *INFN, Italy*

N14-39: Serial Powering of ATLAS Silicon Strip Sensors

E. G. Villani, M. Weber, *Rutherford Appleton Laboratory,*

UK; M. Lammentausta, *Polytechnic Kuopio, Finland*

N14-40: A 8-Channels Low-Noise CMOS Readout Circuit for Silicon Detectors with on-Chip Front-End JFET

C. Fiorini^{1,2}, M. Porro¹, T. Frizzi^{1,2}

¹Politecnico di Milano, Italy; ²INFN, Italy

N14-41: A Baseline Holder for CMOS Readout Circuits with Feedback Extension to the Charge Preamplifier

C. Fiorini^{1,2}, T. Frizzi^{1,2}

¹Politecnico di Milano, Italy; ²INFN, Italy

N14-42: Sampling Pulses for Optimal Timing

A. Bousselham, C. Bohm, *University of Stockholm, Sweden*

N14-43: The High Voltage Distribution System for the Hybrid Photodetector Arrays of Rich1 and Rich2 at Lhcb

C. Arnaboldi¹, T. Bellunato¹, T. Gys², E. Panzeri¹, G. Pessina¹,

D. Piedigrossi²

¹INFN Istituto Nazionale di Fisica Nucleare, Italy; ²CERN, Switzerland

N14-44: A Front-End Readout for Micro Bolometers Having Sub-Nano-Volt Noise Floor

C. Arnaboldi, G. Pessina

INFN Istituto Nazionale di Fisica Nucleare, Italy

Astrophysics and Space Instrumentation

N14-45: Performance Study of Optical Imaging Capillary Plate Gas Detector with Synchrotron Radiation

F. Tokanai, H. Sakurai, S. Gunji, *Yamagata University, Japan*; H. Toyokawa, M. Suzuki, H. Tanida, *SPring⁻⁸, Japan*; S. Kishimoto, *KEK, Japan*

N14-46: Dynamic Localization of Vapour Fraction in Ariane 5 Inducer by X-Rays Tomography

W. Hassan, S. Legoupil, D. Chambellan, *Commissariat à l'énergie atomique, France*; S. Barre, *Institut National Polytechnique de Grenoble, France*

N14-47: Empirical Formulae for Hypervelocity Impact with a Piezoelectric Element and Their Application to a New Real Time Dust Detector

T. Miyachi, M. Fujii, N. Hasebe, G. Kuraza, *Waseda University, Japan*; K.-I. Nogami, *Dokyo University School of Medicine, Japan*; T. Iwai, *University of Tokyo, Japan*; S. Sasaki, *National Astronomical Observatory of Japan, Japan*; H. Ohashi, *Tokyo University of Marine Science and Technology, Japan*; S. Hasegawa, H. Yano, *Japan Aerospace Exploration Agency, Japan*; H. Shibata, *Kyoto-University, Japan*; E. Grün, R. Srama, *Max-Planck-Institut für Kernphysik, Germany*; N. Okada, T. Tou, *Honda Electronics Co. Ltd., Japan*

N14-48: Compact Combined Ion and Neutron Spectrometer (CINS) for Space Application

R. H. Maurer¹, C. J. Zeitlin², D. K. Haggerty¹, D. R. Roth¹, J. O. Goldsten¹

¹The Johns Hopkins Applied Physics Laboratory, MD; ²E. O. Lawrence Berkeley National Laboratory, USA

N14-49: IDeF-X V1.0: Performances of a New CMOS Multi Channel Analogue Readout ASIC for Cd(Zn)Te Detectors

O. Gevin, F. Lugiez, O. Limousin, B. Dirks, E. Delagnes *CEA, France*

N14-50: The Underwater Power and Communications Hub of the ANTARES Neutrino Telescope

M. Anghinolfi¹, A. Calzas², B. Dinkespiler², S. Cuneo¹, S. Favard², G. Hallewell², M. Jaquet², P. Vernin³

¹INFN Sezione di Genova, Italy; ²CPM (CNRS/IN2P3), Université de la Méditerranée, France; ³DSM-DAPNIA, CEA Saclay, France

N14-51: Recent Achievements of Si/CdTe Semiconductor Compton Telescopes

S. Watanabe¹, T. Tanaka^{1,2}, K. Oonuki^{1,2}, S. Takeda^{1,2}, K. Nakazawa¹, T. Takahashi^{1,2}, H. Tajima³, Y. Fukazawa⁴, M. Nomachi⁵, M. Kokubun², Y. Terada⁶, M. Onishi⁷, Y. Kuroda⁷

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N14-52: Development of Alpha Ray Detector (ARD) for Mapping of Rn and Po On the Lunar Surface Onboard Japanese Lunar Mission SELENE

T. Takashima, J. Nishimura, *ISAS/JAXA, Japan*; T. Kashiwagi, S. Okuno, K. Yoshida, *Kanagawa Univ., Japan*; K. Mori, *CLEAR PULSE Co., Japan*; M. Itoh, K. Furuichi, *Kobe Univ., Japan*

N14-53: Electron-Tracking Compton Telescope with a Gaseous TPC

R. Orito¹, K. Hattori², H. Kubo², K. Miuchi², T. Nagayoshi³, H. Nishimura², Y. Okada², H. Sekiya², A. Takada², A. Takeda⁴, T. Tanimori²

¹Kobe University, Japan; ²Kyoto University, Japan; ³Waseda University, Japan; ⁴ICRR, Japan

N14-54: Pixelated CdZnTe(CdTe) Detectors for the Miniature X- and Gamma-Ray Sensor on ASIM

I. Kuvvetli, C. Budtz-Jørgensen, *Danish National Space Center, Denmark*; A. Spilde, *University of Bergen, Norway*; A. R. Berlanga, *University of Valencia, Spain*

N14-55: Cross Delay Line Detectors for High Time Resolution Astronomical Polarimetry and Biological Fluorescence Imaging

O. Siegmund, J. Vallerger, P. Jelinsky, *University of California, Berkeley, USA*; M. Redfern, *National University of Ireland, Ireland*; X. Michalet, S. Weiss, *University of California, Los Angeles, USA*

N14-56: The Focal Plane Instrumentation of the ROSITA Telescope

E. Pfeffermann¹, A. Deresch¹, P. Friedrich¹, R. Hartmann¹, G. Hartner¹, G. Hasinger¹, S. Herrmann¹, H. Hippmann¹, E. Kendziorra², G. Kettenring¹, W. Kink¹, N. Meidinger¹, S. Mueller¹, P. Predehl¹, C. Rohe¹, L. Strueder¹

¹Max Planck Institut fuer extraterrestrische Physik, Germany; ²Institut fuer Astronomie und Astrophysik der Universitaet Tuebingen Abteilung Astronomie, Germany

N14-57: Perspectives of New Scintillators for Planetary Gamma-Ray Spectroscopy

B. Pirard, C. d'Uston, S. Maurice, O. Gasnault *Centre d'Etude Spatiale des Rayonnements (CNRS-UPS), France*

N14-58: Evaluation of 5 mm-Thick CdTe Substrates from the Company ACRORAD

A. B. Garson III, J. Perkins, I. Jung, H. Krawczynski *Washington University in St. Louis, USA*

N14-59: Progress Towards the XEUS Wide Field Imager

P. H. Lechner, *PNSensor GmbH, Germany*; O. Hälker, S. Herrmann, L. Strüder, J. Treis, S. Wölfel, *MPI für extraterrestrische Physik, Germany*; L. Andricsek, G. Lutz, R. H. Richter, *MPI für Physik, Germany*; P. Fischer, M. Harter, I. Peric, *Universität Mannheim, Germany*; R. Kohrs, H. Krüger, M. Trimpl, N. Wermes, *Universität Bonn, Germany*; M. Porro, *Politecnico di Milano, Italy*; Z. Chen, *Tsinghua University, China*

N14-60: A Hard X-Ray Polarimeter Designed for Transient Astrophysical Sources

M. L. McConnell¹, P. Bloser¹, J. Legere¹, J. R. Macri¹, T. Narita², J. M. Ryan¹

¹University of New Hampshire, USA; ²College of the Holy Cross, USA

N14-61: Large Area and High-Pressure GPSC/MSGC for Space Solar X-Ray Spectrometry

R. M. Curado da Silva, N. F. C. Mendes, M. T. D. Castanheira, J. F. C. A. Veloso, D. S. A. P. Freitas, C. A. N. Conde, *Universidade de Coimbra, Portugal*; F. Wei, H. Lin, *Chinese Academy of Sciences, China*

N14-62: Bayesian Inference Applied to Source Reconstruction for Compton Cameras

S. P. Brumby, *Los Alamos National Laboratory, USA*

Environmental Health and Safety Instrumentation

N14-63: Thermoluminescent Response of K₂YF₅:Dy³⁺ Crystals to X and Gamma Radiation Fields

L. O. Faria¹, N. M. Khaidukov², E. C. da Sila¹, N. S. Nogueira¹
¹*Centro de Desenvolvimento da Tecnologia Nuclear - CDTN, Brazil;*
²*Institute of General and Inorganic Chemistry, Russia*

N14-64: Study of Artificial Neural Network on Explosive Detection

H. Wang, Y. Li, Y. Yang, S. Hu, B. Chen, W. Gao
Tsinghua University, China

N14-65: Obtainment of Stone-Fruit Active Carbons of High Ion-Exchangeability for Recovering Radioactive and Other Substances

A. S. Danagulyan, V. G. Martirosyan, A. A. Kazinyan, Y. S. Sarkisova, B. A. Atoyan
Yerevan State University, Armenia

N14-66: Radiation and Photo-Induced Transformations of Oxygen-Deficient Centers

E. M. Ibragimova, A. K. Islamov, I. Nuritdinov, *Institute of Nuclear Physics Academy of Science, Uzbekistan;* A. V. Amosov, *State Optical Institute, Russia;* W. D. Cooke, *Los Alamos National Laboratory, USA*

N14-67: Ultra Compact, Hand-Held HPGe Detector Assembly for Field Use

V. Gostilo, A. Sokolov, A. Pchelintsev, A. Loupilov, *Baltic Scientific Instruments, Latvia;* R. Arlt, M. Swoboda, *International Atomic Energy Agency, Austria*

N14-68: Determination of the Response to Photons and Fast/thermal Neutrons of New LiF Based TL Materials for Radiation Protection Purposes

A. Esposito¹, R. Bedogni¹, A. Maurizio², M. Chiti¹
¹*INFN - Frascati National Laboratories, Italy;* ²*ENEA, Italy*

Synchrotron Radiation Instrumentation

N14-69: A Fast Gaseous Integrating Detector for Small Angle X-Ray Scattering

K. Medjoubi¹, M. Bordessoule¹, T. Bucaille¹, G. Chaplier², S. Hustache¹, M. Lemonnier², A. Juha², S. Megtert², J. Perez¹, P. Vachette¹
¹*Synchrotron SOLEIL, France;* ²*LURE, France*

Accelerator and Beam Line Instrumentation

N14-70: Ion Chamber Arrays for the NuMI Neutrino Beam at Fermilab

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N14-80: A Study of Accelerator Induced Neutron Backgrounds

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N14-83: Simulation Results of a Dual Aperture Gamma Camera

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N14-86: Gamma Scanning Evaluation for Random Packed Columns

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N14-94: Monte Carlo Optimization Studies of a Compton Suppression Spectrometer with a Room-Temperature Primary Detector

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N14-99: A Compact Electronics for Pulse Shape Particle Discrimination with CHIMERA

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S. J. Morris, J. C. Hayes, T. R. Heimburger, M. A. Hughes, J. I. McIntyre, R. M. Pratt, L. D. Reid
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G. Barouch, S. Legoupil, M. Mur, E. Delagnes, *CEA Saclay, France*; R. Passignat, *EDF, France*

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N14-110: The ALICE TPC Readout Control Unit

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N14-111: Development of a Low-Noise Front-End Electronics for a Multi-Channel APD Readout System

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N14-112: The Muon Spectrometer Barrel Level-1 Trigger of the Atlas Experiment at LHC

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On behalf of the Level-1 Atlas Muon Barrel Trigger

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On behalf of the ATLAS Liquid Argon Electronics Group

N14-114: The AMSRW Board for the Silicon Vertex Tracker Upgrade at CDF

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N14-115: Remote JTAG Uploading and Configuration Checking of a Spartan 3 FPGA-Based Readout System

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N14-116: The AM++ Board for the Silicon Vertex Tracker Upgrade at CDF

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N14-117: First Step of the Silicon Vertex Tracker upgrade at CDF

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D. Vartsky, I. Mor, M. B. Goldberg, D. Bar, G. Feldman, I. Mardor, Z. Vagish, S. Levi, *Soreq NRC, Israel*; V. Dangendorf, *PTB, Germany*; A. Breskin, R. Chechik, *Weizmann Institute of Science, Israel*

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N14-124: Straw Detector for High Rate, High Resolution Neutron Imaging

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N14-129: A New 2-Dimensional Position Sensitive Neutron Detector

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N14-131: Dalitz Plot Partial Wave Analysis Software Using Template Metaprogramming

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N14-133: MWPC-Readout with the N110 TDC under Linux Using a Flexible, Low-Cost FPGA Solution

H. Kleines, G. Bertschinger, F. Suxdorf, W. Erven, O. Eisen, F.-J. Kayser, P. Wüstner, M. Ramm
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J. Murata, *Rikkyo University, JAPAN*

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F. M. C. Clemêncio, *Escola Superior de Tecnologia da Saúde do Porto, Portugal*; C. F. M. Loureiro, C. M. B. A. Correia, *University of Coimbra, Portugal*

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N14-142: FPGA-Based Antineutrino Detector Trigger System

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E. Higon, C. Iglesias, A. Munar, J. Poveda, A. Ruiz-Fernandez, B. Salvachua, C. Solans, A. Valero, J. A. Valls, *IFIC, Spain*

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M. G. Na, *Chosun University, South Korea*

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Y. Li, Y. Li, S. Wang, L. Cao, *Tsinghua University, China*

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H. Kim, N. Akchurin, *Texas Tech University, U.S.*

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High Energy Physics Detectors

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G. De Lellis, *University of Naples, Italy*

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E. J. Ramberg, *Fermi National Accelerator Laboratory, USA*

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S. Ishibashi, S. Kobayashi, *Saga University, Japan*; M. Doroshenko, T. Inagaki, T. K. Komatsubara, G. Y. Lim, H. Okuno, T. Sato, H. Watanabe, *High Energy Accelerator Research Organization, KEK, Japan*; H. Ishii, K. Sakashita, *Osaka University, Japan*; H. S. Lee, *Pusan National University, Republic of Korea*; T. Sumida, H. Morii, *Kyoto University, Japan*; H. Sato, Y. Tajima, *Yamagata University, Japan*

N14-163: The Barrel Alignment System of the ATLAS Muon Spectrometer
V. Gautard, *CEA-Saclay, FRANCE*
On behalf of the Saclay ATLAS muon group

N14-164: The ALICE Silicon Pixel Detector: Final Electronics System Integration
A. Kluge, *CERN, Switzerland*
On behalf of the Silicon Pixel Detector Project in the ALICE Collaboration

N14-165: Analysis of Test-Beam Data from a Prototype LHCb RICH Detector
M. Patel, *CERN, Switzerland*
On behalf of the LHCb RICH Collaboration

N14-166: The Detector Control System of the LHCb RICH Detector

F. Fontanelli, *Universita' di Genova and I.N.F.N., Italy*

On behalf of the LHCb Collaboration / Rich Group

N14-167: Study of Scintillator Strip with Wavelength Shifting Fiber and Silicon Photomultiplier

V. Balagura, M. Danilov, B. Dolgoshein, S. Klemin, R. Mizuk, P. Pakhlov, E. Popova, V. Rusinov, E. Tarkovsky, I. Tikhomirov
ITEP, Russia

N14-168: Studies of the Performance of Control System for the LHCb Muon Detector

D. Pinci, V. Bocci, G. Chiodi, F. Iacoangeli, R. Nobrega, W. Rinaldi
University "La Sapienza", Italy

N14-169: A New Inner Layer Silicon Strip Detector for D0

R. J. Lipton, *Fermilab, USA*

On behalf of the D⁰ Collaboration

N14-170: Organic Plastic and Liquid Materials for the Detection of Ionizing Radiation

R. Ruchti, K. Andert, B. Baumbaugh, D. Karmgard, J. Marchant, M. McKenna, M. Vigneault, *University of Notre Dame, USA*; C. Hurlbut, *Ludlum Measurements Inc, USA*

N14-171: Development of Large-Aperture Hybrid Photo-Detector and Readout System

Y. Kawaj, *The Graduate University for Advanced Studies, Japan*; H. Nakayama, A. Kusaka, H. Kakuno, T. Abe, M. Iwasaki, H. Aihara, *University of Tokyo, Japan*; M. Tanaka, *High Energy Accelerator Research Organization, Japan*; M. Shiozawa, *Institute for Cosmic Ray Research, Japan*; H. Kyushima, M. Suyama, *Hamamatsu Photonics K.K., Japan*

N14-172: Development of the Scintillator-Deposited Charge-Coupled Device (SD-CCD) and Application for the Balloon-Born Experiment

E. Miyata, N. Anabuki, K. Mukai, N. Tawa, H. Tsunemi, K. Miyaguchi
Osaka University, Japan

N14-174: Development of Double-Sided Silicon Strip Position Sensor

D. H. Kah¹, S. H. Do², H. D. Kang¹, D. S. Kim³, H. J. Kim¹, H. Park¹

¹*Kyungpook National University, Korea*; ²*Pukyong National Univ., Korea*; ³*Daegu Univ., Korea*

N14-175: Production and Commissioning Performance Tests of the Read-Out Driver Boards for the Hadronic Tile Calorimeter of the ATLAS Detector at LHC

J. A. Valls¹, J. Castelo¹, V. Castillo¹, C. Cuenca¹, A. Ferrer¹, E. Fullana¹, V. González², E. Higón¹, T. Munar¹, J. Poveda¹, A. Ruiz-Martínez¹, B. Salvachúa¹, E. Sanchis², C. Solans¹, J. Soret², J. Torres², A. Valero¹

¹*IFIC, Spain*; ²*Universidad de Valencia, Spain*

N14-176: A System to Compensate Magnetic Distortions in Pixel Hybrid Photon Detectors

G. Aglieri Rinella^{1,2}, C. D'Ambrosio¹, T. Bellunato^{3,4}, R. Forty¹, T. Gys¹, M. Patel¹, D. Piedigrossi¹, A. Van Lysebetten¹, G. Vital Sirtjes⁵

¹*CERN, Switzerland*; ²*University of Palermo, Italy*; ³*University of*

Milano Bicocca, Italy; ⁴*INFN, Italy*; ⁵*Imperial College, UK*

N14-177: Front End Electronics for Single Photon Detectors for Ring Imaging Cherenkov Detectors

M. Artuso, *Syracuse University, USA*

On behalf of the BTev RICH Group

N14-178: Dependence of the Space-to-Drift-Time Relationship of Monitored Drift-Tube Chambers on the Magnetic Field in the ATLAS Muon Spectrometer

O. Kortner¹, J. Dubbert², S. Horvat¹, D. Khartchenko¹, S. Kotov¹, H. Kroha¹, K. Nikolaev¹, F. Rauscher², R. Richter¹, A. Staude², C. Valderanis¹

¹*Max-Planck-Institut fuer Physik, Germany*; ²*Ludwig-Maximilians-Universitaet Muenchen, Germany*

N14-179: Pre-Calibration of the CMS Electromagnetic Calorimeter with Cosmic Rays

T. Tabarelli de Fatis, *universita' di Milano Bicocca and INFN Milano, Italy*

On behalf of the CMS ECAL collaboration

N14-180: Simulations of 3D Silicon Radiation Detector Structures in 2D and 3D

J. J. Kalliopuska, *Helsinki Institute of Physics, Finland*; S. Eränen, *VTT Information Technology, Finland*; R. Orava, *European Organization for Nuclear Research (CERN), Switzerland*

N14-181: Investigations of radiation induced transient absorption and emission in the quartz-polymer optical fiber

M. Ashurov¹, M. Baydjanov¹, E. Gasanov², N. Ivanov³, R. Igor¹, A. Safarov³, R. Suleymanov³, B. Yuldashev²

¹*Scientific Industrial Association Phoson, Uzbekistan*; ²*Institute of Nuclear Physics of Academy of Science, Uzbekistan*; ³*Samarqand State University, Uzbekistan*

N14-182: The Triple-GEM Detector for the M1R1 Muon Station of the LHCb Experiment

M. Alfonsi¹, G. Bencivenni¹, W. Bonivento², A. Cardini², P. de Simone¹, F. Murtagh¹, D. Pinci³, M. Poli Lener¹, D. Raspino², B. Saitta²

¹*Laboratori Nazionali di Frascati - INFN, Italy*; ²*I.N.F.N. Cagliari, Italy*; ³*I.N.F.N. Roma 1, Italy*

N14-183: Test of a Prototype of the Focusing DIRC

J. Schwiening, C. Field, D. W. G. S. Leith, G. Mazaheri, B. N. Ratcliff, J. Uher, J. Va'vra

Stanford Linear Accelerator Center, USA

N14-184: Separation of Scintillation and Cherenkov Light in an Optical Calorimeter

N. Akchurin, *Texas Tech University, USA*

On behalf of the DREAM Collaboration

N14-185: Development of a Muon Tracking System for Cosmic Ray Tomography

J. A. Green, *Los Alamos National Laboratory, U.S.A.*

On behalf of the Muon Tomography Collaboration

N14-186: Three-Dimensional Track Imager for Future Gamma-Ray Telescopes

S. D. Hunter, *NASA/Goddard Space Flight Center, USA*; P. F. Bloser,

J. Macri, M. McConnell, J. Ryan, *University of New Hampshire, USA*

N14-187: The NOvA Detector: a Second Generation Neutrino Oscillation Detector

R. W. Rusack, *The University of Minnesota, USA*
On behalf of the NOvA Collaboration

N14-189: The SiD Design Concept Study for the ILC

H. Weerts, *Michigan State University, USA*
On behalf of the SiD Design Study

N14-190: Improved Performance of Cd0.9Zn0.1Te Radiation Detectors by Chemically Modifying Surface Treatments

K. C. Mandal, S. H. Kang, G. J. Pena, M. Choi, R. D. Rauh, *EIC Laboratories, Inc., U.S.A.*; M. Groza, U. N. Roy, A. Burger, *Fisk University, U.S.A.*; G. E. Jellison, G. W. Wright, D. E. Holcomb, J. A. Williams, *Oak Ridge National Laboratory, U.S.A.*

N14-191: Development of Silica Aerogel with Any Density

M. Tabata¹, I. Adachi², T. Fukushima¹, H. Kawai¹, H. Kishimoto³, A. Kuratani¹, H. Nakayama¹, S. Nishida², T. Noguchi⁴, K. Okudaira⁵, Y. Tajima⁶, H. Yano⁵, H. Yokogawa³, H. Yoshida⁶

¹*Chiba University, Japan*; ²*High Energy Accelerator Research Organization (KEK), Japan*; ³*Matsushita Electric Works, Ltd, Japan*; ⁴*Ibaraki University, Japan*; ⁵*Japan Aerospace Exploration Agency (JAXA), Japan*; ⁶*Yamagata University, Japan*

N14-192: An Overview of Packaging and Characterization Results of Pixel Multichip Modules at Fermilab

G. Cardoso¹, J. Andresen¹, J. A. Appel¹, D. C. Christian¹, S. Cihangir¹, J. Chramowicz¹, G. Deuerling¹, J. Fast¹, J. Hoff¹, S. W. Kwan¹, C. M. Lei¹, S. Magni², A. Mekkaoui¹, D. Menasce², L. Moroni², A. Prosser¹, M. A. Turqueti¹, L. Uplegger¹, R. Yarema¹
¹*Fermi National Accelerator Laboratory, USA*; ²*Sezione INFN di Milano, Italy*

N14-193: Performance of the CDF Luminosity Monitor in Tevatron Run II

R. Rossin, D. Acosta, S. Klimentko, J. Konigsberg, A. Korytov, G. Lungu, G. Mitselmakher, V. Necula, A. Pronko, A. Sukhanov, S. M. Wang
University of Florida, USA

N14-194: The HERMES Recoil Detector

M. J. Murray, *Glasgow University, Scotland*
On behalf of the HERMES Collaboration (Recoil Group)

N14-195: Muon Trigger System of the D0 Experiment at the Tevatron

D. Denisov, *Fermi National Accelerator Laboratory, USA*
On behalf of the The D⁰ Collaboration

N14-196: Performance Validation Tests of the Cathode Strip Chambers for the CMS Muon System

A. Korytov, *University of Florida, USA*
On behalf of the CMS Collaboration

N14-197: Muon Calibration Data Extraction and Distribution for the Atlas Experiment

E. Pasqualucci, S. Falciano, A. De Salvo, A. Di Mattia, F. Marzano, L. Luminari, *INFN sezione di Roma, Italy*; D. Orestano, *INFN sezione di Roma*³, *Italy*; B. Martin, C. Meirosu, *CERN, Switzerland*

N14-198: Sagitta Resolution Studies for the Endcap Muon Chambers of the ATLAS Spectrometer

R. M. Avramidou, *University of Michigan, USA*

N14-199: Dependence of the ATLAS Muon Chambers Drift Time on the Gas Mixture

R. M. Avramidou, *University of Michigan, USA*

Computing and Software for Experiments

N14-200: Validation of Geant4 Electromagnetic and Hadronic Processes in the BaBar Detector

A. Khan, *Brunel University, UK*
On behalf of the BaBar Computing Collaboration

N14-201: Performance Comparison of the LCG and FiReMan Grid File Catalogues

A. Khan, C. Munro, *Brunel University, UK*; B. Koblitz, *CERN, Switzerland*

N14-202: EasyGrid: a Job Submission System for the BaBar High Energy Physics Experiment

A. Khan, *Brunel University, UK*; R. Barlow, J. Werner, *Manchester University, UK*

N14-203: Test of Distributed Data Quality Monitoring of CMS Tracker

M. S. Mennea, G. Zito, N. DeFilippis
University of INFN Bari, Italy

N14-204: Precision Track Reconstruction in the Atlas Muon Spectrometer

S. Willocq, *University of Massachusetts, Amherst, USA*
On behalf of the ATLAS Collaboration

N14-205: Monte Carlo Optimization of an Industrial Tomography System

N. Lanconelli, A. Berdondini, M. Bettuzzi, D. Bianconi, R. Brancaccio, F. Casali, S. Cornacchia, M. P. Morigi, A. Pasini, A. Rossi
University of Bologna, Italy

N14-206: Slow Control of the PHENIX DAQ System

S. V. Belikov, *Brookhaven National Laboratory, USA*
On behalf of the PHENIX Collaboration

N14-207: Performance of R-GMA for Monitoring Grid Jobs for CMS Data Production

R. Byrom¹, D. J. Colling², S. M. Fisher¹, C. Grandi³, P. R. Hobson⁴, P. Kyberd⁴, B. MacEvoy², J. J. Nebrensky⁴, S. Traylen¹

¹*Rutherford Appleton Laboratory, England*; ²*Imperial College London, England*; ³*Istituto Nazionale di Fisica Nucleare, Italy*; ⁴*Brunel University, England*

N14-208: A Metadata Database for Simulated Air Showers

P. Yeh, W.-C. Yang, Y. Lee, C.-C. Hsu
National Taiwan University, R.O.C.

N14-209: An Application of Grid Technology to Medical Physics Simulation

G. Iwai, *JST, Japan*; K. Amako, Y. Iida, S. Kameoka, K. Murakami, T. Sasaki, S. Suzuki, S. Yashiro, *KEK, Japan*

N14-210: Two Techniques for the Analysis of the Local Power Range Monitors Readings' under BWR Unstable Conditions

F. Maggini, R. Miró, D. Ginestar, G. Verdú
Polytechnic University of Valencia, Spain

N14-211: Experimental Imaging and 3D Rendering of Absorbed Dose by Means of Piled-up Dosimetric Sheets

M. Carrara¹, G. Gambarini^{1,2}, S. Tomatis³
¹*Department of Physics of the University, Italy;* ²*INFN (National Institute of Nuclear Physics), Italy;* ³*National Cancer Institute, Italy*

N14-212: MCNP Prediction of Measured Subcritical Reactor Parameters

N. Xoubi, Z. Zhao, G. I. Maldonado
University of Cincinnati, USA

N15 Photodetectors and Radiation Imaging II

Tuesday, Oct. 25 16:00-18:00, Magnolia Ballroom
Session Chair: **Mitchell Woodring**, *Pacific Northwest National Laboratory*

N15-1: A Muon Detector for the Search of Hidden Chambers in the Pyramid of the Sun

A. Martinez-Davalos, R. Alfaro, E. Belmont-Moreno, V. Grabski, J. M. Lopez-Robles, A. Menchaca-Rocha, A. Sandoval
Instituto de Fisica, UNAM, Mexico

N15-2: Perspectives of the Heavy Metal Halides Family for Direct and Digital X-Ray Imaging

L. Fornaro, I. Aguiar, A. Noguera, M. Perez, N. Sasen, L. Mussio
Faculty of Chemistry, Montevideo, Uruguay, Uruguay

N15-3: Energy-Imaging Integrated Reconstruction and the Estimation of Compton Camera System Response Function

D. Xu, Z. He, *University of Michigan, USA*

N15-4: Methods for Increasing the Efficiency of Compton Imagers

L. Mihailescu¹, M. T. Burks¹, D. H. Chivers^{1,2}, C. E. Cork¹, M. Cunningham¹, L. Fabris¹, D. L. Gunter^{1,3}, E. L. Hull^{1,4}, D. J. Lange¹, K. E. Nelson¹, T. R. Niedermayr¹, D. Protić², J. D. Valentine¹, K. Vetter¹, D. Wright¹
¹*Lawrence Livermore National Laboratory, USA;* ²*UC Berkeley, USA;* ³*Vanderbilt University, USA;* ⁴*PHDs Semiconductor Detector Systems, USA;* ⁵*Forschungszentrum Jülich GmbH, Germany*

N15-5: Single Photoelectron Resolution for the Calibration of Photomultiplier-Systems

T. Asch, H. Gemmeke, M. Kleifges, A. Kopmann, A. Menshikov, D. Tcherniakhovski
Institute of Data Processing and Electronics, Germany

N15-6: New Silica Aerogel for RICH Radiator

I. Adachi¹, S. Fratina², T. Fukushima³, A. Gorisek³, T. Iijima⁴, H. Kawaii³, S. Korpar⁵, Y. Kozakai⁴, P. Krizan⁶, T. Matsumoto⁷, Y. Mazuka⁴, S. Nishida¹, S. Ogawa⁸, R. Pestronik², S. Saitoh¹, T. Seki⁷, T. Sumiyoshi⁷, M. Tabata³, Y. Uchida¹, Y. Unno¹, A. Kuratani³
¹*KEK, Japan;* ²*J. Stefan Institute, Slovenia;* ³*Chiba Univ., Japan;* ⁴*Nagoya Univ., Japan;* ⁵*Univ. of Maribor, Slovenia;* ⁶*Univ. of Ljubljana, Slovenia;* ⁷*Tokyo Metropolitan Univ., Japan;* ⁸*Toho Univ., Japan*

N15-7: Beam Test Results of C4F8O Gas Radiator Cherenkov Detector Using Multi-Anode Photomultiplier Tubes

N. Mena, *Syracuse University, U. S. A.*

N15-8: A New Analog Sampling Readout System for the COMPASS RICH Detector

B. Ketzer¹, I. Konorov¹, P. Abbon², E. Delagnes², H. Deschamps², S. Gerassimov¹, N. Gerassimov³, D. Neyret², S. Panebianco²
¹*Technische Universität München, Germany;* ²*CEA DSM-DAPNIA Saclay, France;* ³*JINR Dubna, Russia*

N16 Analog and Digital Circuits I

Tuesday, Oct. 25 16:00-18:00, Grand Caribbean Ballroom, Salons 1 & 2
Session Chair: **Pavel Rehak**, *Brookhaven National Laboratory*

N16-1: FSSR2, a Self-Triggered Low Noise Readout Chip for Silicon Strip Detectors

V. Re^{1,2}, M. Manghisoni^{1,2}, L. Ratti^{3,2}, J. Hoff⁴, A. Mekkaoui⁴, R. Yarema⁴
¹*Università di Bergamo, Italy;* ²*INFN, Italy;* ³*Università di Pavia, Italy;* ⁴*Fermi National Accelerator Laboratory, USA*

N16-2: A CMOS Circuit for High-Stability X-Ray Spectroscopy with Silicon Drift Detectors with on-Chip JFET

C. Fiorini^{1,2}, T. Frizzi^{1,2}, A. Longoni^{1,2}, M. Porro¹
¹*Politecnico di Milano, Italy;* ²*INFN, Italy*

N16-3: PACE3 : a Large Dynamic Range Analog Memory Front-End ASIC Assembly for the Charge Readout of Silicon Sensors.

P. Aspell¹, D. Barney¹, W. Bialas², J. Crooks³, M. Dupanloup⁴, A. Go⁵, K. Kloukinas¹, D. Moraes¹, Q. Morrissey³, S. Reynaud¹
¹*CERN, Switzerland;* ²*AGH University of Science and Technology, Poland;* ³*Rutherford Appleton Laboratory, UK;* ⁴*IPNL, FRANCE;* ⁵*NCU, Taiwan*

N16-4: Advanced Front End Signal Processing Electronics for ATLAS CSC System

S. S. Junnarkar, A. Kandasamy, J. Fried, P. O'connor, V. Polychronakos, V. Gratchev, V. Tcherniatine, *Brookhaven National Laboratory, USA;* A. Khodinov, S. H. Maramraju, *State University of New York at Stonybrook, USA*

N16-5: DCal: a Custom Integrated Circuit for Calorimetry at the International Linear Collider

J. R. Hoff, A. Mekkaoui, R. Yarema, *Fermilab, USA;* G. Drake, J. Repond, *Argonne National Lab, USA*

N16-6: Performance of FLC_PHY3 : Readout ASIC for the CALICE W-Si Calorimeter

C. La Taille, G. Martin-chassard, J. Fleury
LAL Orsay/ IN2P3 / CNRS, FRANCE

N16-7: The PDD ASIC: Highly Efficient Energy and Timing Extraction for High-Rate Applications

A. Dragone^{1,2}, G. De Geronimo¹, J. Fried¹, P. O'connor¹, E. Vernon¹
¹*Brookhaven National Laboratory, USA;* ²*Politecnico di Bari, Italy*

N16-8: An FPGA-Based, 12-Channel TDC and Digital Signal Processing Module for the RatCAP PET Scanner

S. S. Junnarkar, M. Purschke, J.-F. Pratte, P. O'Connor, *Brookhaven National Laboratory, USA*; R. Fontaine, *Université de Sherbrooke, Canada*

N17 Gas Detectors: GEM-based Instruments and Studies

Tuesday, Oct. 25 16:00-18:00, Grand Caribbean Ballroom, Salon 3
Session Chair: Archana SHARMA, *CERN*

N17-1: Progress in Thick GEM-like (THGEM)-based Detectors

R. Chechik, A. Breskin, C. Shalem, G. Guedes, M. Cortesi, *The Weizmann Institute of Science, israel*; V. Dangendorf, *Physikalisch technische bundesanstalt, germany*; D. Vartzyk, D. Bar, *SOREQ Nuclear Research Center, israel*

N17-2: A GEM Based TPC for the LEGS Experiment

B. Yu, G. De Geronimo, J. Fried, A. Kandasamy, D. S. Makowiecki, G. C. Smith, V. Radeka, S. Hoblit, A. M. Sandorfi, C. E. Thorn, *Brookhaven National Laboratory, USA*; B. E. Norum, K. Wang, *University of Virginia, USA*; J. C. Mahon, *Ohio University, USA*

N17-3: R & D Work for GEM-Based High Resolution TPC at the ILC

J. Mnich, S. Aplin, M. Ball, T. Behnke, A. Imhof, M. Jannsen, K. Komar, A. Vogel, *DESY, Germany*; M. Giffels, G. Kaussen, M. Killenberg, S. Lotze, A. Muennich, S. Roth, M. Weber, *RWTH Aachen, Germany*; R.-D. Heuer, T. Lux, *Hamburg University, Germany*

N17-4: A Radial Time Projection Chamber for the Barely off-Shell Nucleon Structure Collaboration

N. K. Baillie, *The College of William and Mary, USA*
On behalf of the Bonus Collaboration

N17-5: GEM Performance in He, Ne, He+H2 and Ne+H2 at Low Temperatures

A. Buzulutskov¹, J. Dodd², R. Galea², Y. Ju², M. Leltchouk², P. Rehak³, D. Pavlyuchenko¹, D. Tcherniatine³, W. J. Willis²
¹*Budker Institute of Nuclear Physics, Russia*; ²*Nevis Laboratories, Columbia University, USA*; ³*Brookhaven National Laboratory, USA*

N17-6: Readout of GEM Detectors Using MEDIPIX2 Pixel Chip

A. Bamberger¹, K. Desch¹, J. Ludwig¹, M. Titov², N. Vlasov¹, A. Zwerger¹
¹*Freiburg University, Germany*; ²*Freiburg University/ITEP Moscow, Germany*

N17-7: Development of a Triple GEM Detector for Particle Tracking

M. G. Ziegler
Santa Cruz Institute for Particle Physics, US

N17-8: Development of a Time Projection Chamber Using Gas Electron Multipliers (GEM-TPC)

S. X. Oda, H. Hamagaki, K. Ozawa, M. Inuzuka, T. Sakaguchi, T. Isobe, T. Gunji, S. Saito, Y. Morino, *Center for Nuclear Study, the University of Tokyo, Japan*; Y. L. Yamaguchi, *Waseda University, Japan*; S. Sawada, *KEK, High Energy Accelerator Research Organization, Japan*; S. Yokkaichi, *RIKEN (The Institute of Physical and Chemical Research), Japan*

N18 Analog and Digital Circuits II

Wednesday, Oct. 26 08:00-10:00, Magnolia Ballroom
Session Chair: Valerio Re, *Università di Bergamo*

N18-1: ASIC for CPG Sensors with Grid-Only Depth-of-Interaction Sensing

G. De Geronimo, G. Carini, J. Fried, P. O'connor, *Brookhaven National Laboratory, USA*; S. A. Soldner, *eV Products, USA*

N18-2: VAS_UM/TAT4 ASIC Systems for 3D CdZnTe/HgI2 Detector Arrays

F. Zhang, Z. He, *The University of Michigan, U.S.A.*

N18-3: Noise Performances of 0.13 μm CMOS Technologies for Detector Front-end Applications

M. Manghisoni^{1,2}, L. Ratti^{3,2}, V. Re^{1,2}, V. Speziali^{3,2}, G. Traversi^{1,2}
¹*Università degli Studi di Bergamo, Italy*; ²*INFN, Italy*; ³*Università degli Studi di Pavia, Italy*

N18-4: Noise Optimization of Charge Amplifier with MOS Input Transistor Working in Moderate Inversion Region

P. Grybos, M. Idzik
AGH University of Science and Technology, Faculty of Physics and Nuclear Techniques, Poland

N18-5: The Optically-Coupled Current-Mirror: a Novel Approach for Linear Transmission of Fast Analogue Signals via Fiber Optics

D. V. Camin, V. Grassi
Dipartimento di Fisica dell'Università and INFN., Italy

N18-6: A Method for the Optimization of Front-End Electronics for Ionizing Spectrometers

D. Maiocchi^{1,2}, S. Riboldi^{1,2}, A. Pullia^{1,2}
¹*Milan University, Italy*; ²*INFN, Italy*

N18-7: Non-Standard Approach to Charge Signal Processing in CMOS MAPS for Charged Particle Trackers

L. Ratti^{1,2}, M. Manghisoni^{2,3}, V. Re^{2,3}, V. Speziali^{1,2}, G. Traversi^{2,3}
¹*University of Pavia, Italy*; ²*University of Bergamo, Italy*; ³*INFN, Italy*

N18-8: Evaluation of the Radiation Tolerance of SiGe Heterojunction Bipolar Transistors under 24GeV Proton Exposure

H. F. Sadrozinski, D. E. Dorfan, A. A. Grillo, J. Metcalfe, M. L. Rogers, A. Seiden, E. N. Spencer, M. Wilder, *Univ. of California Santa Cruz, USA*; J. D. Cressler, A. K. Sutton, *Georgia Tech, USA*

N19 Computing and Software for Experiments II: Simulation

Wednesday, Oct. 26 08:00-10:00, Grand Caribbean Ballroom, Salons 1 & 2
Session Chair: Rene Brun, *CERN*

N19-1: Parallel Tally Geometry in GEANT4 for Medical Dose Calculation

T. Aso¹, J. Apostolakis², M. Asai³, G. Cosmo², G. Daquino², A. Kimura⁴, T. Sasaki⁵, M. Verderi⁶
¹*Toyama National College of Maritime Technology, Japan*; ²*CERN, Switzerland*; ³*SLAC, USA*; ⁴*CREST JST, Japan*; ⁵*KEK, Japan*; ⁶*IN2P3/LLE, France*

N19-2: DICOM Interface and Visualization Tool for Geant4-Based Dose Calculation

A. Kimura, *Japan Science and Technology Agency, Japan*; S. Tanaka, *Ritsumeikan University, Japan*; T. Aso, *Toyama College of Maritime Technology, Japan*; H. Yoshida, *Naruto University of Education, Japan*; N. Kanematsu, *National Institute of Radiological Science, Japan*; M. Asai, *Stanford Linear Accelerator Center, U.S.A.*; T. Sasaki, *High Energy Accelerator Research Organization, Japan*

N19-4: Parallelization of EGS4 for Air Shower Simulations

P. Yeh, Y.-C. Chen, R.-J. Shiue
National Taiwan University, R.O.C.

N19-5: Simulations of a Si-based Advanced Compton Telescope

E. I. Novikova, E. A. Wulf, B. F. Philips, J. D. Kurfess, *Naval Research Laboratory, USA*; A. Zoglauer, *University of California, USA*; G. Weidenspointner, *Centre National de la Recherche Scientifique, France*

N19-6: ATLAS Detector Simulation: Status and Outlook

M. V. Gallas¹, A. Rimoldi², A. Dell'Acqua¹, A. Di Simone¹, A. Nairz³, J. Boudreau⁴, V. Tsulaia⁴, D. Costanzo⁵
¹*CERN, Switzerland*; ²*University of Pavia & INFN, Italy*; ³*University of Innsbruck, Austria*; ⁴*University of Pittsburgh, USA*; ⁵*Brookhaven National Laboratory, USA*

N19-7: The CMS OSCAR Object-Oriented Simulation Program

M. Stavrianiakou, *FNAL, USA*
On behalf of the CMS Collaboration

N19-8: The Offline Software Framework of the Pierre Auger Observatory

S. Argiro¹, S. L. C. Barroso², J. Gonzalez³, L. Nellen⁴, T. C. Paul³, T. F. Porter⁵, L. Prado, Jr.², D. Veberic⁶
¹*University of Torino and INFN, Italy*; ²*State University at Campinas, Brazil*; ³*Northeastern University, USA*; ⁴*Universidad Autonoma de Mexico, Mexico*; ⁵*Louisiana State University, USA*; ⁶*Laboratoire de l'Accelerateur Lineaire and Nova Gorica Polytechnic, France*

N20 Instrumentation for Homeland Security II

Wednesday, Oct. 26 08:00-10:00, Grand Caribbean Ballroom, Salon 3
Session Chair: **Daniel Stephens, Jr.**, *Pacific Northwest National Laboratory*

N20-1: Portable Active Neutron Interrogation System

K. Hertz, N. Mascarenhas, C. Kunz, *Sandia National Laboratories/CA, USA*; C. Alexander, *Oak Ridge National Laboratory, USA*

N20-2: Active Nuclear Material Detection and Imaging

D. R. Norman, J. L. Jones, K. J. Haskell, *Idaho National Laboratory, USA*; P. E. Vanier, L. Forman, *Brookhaven National Laboratory, USA*

N20-3: Plastic Gamma-Ray Spectrometers

D. Ramsden, M. D. Dallimore, G. J. Crossingham, C. Ferguson
Symetrica Ltd, UK

N20-4: Temperature Study of CdZnTe Coplanar-Grid Detectors

M. Amman, J. S. Lee, P. N. Luke
E. O. Lawrence Berkeley National Laboratory, USA

N20-5: Development of Pixelated CdZnTe Detectors for Homeland Security Instrumentation

W. W. Craig, J. W. Collins, L. Fabris, S. E. Labov
Lawrence Livermore National Laboratory, USA

N20-6: High Sensitivity Portable Neutron Detector for Fissile Materials

A. Athanasiades, N. N. Shehad, L. Sun, T. D. Lyons, C. S. Martin, L. Bu, J. L. Lacy
Proportional Technologies, Inc., USA

N20-7: The Role of Automated Gamma Spectrometry in Radiation Monitoring at Borders and in a Country

R. Arlt¹, J. Brutscher², A. Georgiev³, R. T. Kouzes⁴, M. Majorov⁵, R. P. Oxford⁶, M. Schrenk⁷, J. Stein³, M. Swoboda¹
¹*International Atomic Energy Agency, Austria*; ²*GBS - Wissenschaftlicher Geraetebau, Germany*; ³*target instruments inc., Germany*; ⁴*Pacific Northwest National Laboratory, USA*; ⁵*Scientific Engineering Center Nuclear Physics Research, Russia*; ⁶*Thermo Electron Corporation, USA*; ⁷*Atominstytut der Oesterreichischen Universitaeten, Austria*

N20-8: Creation of High-Precision Calibrated Models for Homeland Security Purposes

S. M. Robinson, *Pacific Northwest National Laboratory, USA*

N21 High Energy Physics Detectors I

Wednesday, Oct. 26 08:00-10:00, Poinsettia Ballroom, Salons A, B, C
Session Chairs: **Uwe Bratzler**, *CERN*
Bernd Surrow, *Massachusetts Institute of Technology*

N21-1: The Muon Spectrometer of the ALICE Experiment at LHC

P. Rosnet, *Université Blaise Pascal - CNRS/IN2P3, France*
On behalf of the ALICE collaboration

N21-2: The CMS Muon System

A. Sharma, *CERN, Switzerland*
On behalf of the CMS Muon Collaboration

N21-3: Test, Integration, Commissioning and Installation of Large Drift Tube Chambers of the ATLAS Barrel Muon Spectrometer

J. Dubbert, M. Groh, S. Horvat, O. Kortner, H. Kroha, S. Mohrdieck-Moock, R. Richter, *Max-Planck-Institut für Physik, Germany*; O. Biebel, J. Elmsheuser, M. Erlebach, F. Fiedler, R. Hertenberger, R. Mameghani, D. Merkl, T. Nunnemann, F. Rauscher, D. Schaile, A. Staude, R. Ströhmer, C. F. Vollmer, *Ludwig-Maximilians-Universität, Germany*

N21-4: Long-Term Geometry Stability of ATLAS MDT Chambers Studied with a High-Precision X-Ray Tomograph

S. Schuh, G. Kowarik, M. Marchesotti, R. Silva, R. Voss, V. Zhuravlov
CERN, Switzerland

N21-5: The ATLAS Liquid Argon Calorimeter: Construction, Integration, Commissioning and Performance from Selected Particle Beam Test Results

P. Krieger, *University of Toronto*
On behalf of the ATLAS Liquid Argon Calorimeter Group

N21-6: The CMS Electromagnetic CalorimeterM. Paganoni, *University of Milano-Bicocca and INFN, Italy*

On behalf of the CMS ECAL collaboration

N21-7: Digital Hadron Calorimetry for the International Linear Collider Using Gas Electron Multiplier TechnologyA. P. White¹, J. Yu¹, K. De¹, A. Brandt¹, M. Sosebee¹, T. Zhao², C. Han³, J. Li¹, D. Jenkins¹, K. Parmer¹, J. Smith¹¹University of Texas at Arlington, USA; ²University of Washington, USA;³Changwon National University, Korea**N21-8: Performance Improvements of the CsI(Tl) Calorimeter at BaBar**J. M. Bauer, *University of Mississippi-Oxford, U.S.A.*

On behalf of the EMC Group of the BaBar Collaboration

N22 Accelerators and Beam Line Instrumentation

Wednesday, Oct. 26 10:20-11:35, Magnolia Ballroom

Session Chair: **Stephan Friedrich**, *Lawrence Livermore National Laboratory***N22-1, invited: The Radiation Monitoring Systems for the CERN Large Hadron Collider**

C. J. Ilgner

*European Organization for Nuclear Research (CERN), Switzerland***N22-2: Development of Residual Gas Ionization Profile Monitor for High Intensity Proton Beams**

Y. Sato, K. Agari, M. Ieiri, Y. Katoh, E. Hirose, Y. Igarashi, S. Inaba, M. Minakawa, H. Noumi, M. Saito, Y. Suzuki, H. Takahashi, M. Takasaki, K. Tanaka, A. Toyoda, Y. Yamada, Y. Yamanoi, H. Watanabe

*High Energy Accelerator Research Organization (KEK), Japan***N22-3: Segmented Foil SEM Profile Monitors for High Intensity Proton Beams at Fermilab**S. E. Kopp, D. Indurthy, R. Zwaska, Z. Pavlovich, M. Proga, *University of Texas, USA*; B. Baller, D. Harris, S. Childress, R. Ford, C. Moore, G. Tassotto, C. Kendziora, *Fermilab, USA***N22-4: Beam Loss Monitoring System for the LHC**E. B. Holzer, *CERN, Switzerland*

On behalf of the LHC BLM Team

N22-5: FONT: Luminosity Optimisation at a Future Linear ColliderS. Molloy, P. Burrows, T. Hartin, C. Clarke, G. White, G. Christian, *Queen Mary, University of London, UK*; M. Dufau, A. Kalinin, *Daresbury Laboratory, UK*; G. Myatt, C. Perry, *Oxford University, UK*; C. Adolphsen, J. Frisch, L. Hendrickson, K. Jobe, T. Markiewicz, D. McCormick, J. Nelson, M. Ross, S. Smith, T. Smith, *Stanford Linear Accelerator Center, USA***N23 Nuclear Measurements and Monitoring Techniques II**

Wednesday, Oct. 26 10:20-11:35, Grand Caribbean Ballroom, Salons 1 & 2

Session Chairs: **Adam Bernstein**, *Lawrence Livermore National Laboratory*
Dennis Slaughter, *LLNL***N23-1: Single Sensors for Separate Neutron and Gamma Dosimetry in Mixed Radiation Fields**A. B. Rosenfeld¹, M. Yudelev², K. Alyousef², J. Brandon³, M. L. F. Lerch¹, I. M. Cornelius¹, M. Reinhard⁴, V. Perevertailo⁵¹University of Wollongong, Australia; ²Wayne State University, USA; ³MedCyc Corp., USA; ⁴Australian Nuclear Science and Technology Organisation, Australia; ⁵SPO BIT Detectors, Ukraine**N23-2: Nuclear Applications of Large Arrays of High-Resolution Microcalorimeters**M. W. Rabin¹, C. R. Rudy¹, M. K. Smith¹, D. T. Vo¹, J. N. Ullom², K. D. Irwin², D. M. Tournear¹¹Los Alamos National Laboratory, USA; ²National Institute of Standards and Technology (NIST), USA**N23-3: Dynamic Gamma Ray Channeling in Layered Structures**

D. M. Tournear, R. Epstein, R. M. Kippen

*Los Alamos National Laboratory, USA***N23-4: Monte Carlo Analysis of Energy Deposition in a Cryogenic Neutron Detector**Z. W. Bell, S. A. Pozzi, *Oak Ridge National Laboratory, USA*; E. Padovani, *Polytechnic of Milan, Italy***N23-5: Optimal Design of Passive Gamma-Ray Spectrometers**

K. D. Jarman, L. E. Smith, A. Heredia-Langner, A. R. Swickard, W. Kaye

*Pacific Northwest National Laboratory, USA***N24 Astrophysics and Space Instrumentation II**

Wednesday, Oct. 26 10:20-11:50, Grand Caribbean Ballroom, Salon 3

Session Chair: **James Matteson**, *Center for Astrophysics and Space Sciences, University of California, San Diego***N24-1: The X-Ray Telescope of the CAST Experiment**R. Kotthaus¹, H. Bräuninger², P. Friedrich³, R. Hartmann³, D. Kang⁴, M. Kuster^{2,5}, G. Lutz¹, L. Strüder²¹Max-Planck-Institut für Physik, Germany; ²Max-Planck-Institut für Extraterrestrische Physik, Germany; ³PNSensor GmbH, Germany;⁴Physikalisches Institut, Albert-Ludwigs-Universität Freiburg, Germany;⁵Institut für Kernphysik, Technische Universität Darmstadt, Germany**N24-2: DEPFET Active Pixel Sensors and pnCCDs for Room Temperature Imaging (X-Ray) Spectroscopy**L. W. J. Strueder¹, P. Lechner², G. Lutz¹, R. Richter¹, H. Soltau², L. Andricek¹, R. Eckhardt², G. Schaller¹, C. Zhang¹, M. Schnecke¹, P. Holl², F. Schopper¹, J. Treis¹, S. Wölfel¹, S. Herrmann¹, O. Hälker¹, D. Mießner¹, K. Heinzinger², N. Wermes³, M. Trimpl³, R. Kohrs³, P. Fischer⁴, I. Peric⁴, R. Hartmann²¹MPI - Semiconductor Lab, Germany; ²PNSensor, Germany; ³Universität Bonn, Germany; ⁴Universität Mannheim, Germany**N24-3: Improved Spatial Resolution in Thick, Fully-Depleted CCDs with Enhanced Red Sensitivity**N. Roe, *Lawrence Berkeley National Laboratory, USA*

On behalf of the SNAP Collaboration

N24-4: A Bubble Chamber for Dark Matter DetectionW. J. Bolte¹, J. I. Collar¹, M. Crisler², J. Hall¹, D. Holmgren²,

C. M. Lei², D. Nakazawa¹, B. Odom¹, K. O'Sullivan¹, R. Plunkett², E. Ramberg², A. Raskin¹, R. Schmitt², A. Sonnenschein^{1,2}, J. D. Vieira¹

¹University of Chicago, USA; ²Fermi National Accelerator Laboratory, USA

N24-5: Simultaneous Sampling ADC Data Acquisition System for the QUIET Experiment

M. Bogdan, D. Samtleben, *The University of Chicago, USA*

N24-6: Radio Detection of Ultra High-Energy Cosmic Ray Air Showers

H. E. H. Gemmeke, *Institut für Prozessdatenverarbeitung und Elektronik, Germany*

On behalf of the LOPES Collaboration

N25 High Energy Physics Detectors II

Wednesday, Oct. 26 16:00-18:00, Magnolia Ballroom

Session Chair: **Bernd Surrow**, *Massachusetts Institute of Technology*

N25-1: The CMS Tracker System

J. D'Hondt, *Vrije Universiteit Brussel, Belgium*

On behalf of the CMS Collaboration

N25-2: D0 Silicon Microstrip Tracker

S. Burdin, *Fermilab, USA*

On behalf of the D⁰ Collaboration

N25-3: The ATLAS SCT: from Module Assembly to Detector Operation

P. J. Bell, *CERN, Switzerland*

On behalf of the SCT Collaboration of ATLAS

N25-4: The CMS Silicon Strip Tracker Modules Production

M. Giorgi, *INFN and University of Perugia, Italy*

On behalf of the CMS Tracker Collaboration

N25-5: Operational Experiences with the CDF Run-II Silicon Vertex Detector

M. Stanitzki, *Yale University, USA*

On behalf of the CDF Silicon Group

N25-6: Status of the LHCb Experiment

R. Lindner, *CERN, Switzerland*

On behalf of the LHCb Collaboration

N25-7: The RICH 2 Detector of the LHCb Experiment

C. D'Ambrosio, *CERN, Switzerland*

On behalf of the LHCb RICH group

N25-8: Performance and Aging Studies of 2nd Generation BaBar Resistive Plate Chambers

H. R. Band, *U. of Wisconsin, USA*

On behalf of the BABAR IFR Collaboration

N26 Radiation Damage Effects

Wednesday, Oct. 26 16:00-18:00, Grand Caribbean Ballroom, Salons 1 & 2

Session Chair: **Gian Franco Dalla Betta**, *University of Trento*

N26-1, invited: Irradiation of Thin Sensors for Super-LHC

A. Candelori¹, N. Bacchetta¹, D. Bisello¹, M. Boscardin², M. Bruzzi³, G. Dalla Betta⁴, M. Glaser⁵, V. Khomenkov¹, R. Rando¹

¹Universita' di Padova and INFN, Italy; ²ITC-irst, Italy; ³Universita' di Firenze, Italy; ⁴Universita' di Trento, Italy; ⁵CERN, Switzerland

N26-2: Detector Recovery/Improvement via Elevated-Temperature-Annealing (DRIVE) --- a New Approach for Si Detector Applications in High Radiation Environment in SLHC

Z. Li, *Brookhaven National Lab, USA*; E. Verbitskaya, V. Eremin, A. Ivanov, *Ioffe Physico-Technical Institute of Russian Academy of Sciences, Russia*; J. Harkonen, E. Tuovinen, P. Luukka, *Helsinki Institute of Physics, Switzerland*

N26-3: Development of Thin Silicon Detectors for Future Experiments

S. Son, G. Bolla, D. Bortoletto, *Purdue University, USA*

N26-4: Single Event Effects and Their Mitigation for the Collider Detector at Fermilab

R. J. Tesarek, *Fermi National Accelerator Laboratory, USA*

On behalf of the CDF Radiation Monitoring Group

N26-5: An Analytic Model for Single Event Upsets in SRAM-based FPGAs for Use in On-Detector Electronics

S. E. Skutnik, J. G. Lajoie, *Iowa State University, USA*

N26-6: Performance Tests of the Straw Tube Tracker at ZEUS

F. Karstens, *Universität Freiburg, Germany*

On behalf of the STT Group of the ZEUS Collaboration

N26-7: A Systematic Study on Discharge-Induced GEM-Failure Phenomena

A. Cardini, *INFN Sezione di Cagliari, Italy*

N26-8: Dose and Dose-Rate Dependence of Radiation Changes in Scintillation Crystals

M. Globus¹, B. Grinyov¹, M. Ratner², A. Ratner³, V. Lyubinskiy¹

¹Institute for Scintillation Materials, Ukraine; ²Institute for Single Crystals, Ukraine; ³Institute for Low Temperature Physics and Engineering, Ukraine

N27 Solid State Detectors I

Wednesday, Oct. 26 16:00-17:30, Poinsettia Ballroom, Salons A, B, C
Session Chair: **Arnold Burger**, *Fisk University*

N27-1: Identifying Semiconducting Compounds by D.C. Ionization Conductivity*

J. Wang**, E. D. Bourret-Courchesne, S. E. Derenzo, M. K. Klintonberg

Lawrence Berkeley National Laboratory, U.S.A.

N27-2: Spectroscopic Performance of Large Volume HgI2 Detectors

L.-J. Meng, Z. He, *University of Michigan, USA*; B. Alexander, J. Sandoval, *Constellation Technology Corporation, USA*

N27-3: Room-Temperature Particle Detectors Based on Purified InP Single-Crystals Converted to Semi Insulating State by Annealing

K. Zdansky, V. Gorodyskiy, *Institute of Radio Engineering and Electronics, Academy of Sciences, Czech Republic*; L. Pekarek, *Institute*

N27-4: Growth, Fabrication and Evaluation of AlSb for Gamma Ray Detectors

K. J. Wu, R. Welty, A. Coombs, N. Madden, *Lawrence Livermore National Laboratory, USA*; P. Luke, M. Amman, E. Bourret-Courchesne, *E. O. Lawrence Berkeley National Laboratory, USA*; M. Groza, A. Burger, *Fisk University, USA*

N27-5: Characteristics of Semiconducting Boron Carbide Materials for Neutron Detectors

B. W. Robertson, R. Padmanabhan, R. B. Billa, A. D. Harken
University of Nebraska-Lincoln, USA

N27-6: Neutron Detection in All Boron Carbide Devices.

E. E. Day, S. Adenwalla, M. J. Diaz
University of Nebraska-Lincoln, USA

N28 Nuclear Physics Instrumentation

Thursday, Oct. 27 08:00-10:00, Magnolia Ballroom

Session Chair: **Andrew Weisenberger**, *Thomas Jefferson National Accelerator Facility*

N28-1: Nonlinearity of High-Purity Germanium Detectors

C. E. Seifert, M. W. Cooper, J. L. Orrell, B. J. Hyronimus
Pacific Northwest National Laboratory, USA

N28-2: Time Measurement via Digital Pulse Shape Acquisition: Preliminary on-Beam Tests at Several Sampling Frequencies Using CHIMERA Multidetector.

F. Amorini^{1,2}, A. Anzalone², R. Bassini², C. Boiano², G. Cardella², S. Cavallaro², E. De Filippo^{1,2}, P. Guazzoni^{2,3}, E. Laguidara², G. Lanzanò², G. Lanzalone², C. Maiolino², A. Pagano², S. Pirrone², G. Politi^{1,2}, F. Porto^{1,2}, F. Rizzo^{1,2}, S. Russo², P. Russotto^{1,2}, M. Sassi^{2,3}, L. Zetta^{2,3}

¹Università, Italy; ²Istituto Nazionale di Fisica Nucleare, Italy; ³Università degli Studi, Italy

N28-3: Cryogenic High-Resolution High-Efficiency Fast-Neutron Spectrometer Development

T. R. Niedermayr¹, I. D. Hau^{1,2}, O. B. Drury¹, A. Burger³, Z. Bell⁴, U. Roy³, S. Friedrich¹

¹Lawrence Livermore National Laboratory, USA; ²University of California, USA; ³Fisk University, USA; ⁴Oak Ridge National Laboratory, USA

N28-4: Challenges for Solid State Tracking Detectors in Nuclear Physics Experiments at FAIR

O. Kiselev, *Institute of Nuclear Chemistry, Mainz University, Germany*
On behalf of the EXL

N28-5: Particle Identification with the 4 π Chimera Detector Array

G. Politi, *INFN and Università di Catania - Italy, Italy*

On behalf of the CHIMERA Collaboration

N28-6: The BaBar LST Detector High Voltage System: Design and Implementation

G. Benelli, K. Honscheid, E. A. Lewis, J. J. Regensburger, D. S. Smith

The Ohio State University, United States

N28-7: Low-Noise Analog Electronic Devices for the PRISMA Spectrometer Focal Plane Detector

M. Romoli¹, M. Di Pietro¹, A. De Francesco¹, A. De Rosa^{1,2}, P. Di Meo¹, G. Inglima^{1,2}, M. La Commara^{1,2}, B. Martin^{1,2}, D. Pierroutsakou¹, P. Parascandolo¹, M. Sandoli^{1,2}, M. Trotta¹, A. M. Stefanini³, S. Beghini⁴, L. Corradi³, E. Fioletto³, G. Montagnoli⁴, F. Scarlassara⁴

¹INFN - Sezione di Napoli, Italy; ²Università Federico II, Italy; ³INFN - Lab. Naz. di Legnaro, Italy; ⁴Università di Padova and INFN - Sezione di Padova, Italy

N28-8: DEMIN: a New Gas Detector for High-Energy Neutron Spectroscopy in Large Gamma Background

E. Delagnes¹, M. Houry², P. Legou¹

¹Saclay, FRANCE; ²DIF, FRANCE

N29 Solid State Detectors II

Thursday, Oct. 27 08:00-09:30, Grand Caribbean Ballroom, Salons 1 & 2

Session Chair: **Ralph James**, *Brookhaven National Lab*

N29-1: Development of Large Arrays of Microcalorimeters for Precision Gamma-Ray Spectroscopy

J. N. Ullom, J. A. Beall, W. B. Doriese, W. D. Duncan, L. Ferreira, G. C. Hilton, K. D. Irwin, C. D. Reintsema, L. R. Vale, B. L. Zink, *National Institute of Standards and Technology, USA*; M. W. Rabin, C. R. Rudy, M. K. Smith, D. M. Tournear, D. T. Vo, *Los Alamos National Laboratory, USA*

N29-2: Investigation of a Large Volume Multi-Pair Coplanar Grid CdZnTe Detector for Improved Detection Efficiency

Z. He, B. W. Sturm, *University of Michigan, USA*; E. Rhodes, *Johns Hopkins University, USA*

N29-3: Crystal Growth and Characterization of Room Temperature Radiation Detectors

K. G. Lynn, G. Ciampi, K. A. Jones, P. Wiseman
Washington State University, USA

N29-4: Trace Chemistry and Physical Characterization of CdZnTe

M. Bliss, D. C. Gerlach, J. B. Cliff, M. B. Toloczko, D. S. Barnett, C. Seifert, *Pacific Northwest National Laboratory, USA*; G. Ciampi, K. A. Jones, K. G. Lynn, *Washington State University, USA*

N29-5: Non-Uniform Response of CdZnTe Material Seen with the Planar, Coplanar-Grid, and Pixel Detectors

A. E. Bolotnikov, G. S. Camarda, G. A. Cariny, G. W. Wright, R. B. James, *Brookhaven National Laboratory, USA*; M. Fiederle, *Freiburg University, Germany*; L. Li, *Yinnel Tech, Inc., USA*

N29-6: Low-Temperature Solder Bonding of CZT Detector Modules

M. A. Capote, K. Y. Chen, H. Lenos, A. Soriano, *Aguila Technologies, Inc., USA*; J. L. Matteson, F. Duttweiler, R. T. Skelton, G. Huszar, *University of California-San Diego, USA*

N30 Nuclear Measurements and Monitoring Techniques

Thursday, Oct. 27 08:00-09:30, Grand Caribbean Ballroom, Salon 3

Session Chair: **John Estrada**, *Sandia National Laboratories*

N30-1: Radiation Imaging of Dry Storage Casks for Spent Nuclear FuelK. P. Ziocck¹, G. Caffrey², L. Forman³, A. Lebrun⁴, P. Vanier³¹Lawrence Livermore National Laboratory, USA; ²Idaho National Laboratory, USA; ³Brookhaven National Laboratory, USA; ⁴IAEA, Austria**N30-2: A Coherent Approach to Coherent Neutrino Detection**

P. Barbeau, J. I. Collar, B. Odom

Enrico Fermi Institute, 60637

N30-3: Recent Results from a Nuclear Reactor Monitoring Antineutrino Detector

N. S. Bowden, M. Allen, J. K. Estrada, A. Jacobsen, A. Weinbeck, Sandia National Laboratories, USA; A. Bernstein, M. Bera,

C. Haggmann, C. Winant, Lawrence Livermore National Laboratory, USA

N30-4: Design of an On-Line, Multi-Spectrometer Fission Product Monitoring System (FPMS) to Support Advanced Gas Reactor (AGR) Fuel Testing and Qualification in the Advanced Test Reactor

J. K. Hartwell, D. M. Scates, M. W. Drigert

Idaho National Laboratory, USA

N30-5: A Heavy-Liquid Bubble Chamber for Fast Neutron Detection

J. I. Collar, D. Nakazawa, B. Odom, A. Sonnenschein

University of Chicago, USA

N30-6: Improvement of the Low Energy Limit of a Silicon-Based Neutron Spectrometer

A. Fazzi, S. Agosteo, A. Foglio Para, A. Pola, V. Varoli

Politecnico di Milano, Italy

N31 Gas Detectors: Basic StudiesThursday, Oct. 27 08:00-10:00, Poinsettia Ballroom, Salons A, B, C
Session Chair: Rachel Chechik, The Weizmann Institute of Science**N31-1: R&D for RPC Detectors with Glass Electrodes**A. Calcaterra¹, R. de Sangro¹, G. Mannocchi^{1,2}, P. Patteri¹, P. Picchi¹, M. Piccolo¹, S. Ragazzi³, N. Redaelli³, L. Satta⁴, T. Tabarelli de Fatis³, G. C. Trincherò²¹INFN Laboratori Nazionali di Frascati, Italy; ²CNR, IFSI Sezione di Torino, Italy and INFN Sezione di Torino, Italy; ³Università di Milano Bicocca and INFN Milano, Italy; ⁴Università di Roma, Italy**N31-2: Development of a 2-Dimensional Multigrid-Type MSGC Using GLG Method for the New Generation Spallation Neutron Source**

K. Fujita, H. Takahashi, P. Siritiprussamee, H. Niko, M. Kai, M. Nakazawa, The University of Tokyo, Japan; M. Furusaka, Hokkaido University, Japan; T. Ino, S. Sato, T. Yokoo, S. Kishimoto, High Energy Accelerator Research Organization, Japan

N31-3: Aging Effects in Wire Chambers

G. Sprachmann, CERN, Switzerland

N31-4: A Universal SPICE Model for Signals Analysis of the Straw Tube Detector

K. A. Lan, Y. Cui, E. V. Hungerford

University of Houston, U.S.A

N31-5: Progress in Ion-Backflow Reduction in Gaseous DetectorsA. Breskin¹, A. Lyashenko¹, R. Chechik¹, F. D. Amaro²,J. F. C. A. Veloso^{2,3}, J. M. F. dos Santos²¹Weizmann Institute of Science, Israel; ²University of Coimbra, Portugal; ³University of Aveiro, Portugal**N31-6: Radial Position-Sensing in a Coplanar-Grid High-Pressure Xe Gamma-Ray Spectrometer**

S. D. Kiff, Z. He, University of Michigan, USA; G. Tepper, Virginia Commonwealth University, USA

N31-7: Two-Dimensional ³He Neutron Detectors with Pad Readout for High Rates

N. A. Schaknowski, G. C. Smith, B. Yu, Brookhaven National Laboratory, USA; J. Doumas, US Merchant Marine Academy, USA

N31-8: An Ultra-Long Global-Local Grouping 1-D MSGC for Very-Large-Area Gas Detector

H. Takahashi, H. Niko, K. Fujita, M. Nakazawa, M. Ishikawa, University of Tokyo, Japan; M. Furusaka, Hokkaido University, Japan; T. Ino, Material Structure Science, Japan; M. Kanazawa, Futaba, Japan

N32 Environmental Health and Safety Instrumentation

Thursday, Oct. 27 10:20-11:20, Magnolia Ballroom

Session Chair: Morgan Burks, Lawrence Livermore National Laboratory

N32-1: New Technologies for Standoff Assessment of Radiological Contamination

N. Cherepy, Lawrence Livermore National Laboratory, US

On behalf of the Lawrence Livermore National Laboratory

N32-2: Ion Beam Induced Imaging of a Monolithic Silicon TelescopeA. B. Rosenfeld¹, M. Reinhard², A. Fazzi³, I. M. Cornelius¹, A. J. Wroe¹, R. Siegel², A. Pola³, S. Agosteo³¹University of Wollongong, Australia; ²Australian Nuclear Science and Technology Organisation, Australia; ³Milano Politecnico, Italia**N32-3: Characterization of New LiF Based TL Materials for Use in Neutron Spectrometry Around High Energy Accelerators**

R. Bedogni, U.F. Fisica Sanitaria, Rome, Italy;

N32-4: A New Contamination Monitor with Scintillation Detection

A. Klett, P. Haefner, W. Reuter

Berthold Technologies, Germany

N33 Synchrotron Radiation InstrumentationThursday, Oct. 27 10:20-11:20, Grand Caribbean Ballroom, Salon 3
Session Chairs: Stephan Friedrich, Lawrence Livermore NationalLaboratory
David Shuh, Lawrence Berkeley National Laboratory**N33-1: A New Detector for Time-Resolved Small-Angle X-Ray Scattering Studies**

P. M. De Lurgio, J. P. Hessler, G. Jennings, A. S. Kreps, I. Naday, J. T. Weizerick

Argonne National Laboratory, USA

N33-2: PILATUS: Large Area Silicon X-Ray Detectors for Crystallography.

E. F. Eikenberry¹, C. Broennimann¹, G. Huelsen¹, B. Henrich¹, H. Toyokawa², M. Suzuki², R. Horisbeger¹, B. Schmitt¹, C. Schulze-Briese¹, T. Tomizaki¹, A. Wagner¹

¹Swiss Light Source, Paul Scherrer Institute, Switzerland; ²Japan Synchrotron Radiation Research Institute, Japan

N33-3: Pixilation Effect on Germanium Detectors and Their Temperature Dependencies

M. Suzuki, H. Toyokawa, Japan Synchrotron Radiation Research Institute, Japan; C. Broennimann, R. Horisberger, Paul Scherrer Institute, Switzerland

N33-4: High Spatial Resolution X-Ray Beam Position Monitor

M. Kocsis, ESRF, France

N34 Solid State Detectors III

Thursday, Oct. 27 10:20-11:50, Poinsettia Ballroom, Salons A, B, C
Session Chair: Pavel Rehak, Brookhaven National Laboratory

N34-1: A Full Size Diamond Pixel Module and 3D-Pixel Arrays Using ATLAS Frontend Electronics: Lab and Testbeam Results

M. Mathes, University of Bonn, Germany

On behalf of the collaboration for Diamond with RD⁴², W. Trischuk, H. Kagan, et al. and for ³D with C. Kenney, S. Parker, K. Einsweiler

N34-2: DEPFET Macro Pixel Detectors

G. Lutz, P. Lechner, M. Porro, R. H. Richter, L. Strüder, C. Zhang
MPI Semiconductor Laboratory, Germany

N34-3: Performance of Large Area Silicon Drift Detectors

A. Niculae¹, H. Soltan¹, P. Lechner¹, G. Lutz², L. Strueder², C. Fiorini³, A. Longoni³, R. Eckhard², G. Schaller², F. Schopper²

¹PNSensor GmbH, Germany; ²MPI Semiconductor Laboratory, Germany; ³Politecnico di Milano, Italy

N34-4: Ultra-Fast XRF Spectrometer Based on a Novel High-Performance Ring-Shaped Semiconductor Drift Detector

A. Longoni^{1,2,3}, C. Fiorini^{1,2}, C. Guazzoni^{1,2}, R. Alberti^{1,2}, S. Buzzetti^{1,2}, T. Klatka^{1,2}, L. Strüder⁴, P. Lechner⁵

¹Politecnico di Milano, Italy; ²INFN, Italy; ³IFN-CNR, Italy; ⁴Max Planck Institut für Extraterrestrische Physik, Germany; ⁵PNSensor GmbH, Germany

N34-5: High-Resolution Alpha-Particle Spectrometry Using Silicon Carbide Semiconductor Detectors

F. H. Ruddy, J. G. Seidel, H. Chen, A. R. Dulloo, Westinghouse Electric Company, PA; S.-H. Ryu, Cree, Inc., NC

N34-6: Silicon Carbide PiN Diodes as Radiation Detectors

B. F. Philips, K. D. Hobart, F. J. Kub, R. E. Stahlbush, Naval Research Laboratory, USA; M. K. Das, B. A. Hull, Cree, Inc, USA; G. De Geronimo, P. O'connor, Brookhaven National Laboratory, USA

N35 NSS Poster II

Thursday, Oct. 27 14:30-16:00, Grand Caribbean East & South Foyer
Session Chairs: Nerine Cherepy, Lawrence Livermore National Laboratory
Maxim Titov, Freiburg University/ITEP Moscow

Gaseous Detectors

N35-1: Long Lifetime Gas Proportional Detectors

H. J. Sipila, H. J. Andersson, E. S. Kiuru
Oxford Instruments Analytical Oy, FINLAND

N35-2: Time Projection Chamber GEM-Based Readout Using MEDIPIX2 Chip for the Linear Collider Experiment

A. Bamberger¹, K. Desch¹, J. Ludwig¹, M. Titov², N. Vlasov¹, A. Zwerger¹

¹Freiburg University, Germany; ²Freiburg University/ITEP Moscow, Germany

N35-3: Performance Report of Micro-Gap Wire Chamber in KEK PS E248 Experiment

S. Inaba¹, H. Kawai², H. Nakayama², Y. Tajima³, K. Takamatsu¹, T. Tsuru¹, H. Y. Yoshida³

¹High Energy Accelerator Research Organization, Japan; ²Chiba University, Japan; ³Yamagata University, Japan

N35-4: Fabrication of Neutron-Converter-Coated GEM for Thermal Neutron Measurement

S.-H. Park, Y. Kim, H. Kim, S. Kang, J. Ha, C. E. Chung
KAERI, Republic of Korea

N35-5: Simulation of the Effect of Capacitive Decay of Detector-Circuit on the Detector Response

S. L. Sharma, G. A. Kumar, Indian Institute of Technology, India; R. K. Choudhury, Institute of Physics, India

N35-6: High Accuracy Fast Method of 2D Multiwire Proportional Counter Electrodes Manufacture

J. C. Martínez, I. Ramos-Lerate, F. Fernández, D. Beltrán
TI2680596, Spain

N35-7: Development of One- Dimensional Neutron Microstrip Gas Counter with Cathode Encoding

H. Niko¹, M. Kai¹, K. Fujita¹, H. Takahashi¹, P. Siritiprussamee¹, M. Nakazawa¹, T. Ino², M. Furusaka³, S. Kishimoto²

¹University of Tokyo, Japan; ²Material Structure Science, Japan; ³Hokkaido University, Japan

N35-8: Mitigation of Outgas Effects in the Neutron- Capture 6Li Pulse-Mode Ionization Chamber Operation

K. Chung, K. Ianakiev, M. Swinhoe, M. Makela
Los Alamos National Lab, USA

N35-9: Drift Velocity of Xe+ Ions in Gaseous Xe -3He Mixtures

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

N35-10: A Study of Gain Stability and Charging Effects in GEM Foils

B. Azmoun, C. Woody, Brookhaven National Lab, USA; B. Surrow,

MIT, USA; R. Majka, N. Smirnov, *Yale University, USA*; G. Karagorigi, *Florida Institute of Technology, USA*; K. Kearney, G. Keeler, *Tech Etch, USA*

N35-11: Quality Control and Performance of Industrially Produced MICROMEGAS

G. Bolla, I. P. Shipsey, *Purdue University, USA*; J. Miyamoto, *carleton University, Canada*

N35-12: Implementation of a Noise Mitigation Strategy for a High-Pressure Xenon Detector

A. Seifert, B. Milbrath, W. K. Pitts, E. Smith
Pacific Northwest National Laboratory, USA

N35-13: Average Energy to Produce an Ion Pair for Heavy Charged Particles in Gases Measured as a Function of Particle Energy

S. Sasaki, T. Sanami, K. Saito, K. Iijima, H. Tawara, *High Energy Accelerator Research Organization, Japan*; A. Fukumura, *National Institute of Radiological Sciences, Japan*

N35-14: Photoelectron Collection Efficiency in CF₄ and in Mixtures of Noble Gases with CH₄ or CF₄

J. M. D. Escada, P. J. B. M. Rachinhas, T. H. V. T. Dias, F. P. Santos, J. A. M. Lopes, C. A. N. Conde, *Universidade de Coimbra, PORTUGAL*; A. D. Stauffer, *York University, Canada*

N35-15: Experimental Study of the Performance of KBr-Covered Microstrip Plate VUV Photosensors

F. I. G. M. Borges, D. S. A. P. Freitas, C. A. N. Conde
University of Coimbra, Portugal

N35-16: Dual-Cathode CsI Covered Microstrip Plate as VUV High Efficiency Photosensor

C. A. N. Conde, D. S. A. P. Freitas, R. M. Curado da Silva, N. F. C. Mendes
Universidade de Coimbra, PORTUGAL

Scintillation Detectors

N35-17: Cathodoluminescence Emission Studies for Selected Phosphor-Based Sensor Materials

S. M. Goedeke¹, W. A. Hollerman², S. W. Allison¹, P. A. Gray³, L. A. Lewis¹, R. W. Smithwick¹, L. A. Boatner¹, D. C. Glasgow¹, I. V. Ivanov¹, H. Wise³

¹*Oak Ridge National Laboratory, USA*; ²*University of Louisiana at Lafayette, USA*; ³*Integrated Concepts and Research Corporation, USA*

N35-18: Comparison of Cerium Doped LSO and LYSO Crystals in Scintillation Characteristics

G. Ren, L. Qin, *Shanghai Institute of Ceramics, China*

N35-19: Measurement of the Half Brightness Fluence for ZnS:Mn Due to 20 keV Electron Irradiation

W. A. Hollerman¹, S. M. Goedeke², S. W. Allison², M. R. Cates², P. A. Gray³, L. A. Lewis²

¹*University of Louisiana at Lafayette, USA*; ²*Oak Ridge National Laboratory, USA*; ³*Integrated Concepts and Research Corporation, USA*

N35-20: Study of Light Output and Response Function of Liquid Organic Scintillator for High-Energy Neutron Spectrometry

D. Satoh, T. Sato, A. Endo, Y. Yamaguchi, *Japan Atomic Energy Research Institute, Japan*; N. Matsufuji, S. Sato, M. Takada, *National*

Institute of Radiological Sciences, Japan; K. Ishibashi, *Kyushu University, Japan*

N35-21: A Review of Scintillation Counter Options for Planetary Geochemistry

D. Ramsden, C. Ferguson, M. Dallimore, G. Crossingham, *Symetrica Ltd, UK*; A. Owens, F. Quarati, *ESA/ESTEC, Holland*

N35-22: Development of a Novel Small-Sized Neutron Detector Based on a 6Li-Glass Scintillator

T. Matsumoto, H. Harano, T. Shimoyama, A. Uritani, K. Kudo
National Institute of Advanced Industrial Science and Technology, Japan

N35-23: Gamma-Ray Spectroscopy of LGSO Scintillator by Using APD

S. Shimizu¹, H. Murakami², T. Koizumi², T. Usui¹, N. Shimura¹, K. Kurasige¹, Y. Kurata¹, S. Nachimuthu¹, K. Sumiya¹, H. Ishibashi¹
¹*Hitachi Chemical Co., Ltd., Japan*; ²*Rikkyo University, Japan*

N35-24: Role of Rare Earth Ions in Improving Radiation Hardness of Inorganic Scintillators

P. A. Rodnyi
St. Petersburg State Polytechnical University, Russia

N35-25: Extruded Plastic Scintillator for MINERvA

A. Pla-Dalmau, A. D. Bross, *Fermi National Accelerator Laboratory, U.S.A.*; V. V. Rykalin, B. M. Wood, *Northern Illinois University, U.S.A.*

N35-26: Properties of K₂La₅:Ce³⁺ and K₂Ce₅ Scintillators

J. Glodo, E. V. D. van Loef, W. M. Higgins, K. S. Shah
Radiation Monitoring Devices, Inc., USA

N35-27: Beta-Gamma Coincidence Counting Using an Yttrium Aluminum Perovskite and Bismuth Germanate Phoswich Scintillator.

J. I. McIntyre, C. E. Aalseth, M. Cooper, J. C. Hayes, T. R. Heimbigner, T. Hossbach, C. Hubbard, M. Ripplinger, C. E. Seifert, R. Suarez
Pacific Northwest National Laboratory, USA

N35-28: Scintillation and Optical Properties of LuAP and LuYAP Crystals

P. Szupryczynski, C. L. Melcher, M. A. Spurrier, A. A. Carey
CTI Molecular Imaging, Inc., USA

N35-29: Ce-Doped Lutetium Pyrosilicate Scintillators LPS and LYPS

P. Szupryczynski, C. L. Melcher, M. A. Spurrier, A. A. Carey, M. P. Maskarinec, B. Chakoumakos, C. Rawn
CTI Molecular Imaging, Inc., USA

N35-30: Synthesis and Characterization of Doped Ceramic Scintillators Based on (Gd,Y)2O₃

G. Cho¹, Y. K. Kim², S. H. Cho¹, D. K. Kim¹, B.-J. Kim¹, H. J. Seo³, H. K. Kim⁴

¹*Korea Advanced Institute of Science and Technology, South Korea*; ²*Korea Institute of Science and Technology, South Korea*; ³*Bu Kyung University, South Korea*; ⁴*Pusan National University, South Korea*

N35-31: Boron Nitride, a Neutron Scintillator with Deficiencies

R. Engels, G. Kemmerling, J. Schelten

N35-32: Luminescence Properties of LuYSiO₅:Ce, Gd₂SiO₅:Ce, and CsI:TI Single Crystal Scintillators under X-Ray Excitation, for Use in Medical Imaging Systems.

I. Valais¹, A. Konstantinidis¹, D. Nikolopoulos¹, I. Sianoudis², G. Loudos³, N. Giokaris⁴, K. Nikita³, D. Cavouras¹, N. Dimitropoulos⁵, C. Nomicos², G. Panayiotakis⁶, I. Kandarakis¹
¹Technological Educational Institute of Athens, Greece; ²Technological Educational Institution of Athens, Greece; ³National Technical University of Athens, Greece; ⁴Physics Department, University of Athens, Greece; ⁵Euromedica" medical center, Greece; ⁶University of Patras, Greece

N35-33: Second Moment Measurement with Enhanced Charge-Division Readouts and Multi-Channel PMTs

C. W. Lerche¹, J. A. Palazón¹, M. Giménez¹, E. N. Gimenez¹, M. Fernández¹, F. Sánchez¹, J. D. Martínez², A. Sebastián², J. M. Benlloch¹
¹University of Valencia, Spain; ²Polytechnic University of Valencia, Spain

N35-34: Scintillation Property in Helium Mixed with Xenon

K. Saito, S. Sasaki, T. Sanami, H. Tawara, *High Energy Accelerator Research Organization, Japan*; E. Shibamura, *Saitama Prefectural University, Japan*

N35-35: The Temperature Dependence of Gamma-Ray Responses of YAG:Ce Ceramic Scintillators

H. Takahashi, T. Yanagida, D. Kasama, T. Ito, M. Kokubun, K. Makishima, *University of Tokyo, Japan*; T. Yanagitani, H. Yagi, *Konoshima Chemical Co., Ltd., Japan*; T. Shigeta, T. Ito, *Baikowski Japan Co., Ltd., Japan*

N35-36: Light Yield of NaI(Tl)-Scintillators Measured with an Hybrid Photomultiplier Tube.

C. D'Ambrosio¹, F. de Notaristefani², G. Hull¹, H. Leutz¹
¹CERN, Switzerland; ²INFN - sez. Roma III, Italy

N35-37: Pulse Shape Analysis Using Subspace Identification Methods and Particle Identification Using Neural Networks in CsI(Tl) Scintillators.

P. Guazzoni^{1,2}, F. Previdi^{2,1}, S. Russo², M. Sassi^{1,2}, S. M. Savaresi³, L. Zetta^{1,2}
¹Università degli Studi, Italy; ²Istituto Nazionale di Fisica Nucleare, Italy; ³Politecnico, Italy

N35-38: Scintillators and PIN Photodiode for X-Ray Scanner

K. H. Kim, D.-W. Kim, S. Kim, *Chosun University, South Korea*; G. Cho, D. K. Kim, *KAIST, South Korea*

N35-39: Semi-Analytical Response Function for ML-EM Deconvolution of NaI Detector Energy Spectra

J. C. Engdahl, K. Bharwani, *Bradley University, USA*

N35-40: Comparison of Different Pulse Shape Discrimination Methods for BC400/BGO Phoswich and CsI:TI Detectors

T. A. DeVol, P. Chandrikamohan
Clemson University, 29634-0919

N35-41: Temperature Effects on an EJ-301 Cell

B. Alexandrov, D. Gehman, M. Nelson, K. Ianakiev
Los Alamos National Laboratory, USA

N35-42: Cell Size Effects on the Neutron-Spectrum from an EJ-301 Cell

A. Li, M. Nelson, D. Dinwiddie, W. Baird
Los Alamos National Laboratory, USA

N35-43: Soft Gamma-Ray Detector Using CdWO₄/ZnWO₄ Crystal with Avalanche Photodiodes

S. Asano, K. Yamaoka, A. Tsutsui, A. Yoshida, *Aoyama Gakuin University, Japan*; M. Oshika, *Nihon Kessyo Koogaku Co.,LTD, Japan*

N35-44: Investigation of Zinc Oxide-Based Scintillators

J. S. Neal, M. L. Pritchard, L. A. Boatner, *Oak Ridge National Laboratory, USA*; N. C. Giles, M. Luo, C. Xu, N. Y. Garces, L. E. Halliburton, *West Virginia University, USA*

N35-45: CsI:TI Temporal Luminosity Dependence on Radiation Type and Energy

G. N. Lolap, T. A. DeVol, *Clemson University, US*

New Solid State Detectors

N35-46: The ATLAS Beam Conditions Monitor

M. Mikuz¹, V. Cindro¹, I. Dolenc¹, G. Kramberger¹, I. Mandic¹, A. Gorisek², H. Pernegger², P. Weilhammer², W. Tritschuk³, H. Fraiskölbl⁴, E. Griesmaier⁴, H. Kagan⁵, M. Zavrtnik¹
¹Univ. Ljubljana / Jozef Stefan Institute, Slovenia; ²CERN, Switzerland; ³University of Toronto, Canada; ⁴Fotec, Austria; ⁵Ohio State University, USA

N35-47: Performance Comparison of a Large Volume CZT Semiconductor Detector and a LaBr₃(Ce) Scintillator Detector

R. Gonzalez, J. M. Perez, O. Vela, E. de Burgos
CIEMAT, SPAIN

N35-48: The Measurement of Atomistic Behavior via the Stochastic Response of Quenched Microstructures

M. D. Hammig, D. K. Wehe, *University of Michigan, USA*

N35-49: Fabrication of Indium Iodide X-and Gamma-ray Detectors

T. Onodera, K. Hitomi, T. Shoji
Tohoku Institute of Technology, Japan

N35-50: Investigation of Voltages and Electric Fields in Silicon Semi 3D Radiation Detectors Using Silvaco / ATLAS Simulation Tool and a Scanning Electron Microscope

T. Pvaliainen, K. Leinonen, T. Tuuva, *Lappeenranta University of Technology, Finland*; S. Eränen, *VTT Information Technology / Microelectronics, Finland*; J. Härkönen, P. Luukka, E. Tuovinen, *Helsinki Institute of Physics, Finland*

N35-51: Design Optimization for Cryogenic Fast-Neutron Spectrometers

I. D. Hau^{1,2}, T. R. Niedermayr¹, O. B. Drury¹, U. Roy³, A. Burger³, Z. W. Bell⁴, S. Friedrich¹
¹Lawrence Livermore National Laboratory, USA; ²University of California – Berkeley, USA; ³Fisk University, USA; ⁴Oak Ridge National Laboratory, USA

N35-52: Performance of CdZnTe Detectors Grown by Low-Pressure Bridgman

C. E. Seifert, J. L. Orrell, M. Bliss, *Pacific Northwest National Laboratory, USA*; K. G. Lynn, *Washington State University, USA*

N35-53: New Results with Thick Silicon Multi-Cathode X-Ray Detectors

S. Barkan, J. S. Iwanczyk, V. D. Saveliev, L. Feng, C. R. Tull, B. E. Patt

Radiant Detector Technologies, USA

N35-54: Development of Bulk Semi-Insulating GaAs Semiconductor Radiation Detector at Room Temperature

J. H. Ha, Y. K. Kim, S. H. Park, S. M. Keng, H. S. Kim

Korea Atomic Energy Research Institute, South Korea

N35-55: Hydrogenated Amorphous Silicon Sensors Based on TFA Technology

D. Moraes, M. Despeisse, G. Anelli, J. Kaplon, P. Jarron, *CERN, Switzerland*; A. Shah, N. Wyrsh, *Institut de Microtechnique, Switzerland*

N35-56: Formation of Schottky Electrode for CdTe Radiation Detector

H. Toyama¹, M. Yamazato¹, A. Higa¹, T. Maehama¹, R. Ohno², M. Toguchi¹

¹*University of the Ryukyus, Japan*; ²*Acronad Co., Ltd., Japan*

N35-57: Influence of Surface Treatment of CdZnTe for the Radiation Detector

Y. Kim, S. Park, H. Kim, J. Ha, C. E. Chung

KAERI, Republic of Korea

N35-58: PRELIMINARY RESULTS of LARGE VOLUME CdZnTe COPLANAR DETECTOR FABRICATION

V. Gostilo¹, Z. He², V. Ivanov³, L. Li⁴, A. Loupilov¹, I. Tsirkounova¹

¹*Baltic Scientific Instruments, Latvia*; ²*University of Michigan, USA*; ³*Ritec, Latvia*; ⁴*Yinnel Tech., Inc., USA*

N35-59: Arrays of Large-Area Silicon Drift Detectors for Industrial and Medical Applications

O. Boslau, A. Pahlke, S. Pahlke, J. Kemmer, F. Wiest, T. Eggert, R. Stoetter, P. Goldstrass

Ketek GmbH, Germany

N35-60: Comparison of Various Readout Methods of Silicon Drift Detectors

A. Niculae¹, H. Soltau¹, P. Lechner¹, G. Lutz², L. Strueder², C. Fiorini³, R. Eckhard², G. Schaller², F. Schopper²

¹*PNSensor GmbH, Germany*; ²*MPI Semiconductor Laboratory, Germany*; ³*Politecnico di Milano, Italy*

N35-61: Continued Studies of Single-Sided Charge-Sharing CZT Strip Detectors

B. Donmez¹, L.-A. Hamel², T. Narita³, J. R. Macri¹, J. M. Ryan¹

¹*University of New Hampshire, USA*; ²*University of Montreal, Canada*; ³*College of the Holy Cross, USA*

N35-62: Thick Position-Sensitive Silicon Detectors Using a Wafer-Bonding Technique

B. F. Philips, J. D. Kurfess, K. D. Hobart, F. J. Kub

Naval Research Laboratory, USA

N35-63: Melt Growth of HgxCd1-xI2, Crystals at High Pressure

A. G. Ostrogorsky¹, C. Marin², T. Cummings¹

¹*Rensselaer Polytechnic Institute, USA*; ²*University of Puerto Rico, PR, USA*

N35-64: Performance of Silicon Multi-Cathode X-Ray Detectors in Magnetic Fields

V. D. Saveliev, J. S. Iwanczyk, S. Barkan, I. C. R. Tull, L. Feng, B. E. Patt, *Radiant Detector Technologies, USA*; S. George, S. Friedrich, *Lawrence Berkeley National Laboratory, USA*

N35-65: Investigation of Synthetic Diamond Using Heavy Ion Beams

Y. Uchihori¹, T. Kashiwagi², K. Hibino², H. Kitamura¹, S. Okuno², T. Takashima³, K. Yajima^{1,4}, M. Yokota², K. Yoshida²

¹*National Institute of Radiological Sciences, Japan*; ²*Kanagawa University, Japan*; ³*Japan Aerospace Exploration Agency, Japan*; ⁴*Toho University, Japan*

N35-66: Solid-State Pillar Structured Thermal Neutron Detector

R. J. Welty¹, C. L. Cheung², C. E. Reinhardt¹, T.-F. Wang¹

¹*Lawrence Livermore National Laboratory, US*; ²*University of Nebraska, US*

N35-67: Silicon Sensor Development for the Silicon-Tungsten Calorimeter of the PHENIX Detector at RHIC

E. P. Kistenev, Z. Li, E. O'Brien, *Brookhaven National Laboratory, USA*; R. Seto, *University of California at Riverside, USA*; M. Merkin, *Moscow State University, Russia*; V. Vrba, *Institute of Physics, Academy of Sciences of the Czech Republic, Czech Republic*

Solid State Tracking Detectors

N35-68: The Micro-Vertex-Detector of the PANDA-Experiment at FAIR

T. Stockmanns, *IKP I, Forschungszentrum Jülich, Germany*
On behalf of the PANDA Collaboration

N35-69: Low Cost Extruded Plastic Scintillating Strips for Opera Experiment

S. Melnychuk, V. Senchyshyn, S. Minenko, N. Semenc
Institute for scintillating materials, Ukraine

N35-70: A Silicon Strips Detector Readout Prototype Chip in 180 Nanometer CMOS Technology.

J.-F. C. Genat, H. Lebbolo, T. H. Pham, A. Savoy-Navarro
CNRS/IN2P3/LPNHE, France

N35-71: An Improved Fabrication Technology for Silicon Detectors with Integrated JFET/MOSFET Electronics

G.-F. Dalla Betta¹, M. Boscardin², A. Candelori³, F. Fenotti¹, L. Pancheri¹, C. Piemonte², L. Ratti^{4,5}, N. Zorzi²

¹*Universita' di Trento, Italy*; ²*ITC-IRST, Divisione Microsistemi, Italy*; ³*INFN, Sezione di Padova, Italy*; ⁴*Universita' di Pavia, Italy*; ⁵*INFN, Sezione di Pavia, Italy*

N35-72: CMOS-APS for HEP Applications: Design and Test of Innovative Architectures

A. Marras^{1,2}, D. Passeri^{3,2}, P. Placidi^{3,2}, P. Ciampolini^{1,2}, G. Matrella^{1,2}, M. Petasecca^{3,2}, L. Servoli²

¹*Universita di Parma, Italy*; ²*Istituto nazionale di Fisica Nucleare, Italy*; ³*Universita di Perugia, Italy*

Instrumentation for Medical and Biological Research

N35-73: Productions and Performance of X-Ray Active Matrix Pixel Sensors for Detection of Electrons in Scanning Transmission Electron Microscope

W. Chen, R. H. Beuttenmuller, D. C. Elliott, J. Fried, G. DeGeronimo, Z. Li, P. O'connor, D. A. Pinelli, V. Radeka, P. Rehak, G. C. Smith, J. S. Wall, B. Yu

Brookhaven National Lab, USA

N36 Gas Detectors: Applications in Large Experiments

Thursday, Oct. 27 16:00-18:00, Magnolia Ballroom

Session Chair: **Carlos Conde**, *University of Coimbra*

N36-1: ATLAS Endcap MDT Chamber Performance in Pre-Commissioning

C. Ferretti, *University of Michigan, USA*

On behalf of the ATLAS Collaboration

N36-2: A High-Efficiency and High-Resolution Straw Tube Tracker for the LHCb Experiment

N. Tuning, *NIKHEF, Netherlands*

On behalf of the LHCb Outer Tracker Collaboration

N36-3: Performance of the PHENIX Time Expansion Chamber/ Transition Radiation Detector

M. A. L. Leite, *University of Sao Paulo, Brazil*

On behalf of the PHENIX TEC/TRD Group

N36-4: Study of the Performance and Aging of Resistive Plate Chambers

C. Gustavino, *INFN, Italy*

N36-5: The Resistive Plate Chamber System for the CMS Experiment At LHC

M. Abbrescia, *University and INFN, Italy*

On behalf of the CMS/RPC collaboration

N36-6: Performance of Time Projection Chamber Prototypes for the Linear Collider Experiment

M. Kobayashi, *KEK (High Energy Accelerator Research Organization), Japan*

On behalf of part of the ILC-TPC collaboration

N36-7: Conditioning of MWPCs for the LHCb Muon System

B. Schmidt, A. Kachtchouk, J.-S. Graulich, T. Schneider, K. Mair *CERN, CH*

N36-8: A New Concept for a Strawtube Detector for HEP Experiments at High-Intensity Machines

E. Basile^(?), F. Bellucci^(?), M. Bertani, S. Bianco, M. Caponero⁽¹⁾, D. Colonna^(?), F. Di Falco^(?), F. L. Fabbri, F. Felli^(?), M. Giardoni, A. La Monaca, G. Mensitieri^(?), B. Ortenzi, M. Pallotta, A. Paolozzi^(?), L. Passamonti, D. Pierluigi, C. Pucci^(?), A. Russo, G. Saviano^(?), F. Massa^(?)

Laboratori Nazionali di Frascati dell'Infn, Italy

N37 High Energy Physics Detectors III

Thursday, Oct. 27 16:00-18:00, Grand Caribbean Ballroom, Salons 1 & 2

Session Chairs: **Ping Yeh**, *Department of Physics, National Taiwan University*

Wim de Boer, *IEKP, Univ. of Karlsruhe*

N37-1: The BaBar Muon System Upgrade: Experience from Installation and Data Taking

W. Menges, *Queen Mary, University of London, UK*

On behalf of the BaBar LST Group

N37-2: Certification and Commissioning of Barrel Stations for the Atlas Muon Spectrometer

S. Zimmermann

European Laboratory for Particle Physics CERN, Switzerland

N37-3: Radiation-Hard Optical Link for the ATLAS Pixel Detector

K. E. Arms¹, K. K. Gan¹, P. D. Jackson¹, H. Kagan¹, R. Kass¹, A. Rahimi¹, S. Smith¹, R. Ter-Antonian¹, M. Ziolkowski², M. M. Zoeller¹

¹*The Ohio state University, USA;* ²*Universitaet Siegen, Germany*

N37-4: Tests and Final Integration of the ATLAS Semiconductor Tracker

B. Mikulec, *University of Geneva, Switzerland*

On behalf of the ATLAS Collaboration

N37-5: A Novel Monolithic Active Pixel Detector in 0.13 μm Triple Well CMOS Technology with Pixel Level Analog Processing.

G. Batignani¹, S. Bettarini¹, L. Bosisio², M. Carpinelli¹, G. Calderini¹, R. Cenci¹, F. Forti¹, G. Giacomini², M. A. Giorgi¹, L. Lanceri², A. Lusiani¹, M. Manghisoni³, G. Marchiori¹, F. Morsani¹, N. Neri¹, E. Paoloni¹, I. Rachevskaia², M. Rama¹, L. Ratti⁴, V. Re³, G. Rizzo¹, G. Simi¹, V. Speziali⁴, G. Traversi³, J. Walsh¹, L. Vitale²

¹*INFN-Pisa & University of Pisa, Italy;* ²*INFN-Trieste & University of Trieste, Italy;* ³*INFN-Pavia & University of Bergamo, Italy;* ⁴*INFN-Pavia & University of Pavia, Italy*

N37-6: A Comprehensive Numerical Simulation of Heavily Irradiated P-Type Silicon Detectors

M. Petasecca^{1,2}, F. Moscatelli^{1,3,2}, D. Passeri^{1,2}, G. U. Pignatelli^{1,2}, C. Scarpello¹

¹*University of Perugia, ITALY;* ²*INFN, ITALY;* ³*IMM-CNR, ITALY*

N37-7: Charge Transfer Efficiency Studies of CCD Vertex Detectors in the LCFI Collaboration

A. Sopczak, *Lancaster University, UK*

On behalf of the LCFI Collaboration

N37-8: Dedicated Front-End Electronics for an ILC Prototype Hadronic Calorimeter with SiPM Readout

E. Garutti, *DESY, Germany*

On behalf of the CALICE Collaboration / Scintillator group

Thursday, Oct. 27 16:00-17:30, Poinsettia Ballroom, Salons A, B, C
 Session Chair: **Rainer Novotny**, *2nd Physics Institute, University Giessen*

N38-1: Development of Gadolinium Pyrosilicate Powder Scintillator for Neutron Science

J. H. Kaneko¹, T. Yamaguchi¹, K. Susa², S. Miura¹, Y. Yagi², S. Kawamura¹, T. Oku³, F. Fujita¹, A. Homma¹, H. Ishibashi², T. Sawamura¹, M. Furusaka¹, H. M. Shimizu⁴, Y. Kiyanagi¹
¹*Hokkaido University, Japan*; ²*Hitachi chemical, Japan*; ³*JAERI, Japan*; ⁴*RIKEN, Japan*

N38-2: Quantum Confinement Effects in Semiconducting Scintillators

K. Shibuya, H. Murayama, *National Institute of Radiological Science, Japan*; M. Koshimizu, K. Asai, *Tohoku University, Japan*

N38-3: On the Suitability of Lanthanum Halide Scintillator Detectors for Interplanetary Space Missions

A. Owens¹, A. J. J. Bos², E. J. Buis³, P. Dorenbos², S. Kraft³, C. W. E. Eijk²
¹*ESA/ESTEC, Netherlands*; ²*Delft University of Technology, Netherlands*; ³*Cosine Science and Computing BV, Netherlands*

N38-4: Comparative Study of Large NaI(Tl) and BGO Scintillators for the EUROpean Illicit TRAFFicking Countermeasures Kit Project

M. Gierlik, T. Batsch, M. Moszyński, T. Szczeniński, D. Wolski, *Soltan Institute for Nuclear Studies, Poland*; W. Klamra, *Royal Institute of Technology, Sweden*; B. Perot, G. Perret, *Cadarache Research Center, France*

N38-5: A Simple Approach to Coherent Neutrino Detection: Scintillation Efficiency of Low Energy Nuclear Recoils in CsI(Na)

P. S. Barbeau, J. I. Collar, B. Odom
University of Chicago, USA

N38-6: Development of a Directional 14 MeV Neutron Detector Using Scintillating Fibers

N. Mascarenhas, J. Lund, J. Peel, D. Sunnarborg
Sandia National Laboratories, USA

We warmly welcome you to the 2005 IEEE Medical Imaging Conference (MIC) in Puerto Rico! Thanks to the high quality of the submitted abstracts, and to your participation, it promises to be another outstanding meeting in the rich tradition that the IEEE NSS/MIC has established over the years.

The meeting you are attending represents almost four years of planning, and is only made possible by the volunteer efforts of a large number of people. You will find their names mentioned in this program booklet, but we would like to take a moment to recognize three particular individuals who bore a particular burden in planning this meeting. First and foremost, nothing would happen without the General Chair. Tom Lewellen has shielded us from the many difficult and time-consuming details of organizing a conference and allowed us to focus on developing the scientific program for the MIC. Together with the rest of his program committee, especially Tony Lavietes who dealt with all the site arrangements, they have done an outstanding job. The other critical person was Bo Yu who over the years has put together a terrific website for the NSS/MIC meeting that saved us literally hundreds of hours of time by allowing us to interact efficiently and seamlessly with the authors and reviewers. Thank you Tom, Tony and Bo!

We would also like to thank the reviewers who did a great job in a very short turn-around time. Their contribution was particularly important this year, as space considerations meant that we could accept just 392 presentations from 543 submissions. Their careful reviews and insightful comments allowed us to conduct a fair review process and to build a strong and diverse scientific program. We would also like to thank the National Institute of Biomedical Imaging and Bioengineering and the National Cancer Institute for funding student travel for the meeting, as well as the companies listed at the back of the brochure for their generous support.

Although this meeting retains the overall approach of previous years, you will also see some notable changes, mainly designed to take advantage of the beautiful resort we are staying at. We have shifted the schedule to allow three and a half hours of free time in the afternoon so that you can enjoy a cocktail on your balcony, a swim in the pool or a boat ride to the beach. We hope this will give you additional time to chat with your colleagues, away from the formality of the lecture hall, and to enjoy the beautiful surroundings. Of course, it also gives the die-hard poster fanatics plenty of time to stroll down the aisles of posters and take their fill of the wonderful science on offer should they so choose. This year we have recognized exceptional submissions with a special "premium poster" category, located in the main foyer.

Another change this year is a tighter integration with the NSS program. There is now so much overlap, especially in the areas of detectors and electronics, that we have a whole day of joint sessions, as well as a joint poster session, designed to promote further interaction and collaboration between the two different interest areas.

We are delighted to have two outstanding plenary speakers this year. Dr. Jeff Bulte from Johns Hopkins University will talk about the use of imaging to visualize and track stem cells, an area with some unique opportunities and challenges for imaging, while Dr. Clifford Chao from the MD Anderson Cancer Center will talk about the use

of functional imaging in radiotherapy planning. Please join us in welcoming them to the MIC meeting.

The meeting will conclude with the MIC Dinner on Saturday evening, which will be a last chance for you to mingle and chat with your colleagues before we go our separate ways and back to our hectic professional lives. It is our sincere hope that you will leave Puerto Rico intellectually enriched, and relaxed and refreshed in mind and spirit.

Simon Cherry
Ramsey Badawi



Ramsey Badawi (left) and Simon Cherry (right),
Scientific Program Chairs of the 2005 IEEE
Medical Imaging Conference

MIC Dinner

Saturday, Oct. 29 19:00-22:00, location to be announced at conference

The Medical Imaging Conference dinner will be an outdoor dinner event taking full advantage of the venue. Details were not finalized when this program book went to press, but several locations and options are under consideration to reflect the location and culture of Puerto Rico.

MIC Plenary Session

Image-guided Stem Cell Therapy

Professor Jeff W.M. Bulte

*Department of Radiology and Institute for Cell Engineering
Johns Hopkins University School of Medicine*

There is considerable interest in the use of stem cells as a new therapeutic approach for tackling a wide range of human disease. Imaging is poised to play a critical role, both in preclinical development and in clinical application of cell-based therapies. In his presentation, Prof. Bulte will review the key biologic properties of stem cells and discuss the pros and cons of the different available non-invasive imaging modalities, with an emphasis on strategies for magnetic labeling of cells with superparamagnetic iron oxides. He will demonstrate the use of imaging for monitoring of neural (stem) cell migration in the brain and spinal cord in rodents, and in guiding bone marrow stem cell therapy in the infarcted myocardium in pig and dog models. He will also report on the results of the first worldwide clinical trial using magnetically labeled therapeutic cells. Finally, Prof. Bulte will examine the limitations of current imaging strategies and explore some of the new emerging technologies that are being considered for stem cell imaging.



Prof. Bulte received his Ph.D. in Immunology from the University of Groningen (The Netherlands) in 1991. From 1992 until 2001 he worked at the National Institutes of Health in the Laboratory of Diagnostic Radiology Research before joining the Department of Radiology and the Institute for Cell Engineering at Johns Hopkins University School of Medicine as an Associate Professor. He is a council member of the Society for Molecular Imaging and in 2006 will chair the Molecular and Cellular Imaging Study Group within the International Society for Magnetic Resonance in Medicine. Combining his expertise in imaging and immunology, he has established himself as one of the leading researchers in the world in the rapidly growing field of *in vivo* imaging of cell-based therapies.

Integration of Functional Images into Future Radiation Oncology Research and Practice

Professor K. Clifford Chao

Radiation Oncology

The University of Texas M.D. Anderson Cancer Center

The technological revolution in imaging during recent decades has transformed the way image-guided radiation therapy is performed. Anatomical imaging (plain radiography, computed tomography, magnetic resonance imaging) greatly improved the accuracy of delineating target structures and has formed the foundation of 3D-based radiation treatment. However, the treatment planning paradigm in radiation oncology is beginning to shift towards a more biological and molecular approach as advances in biochemistry, molecular biology, and technology have made functional imaging of physiological processes (positron emission tomography, nuclear magnetic resonance spectroscopy, optical imaging) in tumors more feasible and practical. Prof. Chao will provide an overview of the role of current imaging strategies in radiation oncology, with a focus on functional imaging modalities, as it relates to staging and molecular profiling of tumors (cellular proliferation, apoptosis, angiogenesis, hypoxia, receptor status), defining radiation target volumes, and assessing therapeutic response. In addition, he will discuss how obstacles such as the validation of imaging with pathology, optimal timing of post-therapy scans, spatial and temporal evolution of tumors, and lack of clinical outcome studies must be overcome before a new era of functional imaging-guided therapy becomes a clinical reality.



Prof. Chao received his MD from Kaohsiung Medical School in 1989. He then completed his residency at the Washington University School of Medicine, St. Louis (1991) and a fellowship at the Mallinckrodt Institute of Radiology (1993). He is currently Director of the Molecular Image-Targeted Research Program in the Department of Radiation Oncology at the M.D. Anderson Cancer Center where he coordinates preclinical and clinical research for molecular/cellular targeted therapy. Prof. Chao is the principal investigator on several grants and has more than 80 peer-reviewed articles to his name. He recently received the Radiological Society of North America (RSNA) Annual Oration in Radiation Oncology Award for 2005.

M01 MIC Plenary Session

Thursday, Oct. 27 08:00-08:00, Pablo Casals Ballroom

Session Chairs: **Simon Cherry**, *University of California-Davis*
Ramsey Badawi, *UC Davis Medical Center*

M01-1: Image-guided Stem Cell Therapy

J. W. M. Bulte

Johns Hopkins University School of Medicine, USA

M01-2: Integration of Functional Images into Future Radiation Oncology Research and Practice

K. C. Chao

The University of Texas M.D. Anderson Cancer Center, USA

M02 Breast Imaging

Thursday, Oct. 27 10:30-12:00, Pablo Casals Ballroom

Session Chairs: **Michael King**, *Univ of Mass Med School*
Craig Levin, *Stanford University School of Medicine*

M02-1: Initial Patient Results from Dedicated Emission Mammotomography

C. N. Brzymialkiewicz, R. L. McKinley, M. P. Tornai

Duke University, USA

M02-2: Design Simulation of a Rotating Dual-Headed PET Scanner for Breast Imaging (MaxPET)

F. Lamare, D. Visvikis, P. Cortes, *Inserm, France*; V.-H. Tran, *Thomas Jefferson National Accelerator Facility, USA*; S. R. Cherry, *UC Davis, USA*; R. D. Badawi, *UC Davis Medical Center, USA*

M02-3: A Scalable System for Microcalcification Cluster Automated Detection in a Distributed Mammographic Database

A. Retico^{1,2}, P. Delogu^{1,2}, M. E. Fantacci^{1,2}, A. Preite Martinez^{1,2}, A. Stefanini^{1,2}, A. Tata^{1,2}

¹*Università di Pisa, Italy*; ²*Sezione di Pisa, Italy*

M02-4: Technical Factors of Clinical Imaging with a CZT-based Molecular Breast Imaging System

C. B. Hruska, M. K. O'Connor, S. W. Phillips, D. J. Rhodes, D. A. Collins

Mayo Clinic, US

M02-5: Investigation of Imaging Characteristics of Rotating Multi-Segment Slant-Hole SPECT Mammography Using Contrast-to-Noise Ratio Criterion

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

M02-6: Design and Testing of Detectors for a Positron Emission Mammography/Tomography Breast Biopsy Device

R. R. Raylman, *Center for Advanced Imaging, West Virginia University, USA*; S. Majewski, B. Kross, V. Popov, J. Proffitt, A. G. Weisenberger, R. Wojcik, *Jefferson Lab, USA*

M03 Posters 1

Thursday, Oct. 27 15:30-17:30, Grand Caribbean East and South Foyer

Session Chairs: Vesna Sossi, *University of British Columbia*
Steven Meikle, *University of Sydney*

M03-85: Task-Based Evaluation of Diffraction-Enhanced Imaging

J. G. Brankov, A. Saiz-Herranz, M. N. Wernick
Illinois Institute of Technology, USA

M03-88: Optical Fiber Coupled Apds For The Readout Of Lso Crystals In A Simultaneous Pet-Mri Scanner

C. Catana¹, M. S. Judenhofer², B. J. Pichler², S. R. Cherry¹
¹*University of California, Davis, USA*; ²*University of Tübingen, Germany*

M03-91: 3D Segmentation of the Mouse Spleen in microCT via Active Contours

D. Aykac, J. R. Price, *Oak Ridge National Laboratory, USA*; J. S. Wall, *University of Tennessee, USA*

M03-94: Fast and Accurate Decimation-in-Angle Hierarchical Backprojection Algorithms

A. George, Y. Bresler
University of Illinois at Urbana-Champaign, USA

M03-97: Simplified Statistical Image Reconstruction Algorithm for Polyenergetic X-Ray CT

S. Srivastava, J. A. Fessler
University of Michigan, Ann Arbor, USA

M03-100: A PET Camera Optimized for Prostate Imaging

J. S. Huber¹, W.-S. Choong¹, W. W. Moses¹, J. Qi^{1,2}, J. Hu¹, G.-C. Wang¹, D. Wilson¹, S. Oh¹, R. H. Huesman¹, S. E. Derenzo¹
¹*E. O. Lawrence Berkeley National Laboratory, USA*; ²*University of California, USA*

M03-103: Nanochemistry for SPECT, PET and Therapeutic Radiopharmaceuticals

A. J. Rondinone, S. J. Kennel, S. Dai, S. Mirzadeh, J. Woodward
Oak Ridge National Laboratory, USA

M03-106: Monte Carlo Estimation of Patient and Detector Scatter and Crosstalk Contamination in SPECT Imaging

J. Ouyang, S. C. Moore, M.-A. Park, G. El Fakhri
Brigham and Women's Hospital and Harvard Medical School, USA

M03-109: Monte Carlo Simulation of Randoms and Pixelated Block Detectors : Validation Using the NEMA NU-2 Test Procedures

B. Guérin¹, G. El Fakhri^{1,2}
¹*Brigham & Women's Hospital, USA*; ²*Harvard Medical School, USA*

M03-112: Pixelated Cadmium Zinc Telluride (CZT) Arrays: Characterization and Applications to Positron Emission Tomography (PET)

J. R. Stickel¹, K. Shah², H. Kim², L. Cirignano², S. R. Cherry¹
¹*University of California at Davis, USA*; ²*Radiation Monitoring Devices, Inc, USA*

M03-115: DOI Detection Capability of 3D Crystal Array Standing over Two PMTs

N. Inadama¹, H. Murayama¹, T. Yamaya¹, T. Tsuda^{1,2}, Y. Ono^{1,2}, M. Hamamoto^{1,3}
¹*National Institute of Radiological Sciences, Japan*; ²*Chiba University, Japan*; ³*Waseda university, Japan*

M03-118: On the Use of the PhotoDetection High-Sensitivity 90cm Bore PET Scanner Wavelength Shifting Fiber Detector Design to Achieve High Spatial Resolution.

L. Romanov, S. S. Adler, J. Chaplin, P. Domigan, O. Johnson, M. King, R. Rohatgi, S. Starsja, W. Worstell
Photodetection Systems, Inc, USA

M03-121: Impact of Inter-Crystal Crosstalk on Pixel Identification and Depth-of-Interaction Information in PET Detectors

C. Degenhardt, K. Fiedler, T. Frach, W. Rütten, T. Solf, A. Thon
Philips Research Aachen, Germany

M03-124: Prototype PET System Using Two 3-D Position Sensitive CdZnTe Detectors

F. Zhang, Z. He, L. J. Meng
The University of Michigan, U.S.A.

M03-127: Performance Characteristics of Continuous Miniature Crystal Element (cMiCE) Detectors

T. Ling, *University of Washington, USA*

M03-130: Effect of Random Reduction on Signal-to-Noise-Ratio in TOF PET

M. Conti, *CPS Innovations, Inc., USA*

M03-133: Optimization of 3D TOF PET Reconstruction Using a Limited Number of 2D Histoprojections

S. Vandenberghe¹, M. Daube-Witherspoon², S. Matej³, R. Lewitt³, J. Karp²
¹*Philips Research USA, USA*; ²*PET instrumentation group, USA*; ³*Medical Image and Processing group, USA*

M03-136: A Tungsten Rubber Based Flexible End-Shield for a Large Axial Field-of-View PET Camera

S. Yamamoto^{1,2}, K. Matsumoto², M. Senda²
¹*Kobe City College of Technology, Japan*; ²*Institute of Biomedical Research and Innovation, Japan*

M03-139: System Architecture of the PhotoDetection 90 Cm Bore High-Sensitivity PET Scanner

D. Lazuka, S. Adler, P. Domigan, O. Johnson, P. Kemp, H. Kudrolli, P. Monteverde, J. Nevin, R. Rohatgi, L. Romanov, S. Starsja, J. Taggart, W. Worstell
Photodetection Systems Inc, USA

M03-142: Investigation of a High-Resolution Detector for Whole-Body PET Imaging

S. Surti, A. Kuhn, J. Karp, *University of Pennsylvania, USA*

M03-145: A Ge-68 PET Hot-Sphere Phantom with No Cold Shells

J. J. Hamill, *CPS Innovations, USA*; C. E. Arnsdorff, X. Liu, W. J. Raulston, *CTI Molecular Imaging, USA*

M03-148: Evaluation of Sinogram Consistency Conditions for Identifying Artifactual PET Attenuation Images

C. M. Laymon¹, J. E. Bowsher², M. J. Swadley¹, S. K. Ziolkow¹
¹University of Pittsburgh, USA; ²Duke University, USA

M03-151: CT Images for Attenuation Correction in PET

V. Rappoport, D. Faul, CPS Innovations, USA; J. P. J. Carney, D. W. Townsend, University of Tennessee, USA

M03-154: Scatter Simulation Including Double Scatter

C. Tsoumpas^{1,2}, P. Aguiar³, D. Ros³, K. Thielemans¹
¹Hammersmith Imanet Ltd, United Kingdom; ²Imperial College, United Kingdom; ³Universitat de Barcelona, Spain

M03-157: Use of a Central Positron Emitting Reference Source to Improve the Timing Alignment of a Singles List-Mode Small Animal PET Scanner

D. P. McElroy¹, C. J. Thompson², V. Spanoudaki¹, S. I. Ziegler¹
¹Technische Universität München, Germany; ²McGill University, Canada

M03-160: High Resolution PET Imaging Characteristics of 68-Ga, 124-I and 89-Zr Compared to 18-F

H. W. A. M. de Jong, L. Perk, G. W. M. Visser, R. Boellaard, G. A. M. S. van Dongen, A. A. Lammertsma
VU University Medical Center, the Netherlands

M03-163: Dosimetry of PET Tracers in Mice Using microPET Scans as an Input Function

A. L. Goertzen¹, C. Janicki², P. Rosa-Neto¹
¹Montreal Neurological Institute, Canada; ²McGill University Health Centre, Montreal General Hospital, Canada

M03-166: FDG-PET Image-Based Dose Distribution in a Realistic Mouse Phantom from Monte Carlo Simulations

R. Taschereau, A. F. Chatziioannou
University of California Los Angeles, USA

M03-169: Improving the Spatial Resolution of the MicroPET Scanner by Wobbling the Bed

C. J. Thompson, Montreal Neurological Institute, McGill University, Canada; A. Labuda, J. Suk, McGill University, Canada

M03-172: High Resolution Imaging with ClearPET™ Neuro – First Animal Images

M. Khodaverdi, S. Weber, M. Streun, C. Parl, H. Larue, G. Brandenburg, A. Bauer, M. Dehnhardt, U. Pietrzyk, K. Ziemons
Forschungszentrum Juelich GmbH, Germany

M03-175: Performance Characteristics of the miniPET Scanner Dedicated to Small Animal Imaging

G. Hegyesi, J. Imrek, G. Kalinka, J. Molnar, D. Novak, J. Vegh, Institute of Nuclear Research, Hungary; L. Balkay, M. Emri, S. A. Kis, G. Molnar, L. Tron, I. Valastyan, PET Center, University of Debrecen, Hungary; I. Bagamery, T. Bukki, S. Rozsa, MEDISO Ltd, Hungary; Z. Szabo, Institute of Experimental Physics, University of Debrecen, Hungary; A. Kerek, Royal Institute of Technology, Sweden

M03-178: Quantitative Iodine-124 Imaging on Animal PET

R. Yao, Y. Shao
State University of New York at Buffalo, USA

M03-181: Monte Carlo Simulation of the microPET FOCUS System for Small Rodents Imaging Applications

S. Jan¹, A. Desbrée², F. Pain², D. Guez³, C. Comtat¹, H. Gurden², S. Kerhoas³, P. Lanièce², F. Lefebvre², R. Mastripolito², R. Trébossen¹
¹CEA - Service Hospitalier Frédéric Joliot, France; ²CNRS/INP³ - IPNO, France; ³CEA - SPHn, France

M03-184: An Integrated Microfluidic Blood Sampler for Determination of Blood Input Function in Quantitative Mouse microPET Studies

H.-M. Wu¹, G. Sui¹, C.-C. Lee², W. Ladno¹, S. Quake³, H.-R. Tseng¹, S.-C. Huang¹
¹University of California Los Angeles, USA; ²California Institute of Technology, USA; ³Stanford University, USA

M03-187: First Experimental Results with the ClearPEM Detector

J. Varela^{1,2,3}, ¹LIP - Lab. de Instrumentação e Física Exp. de Partículas, Portugal; ²IST - Inst. Superior Técnico, Univ. Técnica de Lisboa, Portugal; ³CERN, Switzerland
On behalf of the ClearPEM Project

M03-190: Study of Count Performance, Lesion Visualization and Contrast Resolution as a Function of Crystal Resolution for a Dual-Plate PET Camera Dedicated to Breast Cancer Imaging

J. Zhang, P. D. Olcott, A. M. K. Foudray, G. Chinn, C. S. Levin
Stanford University, USA

M03-193: Optimizing Orientation of SPECT and CT Detectors Through Quantification of Cross Contamination in a Dual Modality Mammotomography System

D. J. Crotty^{1,2}, C. N. Brzymialkiewicz^{1,2}, R. L. McKinley^{1,2}, M. P. Tornai^{1,2}
¹Duke University Medical Center, USA; ²Duke University, USA

M03-196: Effect of Artifacts in CT Attenuation Maps on SPECT Images

A. M. Celler, S. McDiarmid, University of British Columbia, Canada; R. Harrop, Simon Fraser University, Canada

M03-199: Quantification of Myocardial Blood Flow with N-13-Ammonia and Rb-82 PET - OSEM Vs. FBP Reconstruction

R. W. Davies, R. S. Beanlands, R. A. deKemp
University of Ottawa Heart Institute, Canada

M03-202: Fully 4D Reconstruction of Gated Cardiac Images

E. J. Gravier, Y. Yang
Illinois Institute Of Technology, Usa

M03-205: Nuclear Imaging of Vulnerable Plaque: Contrast Improvements Through Multi-Labeling of Nanoparticles

D. J. Wagenaar, Siemens Medical Solutions USA, Inc., USA; J. A. Chen, Illinois Mathematics and Science Academy, USA

M03-208: Estimating Cardiac Wall Motion from a Sequence of Gated SPECT Images

E. Haber, T. Faber, Emory University, USA

M03-211: Quantifying the Normal Range of Myocardial Blood Flow with N-13-Ammonia PET and Tracer Kinetic Modeling

J. Renaud, M. Lortie, J. DaSilva, R. S. Beanlands, R. A. deKemp
University of Ottawa Heart Institute, Canada

M03-214: An Investigation of Reconstruction Strategies for Mediastinal Lesion Detection Using Hybrid Ga-67 SPECT Images

N. F. Pereira¹, H. C. Gifford², T. H. Farncombe³, M. A. King²
¹University of Massachusetts, Amherst, USA; ²University of Massachusetts Medical School, USA; ³Hamilton Health Sciences, Canada

M03-217: A Channelized Observer Study Comparing Fan-Beam and Parallel-Hole Collimation in 99mTc-Sestamibi Myocardial SPECT Defect Detection with a Heterogeneous Phantom Population

K. L. Gilland, B. M. W. Tsui, *Johns Hopkins University, USA*; G. T. Gullberg, *E. O. Lawrence Berkeley National Laboratory, USA*

M03-220: Computer Observer Design for Dynamic PET Image Using Time Domain Filtering

Z. Li, X. Yu, *University of Southern California, USA*

M03-223: Investigation of Lesion Detection in MAP Reconstruction with Non-Gaussian Priors

J. Qi^{1,2}
¹University of California, USA; ²Lawrence Berkeley National Laboratory, USA

M03-226: Comparing Geometries for PET Systems with Depth of Interaction

G. Chinn¹, A. M. K. Foudray^{1,2}, C. S. Levin¹
¹Stanford University, USA; ²University of California, San Diego, USA

M03-229: Determining the Lesion Detectability Index along the Axial and Radial Direction for Multi-Pinhole SPECT

G. Bal, Z. Cao, P. D. Acton
University of Pennsylvania, USA

M03-232: Collimator Spatial Resolution

H. Wiczorek¹, A. Goedicke¹, F. Edström², C. Degenhardt¹, H. Botterweck¹, R. Bippus¹
¹Philips Research Laboratories, Germany; ²Royal Institute of Technology, Sweden

M03-235: A Novel Way to Characterize the MTF in 3D for Quantized SPECT Cameras Having Arbitrary Trajectories

P. Madhav^{1,2}, C. N. Brzymialkiewicz^{1,2}, J. E. Bowsher¹, M. P. Tornai^{1,2}
¹Duke University Medical Center, USA; ²Duke University, USA

M03-238: Performance Evaluation of a Repackaged 64-Pixel Positron-Sensitive Surgical Probe System Using Excised SLNs Tissue

F. Liu¹, R. Wiener², W. Kononenko², J. R. Saffer², G. M. Mayers², F. M. Newcomer², R. Van Berg², J. S. Karp², N. S. Lockyer²
¹Richard Stockton College of New Jersey, USA; ²University of Pennsylvania, USA

M03-241: Stereo-Infrared Tracking to Monitor and Characterize Rigid-Body Motion and Respiration During Cardiac SPECT Imaging: Progress Towards Robust Clinical Utilization

R. D. Beach¹, H. C. Gifford¹, P. P. Bruyand¹, B. Feng¹, M. A. Gennert², S. Nadella², M. A. King¹
¹University of Massachusetts Medical School, USA; ²Worcester Polytechnic Institute, USA

M03-244: Motion Correction for jPET-D4: Improvement of Measurement Accuracy with a Solid Marker

T. Hasegawa¹, Y. Fukushima¹, H. Muraishi¹, T. Nakano¹, T. Kuribayashi¹, Y. Shiba¹, K. Maruyama¹, T. Yamaya², E. Yoshida³, N. Hagiwara³, T. Obi³, H. Murayama²
¹Kitasato University, Japan; ²National Institute of Radiological Sciences, Japan; ³Tokyo Institute of Technology, Japan

M03-247: Incorporation of Elastic Transformations in List Mode Based Reconstruction for Respiratory Motion Correction in PET

F. Lamare¹, T. Cresson¹, M. J. Ledesma Carbayo², G. Kontaxakis², A. Turzo¹, Y. Bizais¹, C. Cheze-Le Rest¹, D. Visvikis¹
¹Laboratoire de Traitement de l'Information Medicale, France; ²Telecomunicacion Universidad Politecnica de Madrid, Spain

M03-250: Scatter Estimation and Motion Correction in PET

K. Thielemans, *Hammersmith Imanet Ltd, UK*

M03-253: Co-Planar PET/CT for Small Animal Imaging

J. J. Vaquero, E. Lage, L. Ricón, S. Redondo, J. Pascau, J. Sánchez, M. Abella, M. L. Soto-Montenegro, M. Desco
Unidad de Medicina y Cirugía Experimental, Hospital GU Gregorio Marañón, Spain

M03-256: Performance Characteristics of an Integrated Small Animal SPECT/CT Unit

S. Daibes Figueroa^{1,2}, C. T. Winkelmann¹, W. A. Volkert¹, T. J. Hoffman^{1,2}
¹University of Missouri-Columbia, USA; ²Harry S. Truman VA Hospital, USA

M03-259: PET-MOT - a Novel Concept for Simultaneous Positron and Optical Tomography in Small Animals

J. Peter, W. Semmler
German Cancer Research Center, Germany

M03-262: Development of an APD Based PET Detector for a Simultaneous PET and 7 Tesla MRI Imaging

M. S. Judenhofer¹, S. B. Siegel², B. K. Swann³, C. Catana³, S. Köhler⁴, R. Ladebeck⁵, M. Schmand⁶, W.-I. Jung⁴, R. Krieg⁵, R. E. Nutt², S. R. Cherry³, C. D. Claussen¹, B. J. Pichler¹
¹Clinic of Radiology, University of Tübingen, Germany; ²CTI-Concorde Microsystems, USA; ³University of California, USA; ⁴Bruker BioSpin MRI, Germany; ⁵Siemens Medical Solutions, Germany; ⁶CPS Innovations, USA

M03-265: Development of a Triple Modality Small Animal Planar Imaging System

A. G. Weisenberger, S. Majewski, B. Kross, V. Popov, B. L. Welch, R. Wojcik, C. Zorn, *Thomas Jefferson National Accelerator Facility, United States*; Z. Lee, *Case Western Reserve University, United States*

M03-268: A Novel Detector for Positron Emission Tomography of Primary Brain Tumours

A. Reznik, B. Lui, S. Yin, J. Rowlands, *Sunnybrook & Women's College Health Sciences Centre, Canada*; W. Zhao, *State University of New York at Stony Brook, USA*

M03-271: Influence of Depth of Interaction on Spatial Resolution and Image Quality for the HRRT

S. Blinder¹, M.-L. Camborde¹, K. R. Buckley², A. Rahmim³, J.-C. Cheng¹, T. J. Ruth², V. Sossi¹

¹University of British Columbia, Canada; ²TRIUMF, Canada; ³Johns Hopkins University, USA

M03-274: List-Mode Image Reconstruction for the High Resolution ClearPET Neuro™ System

P. Musmann, N. Schramm, S. Weber
Forschungszentrum Jülich GmbH, Germany

M03-277: Performance Evaluation of a New Image Acquisition Strategy in Pinhole SPECT: a Simulation Study

T. Zeniya, H. Watabe, T. Aoi, A. Kubo, H. Iida
National Cardiovascular Center Research Institute, Japan

M03-280: SPECT Aperture Design Using Uniform Cramer Rao Bounds

L.-J. Meng¹, Y. E. Eldar², J. F. Fessler¹
¹University of Michigan, USA; ²Technion, Israel Institute of Technology, Israel

M03-283: Continuous Model to Estimate System Properties of Pseudo Stationary Multi-Pinhole SPECT Devices

M. Rentmeester, F. van der Have, F. Beekman
University Medical Center Utrecht, Netherlands

M03-286: Accuracy of Auto-Calibration for Pinhole Micro-SPECT
F. P. DiFilippo, Cleveland Clinic Foundation, USA; M. J. Riffe, Case Western Reserve University, USA

M03-289: The Design of a High-Resolution and High-Sensitivity Multi-Pinhole SPECT System for Small Animal Imaging

B. M. W. Tsui, Y. Wang, S. P. Mok, E. C. Frey, A. Walz-Flannigan, Johns Hopkins University, USA; M. F. Smith, S. Majewski, Thomas Jefferson National Accelerator Facility, USA

M03-292: Advanced Applications in Multi-Pinhole SPECT

N. U. Schramm, J. W. Hoppin, C. Lackas, Research Center Juelich, Germany; A. Wirrwar, University of Duesseldorf, Germany; M. Behe, University of Marburg, Germany

M03-295: A Novel Method for the Estimation of Infarct Size in a Reperfused Rat Model for Pinhole SPECT.

H. Bal, D. Thomas, Z. Cao, V. Ferrari, P. D. Acton
University of Pennsylvania, U.S.A

M03-298: A Hybrid Level Set Approach for Efficient and Reliable Image Segmentation

S. Kim, University of Kentucky, USA; H. Lim, Mississippi State University, USA

M03-301: Development of a System for the Non-Invasive Measurement of the Time Course of [C-11] Nicotine

S. J. Lokitz, T. G. Turkington, J. E. Rose
Duke University Medical Center, USA

M03-304: Event-by-Event Random and Scatter Estimator Based on Support Vector Machine Using Multi-Anode Outputs

E. Yoshida¹, Y. Kimura², K. Kitamura³, F. Nishikido⁴, T. Yamaya¹, H. Murayama¹
¹National Institute of Radiological Sciences, Japan; ²Tokyo Metropolitan Institute of Gerontology, Japan; ³Shimadzu Corporation, Japan; ⁴Waseda University, Japan

M03-307: The Partial Volume Effect in PET/SPECT and Benford's Law

J. P. Chiverton, K. Wells, H. Kadhem, Centre for Vision, Speech and Signal Processing, University of Surrey, UK; M. Partridge, R. J. Ott, Institute of Cancer Research and Royal Marsden NHS Trust, Royal Marsden Hospital, UK

M03-310: An Extravascular Density Model for PET Partial Volume Correction

R. W. Wassenaar, Carleton University, Canada; R. A. deKemp, University of Ottawa Heart Institute, Canada

M03-313: Regional Quantitative Analysis of Cortical Surface Maps of FDG PET Images

H. D. Protas, P. M. Thompson, K. M. Hayashi, C. L. Yu, M. Bergsneider, S. C. Huang
UCLA, USA

M03-316: Image- Based Determination of the Blood Input Function in a Cerebral FDG Study Using Mixture Model Spillover Correction.

J. Kirrane¹, F. O'Sullivan^{1,2}, M. Muzi², A. Spence²
¹University College Cork, Ireland; ²University of Washington, America

M03-319: Residue Analysis of Dynamic PET Data and a Statistical Assessment of the 2-Compartment Model for FDG in Human Brain Tissue

F. O'Sullivan¹, M. Muzi², N. Fitzgerald¹, J. O'Sullivan¹, A. Spence², M. Graham³, K. Krohn²
¹University College Cork, Ireland; ²University of Washington, USA; ³University of Iowa, USA

M03-322: Accurate Dynamic FIM Estimation from List-Mode PET Data for Uniform Resolution Reconstructions

E. Asma, R. M. Leahy
University of Southern California, USA

M03-325: Performance Evaluation of Block-Iterative Algorithms for SPECT Reconstruction

C. Liu, J. Xu, T.-S. Lee, L. Volokh, B. M. W. Tsui
The Johns Hopkins Medical Institutions, USA

M03-328: Multiple Flat Panel CT Reconstruction

S. K. Basu, B. De Man
General Electric Global Research Center, USA

M03-331: List-Mode Reconstruction with System Modeling Derived from Projections

A. J. Reader¹, F. C. Sureau², C. Comtat², I. Buvat³, R. Trébossen²
¹The University of Manchester, United Kingdom; ²French Atomic Energy Commission (CEA), France; ³UMR U678 INSERM - UPMC, France

M03-334: Fully 3-D Image Reconstruction of Data Acquired During Continuous Bed Motion on the PhotoDetection Systems High-Sensitivity 90cm PET Scanner

W. Worstell, L. Romanov, R. Rohatgi, J. Nevin, H. Kudrolli, S. Adler
Photodetection Systems, Inc, USA

M03-337: Image Reconstruction in Optoacoustic Tomography Accounting for Frequency-Dependent Attenuation
P. J. La Riviere, *The University of Chicago, IL*; M. A. Anastasio, *Illinois Institute of Technology, IL*

M03-340: Statistical Reconstruction Methods in PET: Resolution Limit, Noise, Edge Artifacts and Scanners Design
J. L. Herraiz¹, S. España¹, J. J. Vaquero², M. Desco², J. M. Udias¹
¹*Dpto. Física Atomica, Molecular y Nuclear, Spain*; ²*Hospital GU Gregorio Marañon, Spain*

M03-343: Fast Hybrid Algorithms for PET Image Reconstruction
Q. Li, S. Ann, R. M. Leahy
University of Southern California, USA

M03-346: Analytical Reconstruction for Helical Cone-Beam SPECT with Non-Uniform Attenuation Correction
Q. Huang, G. L. Zeng, *University of Utah, USA*; G. T. Gullberg, *E. O. Lawrence Berkeley National Laboratory, USA*

M03-349: Noise Performance of Fast Hierarchical 3D Backprojection for Helical Cone-Beam Tomography
J. Brokish, *InstaRecon, Inc., USA*; Y. Bresler, *University of Illinois at Urbana-Champaign, USA*

M03-352: Helical and Axial Cone Beam Filtered Backprojection Reconstruction Algorithms Using a General Window Function
X. Tang, J. Hsieh, R. A. Nilsen, S. M. Mcolash
GE Healthcare, USA

M03-355: Sampling Requirements for Region of Interest Reconstruction in Fan-Beam Tomography
J. Brokish, *InstaRecon, Inc., USA*; Y. Bresler, *University of Illinois at Urbana-Champaign, USA*

M03-358: Non-Gaussian Noise in γ -Ray and X-Ray Detectors
L. Chen, *University of Arizona, USA*; H. H. Barrett, *University of Arizona, USA*

M03-361: Empirical Water Precorrection for Cone-Beam Computed Tomography
K. Sourbelle, M. Kachelriess, W. A. Kalender
Institute of Medical Physics, Germany

M03-364: Focused Beam-Stop Array for Megavoltage Cone Beam X-Ray Imaging
J. S. Maltz, B. Gangadharan, S. Bose, A. Bani-Hashemi
Siemens Medical Solutions USA, Inc., USA

M03-367: Material Separation with Dual-Layer CT
R. Carmi, G. Naveh, A. Altman
Philips Medical Systems Technologies Ltd., Israel

M03-370: Iterative Bone Correction Coefficient Selection Based on the Normalized Bone Index of Images
J. Li, *GE Healthcare Technologies, USA*

M03-373: 3D and 4D Imaging from Multi-Threaded Cone-Beam CT Scans
M. Knaup, M. Kachelriess, W. A. Kalender
University of Erlangen-Nuremberg, Germany

M04 Whole Body PET & PET/CT

Thursday, Oct. 27 17:30-19:30, Pablo Casals Ballroom
Session Chairs: Magnus Dahlbom, *UCLA School of Medicine*
Richard Carson, *Yale University*

M04-1: A Quantitative Approach to a Weight-Based Scanning Protocol for PET Oncology Imaging
P. Kinahan, P. Cheng, A. Alessio, T. Lewellen
University of Washington, WA

M04-2: Performance of a BGO PET/CT with Higher Resolution PET Detectors
T. G. Turkington¹, J. J. Williams², J. W. Wilson¹, J. G. Colsher², D. L. McDaniel², C. Kim², S. G. Ross², C. W. Stearns², S. D. Wollenweber²

¹*Duke University Medical Center, USA*; ²*GE Healthcare Technologies, USA*

M04-3: Reduction of Attenuation Correction Artifacts in PET-CT
J. L. Nuyts, S. Stroobants, *K.U.Leuven, Belgium, Belgium*

M04-4: The Effects of Object Size, Attenuation, Scatter, and Random Coincidences on Signal to Noise Ratio in Simulations of Time-of-Flight Positron Emission Tomography
R. L. Harrison, A. M. Alessio, P. E. Kinahan, T. K. Lewellen
University of Washington, USA

M04-5: Improving PET/CT Attenuation Correction with Iterative Beam Hardening Correction
M. Kachelriess, W. A. Kalender
Institute of Medical Physics (IMP), Germany

M04-6: Accurate Attenuation Modeling of Rebinned 3D PET Data
M. E. Daube-Witherspoon¹, S. Matej¹, S. Vandenberghe², J. R. Saffer¹, J. S. Karp¹
¹*University of Pennsylvania, USA*; ²*Philips Research USA, USA*

M04-7: Energy-Based Scatter Correction and Energy Dependent Image Reconstruction for PET Scanners
L. M. Popescu, S. Matej, R. M. Lewitt, J. S. Karp
University of Pennsylvania, Department of Radiology, USA

M04-8: Characterization of TOF PET Scanner Based on Lanthanum Bromide
J. S. Karp¹, A. Kuhn¹, A. Perkins², S. Surti¹, M. E. Werner¹, M. E. Daube-Witherspoon¹, L. Popescu¹, S. Vandenberghe³, G. Muehlethner²

¹*University of Pennsylvania, USA*; ²*Philips Medical Systems, USA*; ³*Philips Research USA, USA*

M05 Image Reconstruction

Friday, Oct. 28 08:00-10:00, Pablo Casals Ballroom
Session Chairs: Richard Leahy, *University of Southern California*
Johan Nuyts, *K.U.Leuven, Belgium*

M05-1: Calculation of the Sensitivity Image in List-Mode Reconstruction
J. Qi^{1,2}

¹University of California, USA; ²Lawrence Berkeley National Laboratory, USA

M05-2: Fast Variance Image Predictions for Quadratically Regularized Statistical Image Reconstruction in Fan-Beam Tomography

Y. Zhang, J. A. Fessler, *The University of Michigan, USA*; J. Hsieh, *GE Healthcare Technologies, USA*

M05-3: Fast Projectors for Iterative 3D PET Reconstruction

S. Cho, Q. Li, S. Ahn, R. M. Leahy, *USC, USA*

M05-4: Linear and Iterative Reconstruction Algorithms for a Novel PET-Insert Scanner

D. Pal, Y. C. Tai, J. A. O'Sullivan
Washington University in St Louis, USA

M05-5: Exact ROI Image Reconstruction with Perturbed Source Trajectories in C-Arm CT

D. Xia, E. Y. Sidky, L. Yu, Y. Zou, X. Pan
The University of Chicago, USA

M05-6: Azimuthal Interpolation and Noise Reduction

C. Penßel, M. Kachelriess, M. Knaup, W. A. Kalender
Institute of Medical Physics, University of Erlangen-Nuremberg, Germany

M05-7: Derivation and Implementation of Ordered-Subsets Algorithms for List-Mode PET Data

T. Nakayama, H. Kudo, *University of Tsukuba, Japan*

M05-8: Direct Fully 4D List-Mode Reconstruction with Temporal Prior Basis Functions

A. J. Reader, *The University of Manchester, United Kingdom*; F. C. Sureau, C. Comtat, R. Trébossen, *French Atomic Energy Commission (CEA), France*; I. Buvat, *UMR INSERM U678 - UPMC, France*

M06 Multimodality Imaging

Friday, Oct. 28 10:30-12:00, Pablo Casals Ballroom
Session Chairs: Bernd Pichler, *University of Tuebingen*
Paul Acton, *University of Pennsylvania*

M06-1: A MicroPET/CT System for in Vivo Small Animal Imaging

H. Liang, Y. Yang, K. Yang, J. M. Boone, S. R. Cherry
University of California - Davis, USA

M06-2: Preliminary PET Performance of the Detectors for OPET: a Combined Optical and PET Imaging System

Y. H. Chung¹, A. Douraghy¹, F. R. Rannou², R. W. Silverman¹, A. F. Chatziioannou¹
¹David Geffen School of Medicine, UCLA, USA; ²Universidad de Santiago, Chile

M06-3: SPECT- CT Study of Directed Drug Delivery Using In 111 Labeled Liposomes in Murine Tumor Models

E. W. Izaguirre¹, M. Sun^{1,2}, D. C. Drummond³, M. Wendland¹, M. Knudsen¹, M. E. Hayes³, D. B. Kirpotin³, B. H. Hasegawa^{1,2}
¹University of California, San Francisco, USA; ²University of California, Berkeley, USA; ³Hermes Biosciences Inc., USA

M06-4: Development and Initial Results of a Dual-Modality SPECT/Optical Small Animal Imager

J. Peter, H. Ruehle, V. Stamm, R. B. Schulz, W. Semmler, *German Cancer Research Center, Germany*; M. F. Smith, B. L. Welch, V. Popov, B. Kross, R. Wojcik, A. G. Weisenberger, S. Majewski, *Thomas Jefferson National Accelerator Facility, USA*

M06-5: Pinhole PET (pPET): a Multi-Pinhole Collimator Insert for Small Animal SPECT Imaging on PET cameras

C. A. Cardi¹, Z. Cao², M. L. Thakur¹, J. S. Karp², P. D. Acton²
¹Thomas Jefferson University, U.S.A.; ²University of Pennsylvania, U.S.A.

M06-6: APD-Based PET Detector for Simultaneous PET/MR Imaging

R. Grazioso, N. Zhang, J. Corbeil, M. Schmand, *CPS Innovations, Inc., USA*; R. Ladebeck, M. Vester, G. Schnur, W. Renz, H. Fischer, *Siemens AG Medical Solutions, Germany*

M07 Posters 2

Friday, Oct. 28 15:30-17:30, Grand Caribbean East and South Foyer
Session Chairs: Ed Soares, *Holy Cross*
Simone Weber, *Central Institute for Electronics, Forschungszentrum Juelich*

M07-83: The jPET-D4: Imaging Performance of the 4-Layer Depth-of-Interaction PET Scanner

T. Yamaya¹, E. Yoshida¹, M. Satoh¹, T. Tsuda^{2,1}, K. Kitamura^{3,1}, T. Obi⁴, T. Hasegawa³, H. Haneishi², N. Inadama¹, S. Tanada¹, H. Murayama¹
¹National Institute of Radiological Sciences, JAPAN; ²Chiba University, Japan; ³Shimadzu Corporation, JAPAN; ⁴Tokyo Institute of Technology, Japan; ⁵Kitasato University, Japan

M07-86: Intraoperative Beta Probe for Brain Tumor Surgery

S. Bonzom¹, L. Menard¹, M. A. Duval¹, S. Pitre¹, R. Siebert¹, S. Palfi², Y. Charon¹
¹Institut de physique Nucleaire d'orsay, france; ²hopital henri mondor, france

M07-89: Dynamic Imaging on the High Resolution Research Tomograph (HRRT): Non-Human Primate Studies

V. Sossi¹, M. Camborde², S. Blinder², A. Rahmim¹, K. J.-C. Cheng¹, K. R. Buckley³, D. J. Doudet¹, T. J. Ruth³
¹University of British Columbia, Canada; ²Pacific Parkinson's Research Centre, Canada; ³TRIUMF, Canada

M07-92: Measured Spatially Variant System Response for PET Image Reconstruction

A. M. Alessio, P. E. Kinahan, R. L. Harrison, T. K. Lewellen
University of Washington, USA

M07-95: Monotonic Penalized-Likelihood Image Reconstruction for X-Ray Fluorescence CT

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

M07-98: Regions-of-Interest Based Reconstruction for Quantitative SPECT Imaging

Y. Du, E. C. Frey, B. M. W. Tsui

M07-101: Potentials for a Fifth Generation PET Scanner for Oncology

L. A. Eriksson^{1,2}, D. Townsend³, M. Eriksson^{1,2}, M. E. Casey¹, M. Schmand¹, M. Conti¹, C. Michel¹, C. L. Melcher^{4,5}, B. Bendriem¹, T. Jones⁶, R. Nutt⁴

¹CPS Innovations, USA; ²Karolinska Institute, Sweden; ³University of Tennessee Medical Center, USA; ⁴CTI Molecular Imaging, USA; ⁵University of Tennessee, USA; ⁶Manchester Molecular Imaging Center, UK

M07-104: Matched Collimators for Pixelated Gamma Cameras

P. Raghunathan¹, P. J. Goodale¹, J. Klinger², M. Appleby², J. Atkinson², M. B. Williams¹

¹University of Virginia, Charlottesville, USA; ²Mikro Systems Inc., Charlottesville, USA

M07-107: Simulation Studies for PET Imaging with Non-Pure Positron Emitters

D. Kruecker, U. Pietrzyk, H. Herzog
Forschungszentrum Juelich, Germany

M07-110: A Monte Carlo Study of High Energy Prompt Gamma-Ray Detection with LSO Crystals

L. Xu, R. P. Gardner
North Carolina State University, U.S.A

M07-113: A Study on the Temperature Characteristics of LYSO PET Detector

C. L. Kim, GE Healthcare, USA

M07-116: Comparison with Evaluation of Imaging Performance of the a-Se Based Direct X-Ray Detector System and HgI2 Direct X-Ray Detector

J. K. Park, J. Y. Kim, S. S. Kang, B. Y. Cha, S. H. Jo, S. H. Nam,
Dept biomedical engineering of Inje University, Korea; H. W. Lee,
Medical Imaging Research Center, Inje University, Korea

M07-119: Performance of APD-Based Monolithic-Crystal Detectors for Small Animal PET

M. C. Maas¹, D. J. (van der Laan¹, D. R. Schaart¹, P. Bruyndonckx², C. Lemaître², C. W. E. van Eijk¹

¹Delft University of Technology, The Netherlands; ²Vrije Universiteit Brussel, Belgium

M07-122: Investigation of LaBr3 Detector Timing Resolution

A. Kuhn¹, S. Surti¹, K. S. Shah², J. S. Karp¹

¹University of Pennsylvania, USA; ²Radiation Monitoring Devices, USA

M07-125: Investigation of scintillation light multiplexing techniques for 1 mm resolution Positron Emission Tomography detectors

F. Habte, P. Olcott, J. Zhang, C. S. Levin
Stanford University, USA

M07-128: Pincushion Distortion Correction in Position Sensitive Avalanche Photodiodes

P. Després¹, W. C. Barber¹, M. McClish², K. S. Shah², B. H. Hasegawa¹

¹Physics Research Lab, USA; ²Radiation Monitoring Devices Inc., USA

M07-131: Timing Performance of Hi-Rez Detector for Time-of-Flight (TOF) PET

M. Aykac, CPS Innovations, U.S.

M07-134: An Evaluation of Image Variance for Time-of-Flight PET

C. C. Watson, CPS Innovations, Inc., USA

M07-137: Continuous Bed Motion Data Processing for a High Resolution LSO PET/CT Scanner

Z. Burbar^{1,2}, C. Michel¹, D. Townsend³, B. Jakoby^{1,3}, M. Sibomana¹, F. Kehren¹, S. Tolbert¹, J. Reed¹, K. Hubner³, M. Abidi²

¹CPS Innovation, USA; ²University of Tennessee, USA; ³University of Tennessee Medical Center, USA

M07-140: Optimal Energy Window Selection for Emission Computed Tomography

K. Wells, M. A. Alnafea, A. Tumian, M. I. Saripan, M. Guy
University of Surrey, UK

M07-143: Investigating the Optimum Lower Energy Threshold of the New GE Research PET/CT Scanner

O. R. Mawlawi¹, J. J. Wilson², T. Pan¹, T. G. Turkington²
¹MD Anderson Cancer Center, USA; ²Duke University, USA

M07-146: Image Quality Assessment of the PhotoDetection Systems High-Sensitivity Large-Bore PET Scanner

W. Worstell, S. Adler, P. Domigan, O. Johnson, H. Kudrolli, J. Nevin, L. Romanov
PhotoDetection Systems Inc, USA

M07-149: Improved SPECT Scatter Modeling in Nonuniform Attenuators

E. C. Frey, Y. Du, Johns Hopkins University, USA

M07-152: Evaluation and Correction of Metal Artifacts in Combined PET/CT Imaging

K. P. Schäfers¹, R. Raupach², S. Käpplinger³, T. Beyer¹
¹University Hospital, Germany; ²Siemens AG Medical Solutions, CT, Germany; ³Siemens AG Medical Solutions, PET, Germany

M07-155: Timemark Correction for the ClearPETTM Scanners

M. Streun^{1,2}, G. Brandenburg^{1,2}, M. Khodaverdi^{1,2}, H. Larue^{1,2}, C. Parl^{1,2}, K. Ziemons^{1,2}

¹Forschungszentrum Juelich, Germany; ²Crystal Clear Collaboration, .

M07-158: Preliminary NEMA Small Animal Measurements for the LBNL PEM Camera

G.-C. J. Wang¹, J. S. Huber¹, W. W. Moses¹, J. Qi², W.-S. Choong¹, J. Hu¹

¹Lawrence Berkeley National Lab, USA; ²University of California, Davis, USA

M07-164: A Small Animal Helical SPECT Scanner

M. Sun¹, E. W. Izaguirre¹, T. Funk¹, A. B. Hwang¹, J. Carver², S. Thompson², B. E. Patt³, K. B. Parnham³, T. Vandehei³, B. H. Hasegawa¹

¹University of California, USA; ²Jamco Engineering, USA; ³Gamma Medica, Inc., USA

M07-167: Measured and Simulated Specifications of the Lausanne ClearPET Scanner Demonstrator

M. Rey¹, J.-M. Vieira¹, J.-B. Mosset¹, M. Moulin Sallanon², P. Millet², J.-F. Loude¹, C. Morel³

¹LPHE, Switzerland; ²Belle-Idée, Switzerland; ³CPPM, France

M07-170: A Noise Equivalent Counts Approach for Optimizing I-124 Imaging Performance with a Small Animal PET Scanner

V. Kohli¹, F. R. Rannou², Q. Bao¹, A. F. Chatzioannou¹

¹University of California, UCLA, USA; ²Universidad de Santiago de Chile (USACH), Chile

M07-173: Coincidence Measurements with a Quasi-Continuous Detector for Small Animal PET

J. A. Correia, C. A. Burnham, D. Kaufman, A. J. Fischman
Massachusetts General Hospital, USA

M07-176: Initial Performance Evaluation of a Large-Area Detector Module Based Small-Animal PET Imager

C.-M. Kao, J. Souris, S. Cho, B. C. Penney, C.-T. Chen
The University of Chicago, USA

M07-179: Comparison of Different Monte-Carlo Based Approaches to Calculating the System Matrix for Small Animal PET

E.-N. Gimenez, E. Nacher, M. Giménez, C. W. Lerche,
J. M. Benlloch, M. Rafecas

IFIC-Instituto de Fisica Corpuscular, Spain

M07-182: Geometry Calibration of a Dual Headed SPECT System for Small Animal Imaging

V.-H. Tran, M. F. Smith, B. L. Welch, Thomas Jefferson National Accelerator Facility, USA; S. R. Meikle, University Of Sydney, Australia; J. R. Goddard, Oak Ridge National Laboratory, USA

M07-185: Resolution Effects in a Dense Linear Source Array X-Ray Micro-Tomograph

E. Quan, D. S. Lalush

North Carolina State University and University of North Carolina, USA

M07-188: Reconstruction of Clear-PEM Data with STIR

M. V. Martins¹, N. Matela¹, P. Rodrigues², A. Trindade², N. Oliveira¹, M. Correia¹, H. Cordeiro¹, N. C. Ferreira³, J. Varela², P. Almeida¹

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M07-191: Breast Cancer Imaging Studies by Monte Carlo Simulation with Clear-PEM

A. Trindade¹, P. Almeida², N. C. Ferreira³, M. V. Martins², N. Matela², N. Oliveira², P. Rodrigues¹, J. Varela¹

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M07-194: Component-Based Normalization for PET Systems with Depth of Interaction Measurement Capability

A. M. K. Foudray^{1,2}, G. Chinn¹, C. S. Levin¹

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

M07-197: Attenuation Correction for Cardiac SPECT Imaging Using Small Field-of-View Detectors

C. Bai, R. Conwell, Digirad Corporation, USA

M07-200: Comparison of ANalytic and Iterative Reconstruction Methods for Quantitative Cardiac PET Studies Using 3D Oxygen-15 Water Scans

Y. Bouchareb¹, K. Thielemans², T. Spinks², O. Rimoldi¹, P. G. Camici¹

¹Clinical Sciences Centre, MRC, Imperial College London, UK; ²Hammersmith Imanet Ltd, UK

M07-203: Study of Parameters Characterizing Space-Time Gibbs Priors for 4D MAP-RBI-EM in Gated Myocardial Perfusion SPECT

T.-S. Lee, W. P. Segars, B. M. W. Tsui

Johns Hopkins University, USA

M07-206: Attenuation Correction for Cardiac PET/CT Applications

J. P. J. Carney, M. C. Besozzi, D. W. Townsend

University of Tennessee, USA

M07-209: Spillover Compensation in the Presence of Respiratory Motion Embedded in SPECT Perfusion Data

P. H. Pretorius, M. A. King

University of Massachusetts Medical School, USA

M07-212: Image Quality Vs. NEC in 2D and 3D PET

J. W. Wilson, T. G. Turkington, J. M. Wilson, Duke University Medical Center, USA; J. G. Colsher, G. E. Healthcare Technologies, USA

M07-215: Detective Quantum Efficiency and Deadtime Losses in Complex Imaging Detector Systems

K. Nurdan, A. H. Walenta, T. Conka Nurdan

University of Siegen, Germany

M07-218: Comparison of 3D PET Data Bootstrap Resampling Methods for Numerical Observer Studies

C. Lartizen, CNRS UMR5515-INSERM U630, France; I. Buvat, INSERM UMR 678, France

M07-221: Numerical Observer Evaluation of 3D Statistical PET Reconstruction Method with System Response Modeling

V. Y. Panin, M. Chen, M. E. Casey, CPS Innovations, U.S.A

M07-224: A Comparison of Human Observers and a Channelized Hotelling Observer in Discriminating Between Alzheimer's Dementia and Controls Using Brain Perfusion SPECT

M. Shidahara, K. Inoue, M. Maruyama, Y. Taki, R. Goto, K. Okada, S. Osawa, S. Kinomura, H. Ito, H. Arai, H. Fukuda
Tohoku University, JAPAN

M07-227: Effect on Lesion Detectability of Proximity to Anatomical Boundaries in Emission Tomography

S. Kulkarni¹, P. Khurd¹, I.-T. Hsiao², G. Gindi¹

¹SUNY at Stony Brook, USA; ²Chang Gung University, Taiwan

M07-230: Performance of the Relative Difference Prior for Hot Lesion Detection in Whole-Body PET/CT: an Evaluation with Numerical and Real Observers

J. L. Nuyts, *K.U.Leuven, Belgium, Belgium*; C. Michel, *CPS Innovations, USA*

M07-233: Pre-Processing of SPECT Projection Data: Benefits and Pitfalls

A. H. Vija, E. G. Hawman, *Siemens Medical Solutions USA, Inc., USA*; A. Yahil, *Pixon, LLC, USA*

M07-236: Image Synthesis of Small Semiconductor Gamma Camera and Optical Camera for Identifying Sentinel Lymph Nodes in Radioguided Surgery

H. Haneishi, Y. Onishi, H. Hayashi, *Chiba University, Japan*

M07-239: A Photon Counting Imaging Probe for Radioguided Surgery

I. K. Shestakova¹, B. C. Stack², V. Gaysinskiy¹, G. Entine¹, V. V. Nagarkar¹

¹*RMD Inc., USA*; ²*Pennsylvania State University College of Medicine, USA*

M07-242: The Use of Optical Flow Methods and Dual-Gated List-Mode PET-CT for Motion Correction

N. Lang¹, M. Dawood¹, X. Jiang², W. Howe³, T. Bruckbauer³, O. Schober¹, K. Schäfers¹

¹*University Hospital Münster, Germany*; ²*University Münster, Germany*; ³*CPS Innovations, USA*

M07-245: Recovery Coefficient in PET as a Function of Object Size and Respiratory Motion Trajectory

X. Zhu, J. A. Parker, M. R. Palmer

Beth Israel Deaconess Medical Center, USA

M07-248: Estimation of the Rigid-Body Motion from Three-Dimensional Images Using a Generalized Center-of-Mass Points Approach

B. Feng¹, P. P. Bruyant¹, P. H. Pretorius¹, R. D. Beach¹, H. C. Gifford¹, J. Dey¹, M. A. Gennert², M. A. King¹

¹*University of Massachusetts Medical School, USA*; ²*Worcester Polytechnic Institute, USA*

M07-251: Automated Organ Enhancement Tracking for CT Angiography Scans

O. Hay, *Philips Medical Systems, Israel*

M07-254: Design and Performance of an EMCCD Based Detector for Combined SPECT/CT Imaging

V. V. Nagarkar, B. Singh, I. K. Shestakova, V. Gaysinskiy
RMD Inc., USA

M07-257: Design and Characteristics of a Small Animal Multi-Modality Scanner

A. V. Stolin¹, D. J. Pole¹, S. Majewski², B. Kross², A. Weisenbecker², R. Wojcik², M. B. Williams¹

¹*University of Virginia, USA*; ²*Thomas Jefferson National Accelerator Facility, USA*

M07-260: Dual PET/Ultrasound Imaging of the Prostate

J. S. Huber, W. W. Moses, *E. O. Lawrence Berkeley National*

Laboratory, USA; J. Pouliot, I.-C. Hsu, *University of California, USA*

M07-263: A Compact SPECT/CT for Small Animal Imaging

K. J. Hong¹, Y. Choi¹, S. C. Lee², S. Y. Lee², T. Y. Song¹, B. J. Min¹, J. H. Jung¹, J. Y. Choi¹, Y. S. Choe¹, K.-H. Lee¹, B.-T. Kim¹

¹*Samsung Medical Center, Sungkyunkwan University School of Medicine, Korea*; ²*Kyung Hee University, Korea*

M07-266: Gamma Camera Detector Position Correction and Image Registration for a SPECT/CT System

S. X. Wang, J. Y. Fang, R. Malmin, J. Pawlak
Siemens Medical Solutions, Inc, U.S.A.

M07-269: The Second Generation HRRT - a Multi Centre Scanner Performance Investigation

V. Sossi¹, H. de Jong², W. C. Barker³, P. Bloomfield⁴, Z. Barbur⁵, M. Camborde¹, R. Carson⁶, C. Comtat⁷, L. Eriksson⁵, S. Houle⁸, D. Keator⁸, K. Christof⁹, R. Kraiss¹⁰, A. Lammertsma², A. Rahmim¹¹, O. Rousset¹¹, M. Sibomana⁵, M. Teräs¹⁰, C. Thompson¹², R. Trébossen⁷, J. Votaw¹³, K. Wienhard¹⁰

¹*University of British Columbia, Canada*; ²*VU Medical Center, The Netherlands*; ³*NIH Clinical Center, USA*; ⁴*CAMH, Canada*; ⁵*CTI PET Systems, USA*; ⁶*Yale University New Haven, USA*; ⁷*Frédéric Joliot Hospital Facility Orsay, France*; ⁸*University of California, USA*; ⁹*Max Planck Institute, Germany*; ¹⁰*Turku PET Centre, Finland*; ¹¹*The Johns Hopkins University School of Medicine, USA*; ¹²*McGill University, Canada*; ¹³*Emory University, USA*

M07-272: The Investigation on Emission Reconstruction on Fewer View Projections for Brain SPECT Imaging

I.-T. Hsiao, K.-J. Lin, C. Wietholt, C.-T. Chen, G. Gindi
Chang Gung University, Taiwan

M07-275: Regional Effects of an MR-Based Brain PET Partial Volume Correction Algorithm: a Zubal Phantom Study

M. L. Kusano, C. B. Caldwell
Sunnybrook and Women's College Health Sciences Centre, Canada

M07-278: A Dual Plane Orbit Approach for Improved Pinhole Tomography

B. C. Yoder, D. S. Lalush
University of North Carolina at Chapel Hill and North Carolina State University, USA

M07-281: Multiplexing in Multi-Pinhole SPECT

A. K. Jorgensen, G. L. Zeng, *University of Utah, USA*

M07-284: Investigating Pinhole SPECT for Wrist Imaging

E. Sabondjian^{1,2}, R. G. Wells^{1,2,3}

¹*Lawson Health Research Institute, Canada*; ²*The University of Western Ontario, Canada*; ³*St. Joseph's Health Care, Canada*

M07-287: Single and Multipinhole Collimator Design Evaluation Method for Small Animal SPECT

K. Vunckx¹, D. Bequé¹, M. Defrise², J. Nuyts¹
¹*K.U.Leuven, Belgium*; ²*V.U.Brussel, Belgium*

M07-290: Sub-Millimeter Multi-Pinhole SPECT with Helical Acquisition

C. Lackas, J. W. Hoppin, N. U. Schramm
Forschungszentrum Jülich, Germany

M07-293: A Simulation Study for SPECT Multi-Pinhole Detector Optimization

B. J. Min¹, Y. Choi¹, J. H. Joung², N. Y. Lee³, T. Y. Song¹, J. H. Jung¹, K. J. Hong¹

¹Samsung Medical Center, Sungkyunkwan University School of Medicine, Korea; ²Siemens Medical Solutions USA, Inc., USA; ³Inje University, Korea

M07-296: Non-Invasive Quantification of Iron (56-Fe) in Beef Liver Using Neutron Stimulated Emission Computed Tomography (NSECT)

A. J. Kapadia, C. E. Floyd, J. E. Bender
Duke University, USA

M07-299: Parameter Estimation in a Model Based Approach for Tomographic Perfusion Measurement

C. Neukirchen, G. Rose, Philips Research, Germany

M07-302: Noninvasive High-Resolution Detection of the Arterial and Venous Input Function Through a PET Wrist Scanner

A. M. Kriplani^{1,2}, D. J. Schlyer², A. Villanueva², S. P. Stoll³, P. Vaska², C. L. Woody², S. Shokouhi²

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

M07-305: Quantitative PET Imaging with I-124 and Y-86 Tracers and the Hi-Rez PET/CT System

M. S. Judenhofer¹, J. Kupferschläger¹, A. Stahlschmidt¹, T. Bruckbauer², S. Käpplinger³, R. Bares¹, H.-J. Machulla¹, C. D. Claussen¹, B. J. Pichler¹

¹Clinic Radiology, University of Tübingen, Germany; ²CPS Innovations, USA; ³Siemens Medical Solutions, Germany

M07-308: Characterization of the Short-Lived Non-Pure Positron Emitter 120I for PET Imaging

H. Herzog, S. M. Qaim, L. Tellmann, A. Hohn, D. Kruecker, H. H. Coenen

Forschungszentrum Juelich, Germany

M07-311: A New Approach to Neuroreceptor Quantification from Fast Activity Curves Sampling with a Three-Headed SPECT System

E. Vanzi¹, A. R. Formiconi^{1,2}, M. T. De Cristofaro¹, A. Pupi¹

¹University of Florence, Italy; ²INFN, Italy

M07-314: Noninvasive Estimation of Arterial Input Function from the Dynamic H215O PET Image

N. Kudomi, H. Watabe, T. Hayashi, H. Iida

National Cardiovascular Center - Research Institute, Japan

M07-317: Development of Fully Automatic Technique to Generate Parametric Images of Myocardial Blood Flow with [O-15]Water and Positron Emission Tomography Using Basis Function Method

H. Watabe, K. Koshino, N. Teramoto, Y. Ohta, T. Hayashi, H. Iida

National Cardiovascular Center Research Institute, Japan

M07-320: MicroPET® R4 Neuro-Imaging in Rats and Post-Mortem Measures

V. Sossi¹, S. McCormick², E. M. Strome¹, R. Kornelsen², T. J. Ruth³, D. J. Doudet¹

¹University of British Columbia, Canada; ²Pacific Parkinson's Research Centre, Canada; ³TRIUMF, Canada

M07-323: Fast and Accurate Nearest-Neighbor 3-D LOR Rebinning: the PDR Card Applied to a Rotating 5-Head LSO-Panel-Detector PET Prototype

W. F. Jones, E. Breeding, M. Conti

CPS Innovations / Siemens, USA

M07-326: Region-of-Interest Reconstruction of Motion-Contaminated Data Using a Backprojection Filtration Algorithm

M. T. King, L. Yu, D. Xia, X. Pan, M. L. Giger

University of Chicago, 60637

M07-329: Advanced Convergence of Iterative Reconstruction of Circular Cone-Beam Short-Scans

A. Ziegler, M. Grass, T. Köhler

Philips Research Laboratories, Germany

M07-332: Impact of a High-Performance Communication Network on Cluster-Based Parallel Iterative Reconstruction

J. P. Jones, W. F. Jones, J. Everman, V. Panin, C. Michel, F. Kehren, J. Bao, J. Young, M. E. Casey

CPS Innovations, USA

M07-335: Reconstruction Algorithm for Wide Cone Beam Helical CT

A. A. Zamyatin¹, K. Taguchi^{2,3}, M. D. Silver¹

¹Bio-Imaging Research, Inc, USA; ²Toshiba Medical Systems, Japan;

³Johns Hopkins Medical Institutions, USA

M07-338: Fully 3D Reconstruction of Attenuation for Diffuse Optical Tomography

T. Nielsen, T. Koehler, Philips Research Laboratories, Germany; M. van der Mark, G. 't Hooft, Philips Research Laboratories, The Netherlands

M07-341: Reconstruction of PET Images with a Compressed Monte Carlo Based System Matrix - a Comparison to Other Monte Carlo Based Algorithms

N. S. Rehfeld, M. Fippel, M. Alber

Institute for Radiooncology - University of Tuebingen, Germany

M07-344: Implementation of Scatter Corrected List Mode OP-EM Reconstruction Algorithm and a Dual (Histogram/List Mode) Reconstruction Scheme for Dynamic PET Imaging

J.-C. (. Cheng, A. Rahmim, M.-L. Camborde, S. Blinder, V. Sossi

University of British Columbia, Canada

M07-347: A New Class of Super-Short-Scan Algorithms for Fan-Beam Reconstruction

I. Arai, H. Kudo, University of Tsukuba, Japan; F. Noo, University of Utah, USA; M. Defrise, Vrije Universiteit of Brussels, Belgium

M07-350: Quadratic Regularization Design for 3D Cylindrical PET

H. R. Shi, J. A. Fessler, University of Michigan, USA

M07-353: Backprojection-Filtration Based Exact Helical Cone-Beam Image Reconstruction with Curved Detectors

N. Zuo¹, D. Xia², E. Y. Sidky², L. Yu², Y. Zou², X. Pan², T. Jiang¹

¹The Chinese Academy of Sciences, China; ²The University of Chicago, USA

M07-356: An Advanced Analytic Method Incorporating the Physical Properties of Scanner and Radiation Emissions into the System Model for the True Component of 3D PET Data

P. J. Markiewicz, A. J. Reader, M. Tamal, *University of Manchester, UK*; P. J. Julyan, D. L. Hastings, *North Western Medical Physics, Christie Hospital NHS Trust, UK*

M07-359: Practical Improvement of Geometric Parameter Estimation for Cone Beam MicroCT Imaging

S. A. Sawyer, E. C. Frey, *Johns Hopkins University, USA*

M07-362: Physical Model of Image Formation in Multiple-Image Radiography

J. G. Brankov¹, G. Khelashvili¹, D. Chapman², M. A. Anastasio¹, Y. Yang¹, Z. Zhong³, M. N. Wernick¹

¹Illinois Institute of Technology, USA; ²University of Saskatchewan, Canada; ³Brookhaven National Laboratory, USA

M07-365: Statistical Reconstruction for X-Ray Micro-CT Systems with Noncontinuous Detectors

W. Zbijewski, F. J. Beekman
Image Sciences Institute, The Netherlands

M07-368: Using the Medipix2 Detector for Photon Counting Computed Tomography

D. Niederloehner, F. Nachtrab, G. Anton
Physikalisches Institut, Universitaet Erlangen-Nuernberg, Germany

M07-371: Total Variation Based Fourier Reconstruction and Regularization for Computer Tomography

X. Zhang, J. Froment, *Université de Bretagne Sud, France*

M08 Cardiac Imaging

Friday, Oct. 28 17:30-19:30, Pablo Casals Ballroom

Session Chairs: **Ronald Huesman**, *Lawrence Berkeley Lab*
Sibylle Ziegler, *Nuklearmedizin Klinikum rechts der Isar der TU München*

M08-1: Improved Quantitation of Dynamic SPECT via Fully 4-D Joint Estimation of Compartmental Models and Blood Input Function Directly from Projections

B. W. Reutter, S. Oh, G. T. Gullberg, R. H. Huesman
Lawrence Berkeley National Laboratory, USA

M08-2: Reconstruction of Dynamic Gated Cardiac SPECT

M. Jin, Y. Yang, M. N. Wernick, *ILLINOIS INSTITUTE OF TECHNOLOGY, USA*; M. A. King, *University of Massachusetts Medical School, USA*

M08-3: Measurement of the Biomechanics of 3-D Cardiac Function with Gated Nuclear Medicine Studies

A. Sitek¹, G. J. Klein², B. W. Reutter¹, R. H. Huesman¹, G. T. Gullberg¹
¹E.O. Lawrence Berkeley National Laboratory, USA; ²QuantifiCare, Inc., USA

M08-4: Towards Cardiac Angiographic Computed Tomography

G. Lauritsch, J. Boese, H. Kemeth
Siemens AG, Medical Solutions, Germany

M08-5: Cardiac Cone-Beam CT Using a Circle and Line Acquisition and an Exact Reconstruction

P. Koken, C. Bontus, T. Koehler, M. Grass
Philips Research Laboratories, Germany

M08-6: Comparison of Three Methods of Partial Volume Correction in Dynamic Pet Cardiac Imaging – a Phantom and a Pig Study

L. Le Meunier, M. Hadi, R. de Silva, J. M. Carson, W. Dieckmann, S. L. Bacharach
National Institutes of Health, United States

M08-7: Motion-Compensated Reconstruction of Dynamic Cardiac Images

E. J. Gravier, Y. Yang
Illinois Institute Of Technology, USA

M08-8: Step-and-Shoot VCT Cardiac Imaging

J. Hsieh, J. Li, J. Londt, K. Mohr, M. Vass, X. Tang, D. Okerlund
GE Healthcare Technologies, USA

M09 Small Animal Imaging

Saturday, Oct. 29 08:00-10:00, Pablo Casals Ballroom

Session Chairs: **Roger Lecomte**, *Université de Sherbrooke*
Benjamin Tsui, *Johns Hopkins University*

M09-1: High Resolution Position Sensitive Avalanche Photo Diode Gamma Ray Imaging

W. C. Barber¹, P. Despres¹, T. Funk¹, M. McClish², K. S. Shah², B. H. Hasegawa¹

¹University of California San Francisco, USA; ²Radiation Monitoring Devices, USA

M09-2: Depth of Interaction Resolution Measurements for a High Resolution PET Detector Using Position Sensitive APDs

Y. Yang¹, P. A. Dokhale², R. W. Silverman³, K. S. Shah², M. A. McClish², R. F. Farrell², G. Entine², S. R. Cherry¹

¹University of California-Davis, USA; ²Radiation Monitoring Devices Inc., USA; ³UCLA, USA

M09-3: First Results from a Test Bench for Very High Resolution Small Animal PET Using Solid-State Detectors

K. Honscheid¹, D. Burdette¹, E. Chesi², N. Clinthorne³, S. Huh³, H. Kagan¹, C. Lacasta⁴, G. Llosa⁴, M. Mikuz⁵, S.-J. Park³, W. L. Rogers³, A. Studen⁵, P. Weilhammer²

¹Ohio State University, USA; ²CERN, Switzerland; ³University of Michigan, USA; ⁴Universidad de Valencia, Spain; ⁵University of Ljubljana, Slovenia

M09-4: U-SPECT-I Shows Molecular Dynamics in the Living Mouse Brain at Sub-Minute and Sub-Mm Resolution

F. J. Beekman, F. van der Have, B. Vastenhouw, A. J. A. van der Linden, J. P. H. Burbach, M. P. Smidt
University Medical Center Utrecht, The Netherlands

M09-5: PIXSCAN: Pixel Detector CT-Scanner for Small Animal Imaging

P. Delpierre¹, S. Basolo¹, J.-F. Berar², A. Bonissenti¹, P. Breugnot¹, N. Boudet², B. Caillo², J.-C. Clemens¹, B. Dinkespiler¹, R. Khouri¹, I. Koudobine¹, V. Matarazzo³, C. Meessen¹, M. Menouni¹, C. Morel¹,

C. Mouget², P. Pangaud¹, F. Peyrin⁴, D. Sappey-Marini⁴, S. Valton⁴, E. Vigeolas¹

¹Centre de Physique des Particules de Marseille, France; ²CNRS & D³am CRG beamline, France; ³Institut de Biologie du Développement de Marseille (IBDM), France; ⁴CREATIS, UMR-CNRS-5515, INSERM-U630, France

M09-6: Pinhole SPECT Reconstruction Using Blobs and Resolution Recovery

A. Andreyev, M. Defrise, C. Vanhove
Vrije Universiteit Brussel, Belgium

M09-7: Development of a Fully Rotational Non-Contact Fluorescence Tomographer for Small Animals

R. B. Schulz, G. Echner, H. Ruehle, W. Stroh, J. Vierling, T. Vogt, J. Peter, W. Semmler
German Cancer Research Center (DKFZ), Germany

M09-8: Initial Evaluation of the Indiana Small Animal PET (ISAP) Scanner

N. C. Rouze¹, V. C. Soon¹, J. W. Young², S. Siegel³, G. D. Hutchins¹
¹Indiana University School of Medicine, USA; ²CPS Innovations, Inc., USA; ³Concorde Microsystems, Inc., USA

M10 Motion Compensation

Saturday, Oct. 29 10:30-12:00, Pablo Casals Ballroom

Session Chairs: **Jiang Hsieh**, *GE Healthcare*
Kris Thielemans, *Hammersmith Imanet Ltd*

M10-1: Reconstruction of Projection Data Corrupted by Rigid or Non-rigid Motion

R. R. Fulton^{1,2}, S. R. Meikle²
¹Royal Prince Alfred Hospital, Australia; ²University of Sydney, Australia

M10-2: Estimating 3D Respiratory Motion from Orbiting Views

R. Zeng, J. A. Fessler, J. M. Balter
The University of Michigan, U.S.A

M10-3: Non-Rigid Registration for Target Tracking and Dynamic Treatment Planning: an Analysis of Feasibility on Five Patients

J. Stancanelli^{1,2}, C. Cavedon¹, P. Francescon¹, E. Berna¹, D. Loeckx³, P. Cerveri², G. Ferrigno²
¹San Bortolo Hospital, Italy; ²Politecnico di Milano, Italy; ³Katholieke Universiteit Leuven, Belgium

M10-4: Robust Band Artifact Suppression for Cardiac CT

G. Shechter, I. Levi, A. Altman
Philips Medical Systems and Technologies, Ltd., Israel

M10-5: 4D CT for Respiratory Gated Attenuation Corrections in Canine Cardiac PET Imaging

R. A. H. Cook^{1,2}, G. Carnes^{2,3}, T.-Y. Lee^{1,2,3,4}, R. G. Wells^{1,2,4}
¹Lawson Health Research Institute, Canada; ²University of Western Ontario, Canada; ³Robarts Research Institute, Canada; ⁴St. Joseph's Health Care, Canada

M10-6: Effect of Respiratory Motion in CT-Based Attenuation Correction in SPECT Using Different CT Scanners and Protocols

W. P. Segars, B. M. W. Tsui, *Johns Hopkins University, USA*

M11 Posters 3

Saturday, Oct. 29 15:30-18:00, Grand Caribbean East and South Foyer

Session Chairs: **Carole Lartizien**, *CERMEP*
Georges El Fakhri, *Harvard Medical School and Brigham & Women's Hospital*

M11-84: Performance Results of a Low-Cost High-Sensitivity Rodent Research PET (RRPET) and PET/CT (X-PET)

W.-H. Wong, H. Li, H. Baghaei, Y. Wang, S. Xie, R. Ramirez, Y. Zhang, S. Kim, *University of Texas M.D. Anderson Cancer Center, USA*; B. Patt, *Gamma Medica Corporation, California*

M11-87: Motion Correction of Respiratory-Gated SPECT Image and Clinical Usefulness of the Extracted Motion Information

H. Ue, H. Haneishi, *Chiba University, Japan*; H. Iwanaga, K. Suga, *Yamaguchi University, Japan*

M11-90: Generating Resolution-Enhanced Images for Correction of Partial Volume Effects in Emission Tomography: a Multiresolution Approach

N. BouSSION, M. Hatt, F. Lamarre, Y. Bizais, A. Turzo, C. Cheze-Le Rest, D. Visvikis
INSERM U650, France

M11-93: Mathematical Aspects of 2D PET Using Dual Curvilinear Detectors

I. G. Kazantsev, S. Matej, R. M. Lewitt
University of Pennsylvania, USA

M11-96: Image Reconstruction from Longitudinally and Transversely Truncated Data along an Arc-Line Trajectory

Y. Zou, D. Xia, L. Yu, E. Sidky, X. Pan
The University of Chicago, USA

M11-99: Distributed Computing Platform for PET and SPECT Simulations with GATE

J. De Beenhouwer¹, D. Kruecker², S. S. Staelens¹, L. Ferrer³, A. F. Chatzioannou⁴, F. R. Rannou⁵
¹Ghent University, Belgium; ²Forschungszentrum Juelich, Germany; ³INSERM, France; ⁴University of California, Los Angeles, USA; ⁵Universidad de Santiago de Chile (USACH), Chile

M11-102: Volume Image Reconstruction from a Straight-Line Source Trajectory

E. Y. Sidky, Y. Zou, X. Pan, *University of Chicago, USA*

M11-105: Improved Gamma Camera Performance Using Event Positioning Method Based on Iterative Distance Dependent Weighting

J. Vesel, M. Petrillo, *Philips Medical Systems, USA*

M11-108: Monte-Carlo Modeling of the MicroPET R4 Small Animal PET Scanner for Coincidence-Mode Emission and Singles-Mode Transmission Data Acquisition

E. Vandervoort¹, M. Camborde¹, S. Jan², V. Sossi¹
¹University of British Columbia, Canada; ²Service Hospitalier Frédéric Joliot, France

M11-111: The jPET-D4: Simple and Reliable Construction Method for 4-Layer DOI Crystal Blocks

Y. Ono^{1,2}, H. Murayama², T. Yamaya², H. Kawai¹, N. Inadama², T. Tsuda^{1,2}, M. Hamamoto^{2,3}

¹Chiba University, Japan; ²National Institute of Radiological Sciences, Japan; ³Waseda university, Japan

M11-114: Finite Element Model Based Spatial Linearity Correction for Scintillation Detectors that use Position Sensitive Avalanche Photodiodes

P. D. Olcott, J. Zhang, C. S. Levin

Stanford University, USA

M11-117: RF Transformer Coupled Front-End Readout Circuit for APD PET Detectors

N. Zhang, R. Grazioso, N. Doshi, M. Schmand

CPS Innovations, Inc., USA

M11-120: The Effect of Scintillator Manipulation on High Energy Gamma Ray Imaging

J. Joung, Siemens Medical Solution, USA; J. C. Engdahl, Bradley university, USA

M11-123: The Block Effect in LSO PET Detectors

S. St. James, C. J. Thompson, Montreal Neurological Institute, Canada; N. Zhang, CPS Innovations, USA; S. Siegel, CTI Molecular Imaging, USA

M11-126: Performance Characterization of a Novel Thin Position-Sensitive Avalanche Photodiode for a 1 mm³ Resolution PET Camera

J. Zhang, A. M. K. Foudray, P. D. Olcott, C. S. Levin

Stanford University, USA

M11-129: Investigation of Ghosting in a-Se Detector under Large Accumulated Radiation Exposure

G. Y. Fang, D. Pearson, B. Harper, D. Spence, R. Schmidt, R. Mackie, G. Olivera, TomoTherapy Incorporated, US; A. Rau, J. Rowlands, Sunnybrook and Women's Hospitals, Canada

M11-132: TOF Coincidence Timing Calibration Techniques Using Radioactive Sources

A. E. Perkins¹, M. Werner², A. Kuhn², S. Surti², G. Muehllehner¹, J. S. Karp²

¹Philips Medical Systems, USA; ²University of Pennsylvania, USA

M11-135: Extension of Single Scatter Simulation to Scatter Correction of Time-of-Flight PET

C. C. Watson, CPS Innovations, Inc., USA

M11-138: Implementation of on-the-Fly Scatter Correction Using Dual Energy Window Method in Continuous 3D Whole Body PET Scanning

A. Ishikawa, K. Kitamura, T. Mizuta, K. Tanaka, M. Amano, Y. Inoue, Shimadzu Corporation, Japan; K. Matsumoto, M. Senda, Institution of Biomedical Research and Innovation, Japan

M11-141: Performance of a High Sensitivity PET Scanner Based on Large Area LSO Panel Detectors

M. Conti, M. Casey, C. Michel, L. Eriksson, J. Jones,

V. Panin, V. Rappoport, B. Bendriem, CPS Innovations, Inc., USA; D. W. Townsend, B. Jacoby, University of Tennessee, USA

M11-144: Quantitative Differences Between X-Ray CT-Based and 137Cs-Based Attenuation Correction in Philips Gemini PET/CT

J. S. Kim¹, J. S. Lee¹, D. Gagnon², J. H. Kim¹, D. S. Lee¹, J.-K. Chung¹, M. C. Lee¹

¹Seoul National University College of Medicine, Korea; ²Philips Medical Systems, USA

M11-147: Clinical Evaluation of a GE Research Whole Body PET/CT System

B. J. Kemp¹, S. G. Ross², V. J. Lowe¹

¹Mayo Clinic, USA; ²GE Healthcare, USA

M11-150: Simulation of Countrate Performance for a PET Scanner with Different Degrees of Partial Collimation

R. E. Schmitz¹, P. E. Kinahan¹, R. L. Harrison¹, C. W. Stearns², T. K. Lewellen¹

¹University of Washington, USA; ²GE Healthcare Technologies, USA

M11-153: A MC-Based PV Correction Method for PET/CT Oncological Studies

I. I. Castiglioni, G. Rizzo, M. C. Gilardi, A. Panzacchi, F. Fazio IBFM-CNR, University of Milan-Bicocca, H.S.Raffaele Institute, Italy

M11-156: An Investigation of Row-Action Reconstruction Methods for Short-Time Frame microPET Imaging

A. Vasko, C.-H. Hsu, National Tsing Hua University, Taiwan; K. Lin, C. Chen, National Health Research Institutes, Taiwan

M11-159: Performance Evaluation of the Low-Cost High-Sensitivity Rodent Research PET (RRPET) Camera Using Monte Carlo Simulations

Y. Zhang, W.-H. Wong, H. Baghaei, S. Kim, H. Li, J. Liu, S. Liu, R. Ramirez, Y. Wang, S. Xie

Univ. of Texas, M. D. Anderson Cancer Center, U.S.A.

M11-162: Dual-Gating in Mice Using the QuadHIDAC Animal PET Scanner

K. P. Schäfers, N. Lang, O. Schober, M. Schäfers

University Hospital, Germany

M11-165: Investigation of Inter-Crystal Scatter and Random Coincidences for Singles List-Mode PET with Individual Crystal Readout

D. P. McElroy¹, M. Rafecas², I. Torres¹, M. Huisman¹,

V. Spanoudaki¹, S. I. Ziegler¹

¹Technische Universität München, Germany; ²Grupo de Física Médica Nuclear/Instituto de Física Corpuscular (IFIC), Spain

M11-168: Evaluation of Transmission Methodology for the microPET Focus 220 Animal Scanner

W. Lehnert¹, S. R. Meikle², S. Siegel³, D. Bailey³, R. B. Banati², A. B. Rosenfeld¹

¹University of Wollongong, Australia; ²University of Sydney, Australia; ³CTII/Concorde, USA

M11-171: Development of a Small Animal PET Scanner Using DOI Detectors

M. Watanabe, T. Omura, N. Sato, K. Shimizu, M. Takahashi, K. Ote, A. Katabe, R. Yamada, T. Moriya, K. Sakai, T. Yamashita, E. Tanaka Hamamatsu Photonics K.K., Japan

M11-174: Simultaneous 99mTc and 111In Imaging with the HMS μ SPECT Imaging System

R. E. Zimmerman^{1,2}, S. C. Moore^{1,2}, A. Mahmood^{1,2},
J. D. MacKenzie²

¹Harvard Medical School, USA; ²Brigham & Women's Hospital, USA

M11-177: Compensation Strategies for PET Scanners with Unconventional Scanner Geometry

B. Gundlich, S. Weber, *Forschungszentrum Jülich GmbH, Germany*; M. Oehler, *RheinAhrCampus Remagen, Germany*

M11-180: Geometric, Penetration and Scatter Components of Parallel Hexagonal Hole Collimators for microSPECT: a Monte Carlo Evaluation

M. Rodriguez-Villafuerte, A. Martinez-Davalos
Instituto de Fisica, Universidad Nacional Autónoma de México, Mexico

M11-183: Left Ventricular Blood TAC Quantitation with MicroPET Imaging in Mice Using MAP, FBP and Blood Sampling

D. B. Stout, M. Kreissl, H.-M. Wu, H. Schelbert, S.-C. Huang
UCLA Crump Institute, USA

M11-186: Performance Evaluation of a Controlled Drift Detector for Diffraction Enhanced Breast Imaging

A. Castoldi, C. Guazzoni, A. Galimberti, *Politecnico di Milano and INFN, Italy*; S. Pani, G. Royle, *University College London, UK*

M11-189: Investigating the Effects of Energy Resolution in Dedicated Emission Mammotomography

S. J. Cutler, C. N. Brzymialkiewicz, M. P. Tornai
Duke University, United States

M11-192: A Simulation Study of an Insert Breast PET System

M. Janeczek, H. Wu, Y.-C. Tai
Washington University School of Medicine, USA

M11-195: A New Approach of Dynamic Pinhole SPECT Imaging for Evaluation of Sympathetic Nervous System Function in Animal Models of Cardiac Hypertrophy

J. Hu, A. Sitek, B. W. Reutter, R. H. Huesman, G. T. Gullberg
Lawrence Berkeley National Laboratory, USA

M11-198: Cardiac 511 keV SPECT Simulation with a Compact Detector Design

J. Dingley, U. J. Tipnis, D. R. Gilland
University of Florida, US

M11-201: A Highly-Detailed Quadric-Based Analytical Phantom For Efficient Cardiac CT Simulations

S. M. Moon¹, J. D. Pack¹, M. Kachelriess², F. Noo¹
¹University of Utah, USA; ²University of Erlangen, Germany

M11-204: Iterative Transmission Reconstruction with Adaptive, Spatially Variant Bayesian Prior for Myocardial Perfusion Imaging with SPECT-CT Systems

J. Chen, J. R. Galt, E. V. Garcia
Emory University School of Medicine, USA

M11-207: Investigation of Cold Contrast Recovery as a Function of Acquisition and Reconstruction Parameters for 2D Cardiac PET

S. D. Wollenweber, *GE Healthcare, USA*; K. L. Gould, *University of*

Texas Medical School, USA

M11-210: Investigation of Respiration Motion of the Heart Based on Semi-Automated Segmentation and Modeling of Respiratory-Gated CT Data

J. Dey¹, T.-S. Pan², M. Smyczynski¹, H. Pretorius¹, D. J. Choi¹, M. King¹

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

M11-213: Using Fisher Information to Approximate Ideal-Observer Performance on Detection Tasks

F. Shen, E. W. Clarkson, *University of Arizona, USA*

M11-216: Performance Evaluation of Compton Based Camera for High Energy Gamma Ray Imaging

L. Han, N. H. Clinthorne, *University of Michigan, USA*

M11-219: Equivalence of Percent Correct on a 3-Class Alternative Forced Choice Task and Volume under the 3-Class ROC Surface

X. He, E. C. Frey, J. Links, B. M. Tsui
Johns Hopkins University, USA

M11-222: Evaluation of Image Noise in Prospectively Respiratory Gated PET

N. C. Detorie, A. L. Kesner, T. D. Solberg, M. Dahlbom
UCLA School of Medicine, USA

M11-225: Task-Based Requirements for Resampled Data in Nuclear Medicine

H. C. Gifford¹, M. Mah'd², S. J. Glick¹, M. A. King¹
¹Univ Massachusetts Medical School, USA; ²Univ Massachusetts-Lowell, USA

M11-228: Noise Propagation in Statistical Image Reconstruction with Resolution Recovery

A. Rahmim, *Johns Hopkins University, USA*; J.-C. Cheng, V. Sossi, *University of British Columbia, Canada*

M11-231: Noise Properties of the Backprojection-Filtration Algorithms for Super Short-Scans

D. Xia, Y. Zou, L. Yu, E. Y. Sidky, X. Pan
The University of Chicago, USA

M11-234: Adaptive Noise-Reduction and Sharpening of OSEM Reconstructed Data

A. H. Vija, E. G. Hawman, *Siemens Medical Solutions USA, Inc., USA*; A. Yahil, *Pixon, LLC, USA*

M11-237: Development of a Tweezers-Type Coincidence Imaging Detector

S. Yamamoto^{1,2}, K. Matsumoto², M. Senda²
¹Kobe City College of Technology, Japan; ²Institute of Biomedical Research and Innovation, Japan

M11-240: A Pixelated Silicon Positron Sensitive Imaging Probe

S. S. Huh¹, D. Burdette², E. Chesi², K. Honscheid², H. Kagan², C. Lacasta³, G. Llosa³, M. Mikuz⁴, S.-J. Park¹, W. L. Rogers¹, A. Studen⁴, P. Weilhammer⁵, N. Clinthorne¹
¹University of Michigan, USA; ²Ohio State University, USA; ³Universitat de Valencia, Spain; ⁴University of Ljubljana, Slovenia; ⁵CERN, Switzerland

M11-243: Motion Correction of Respiratory-Gated PET/CT Images Using Polynomial Warping

S. K. Woo, T. Y. Song, J. Y. Choi, Y. Choi, K. H. Lee, B. T. Kim
Samsung Medical Center, Sungkyunkwan Univ. School of Medicine, Korea

M11-246: Compensating Respiratory Motion in PET Image Reconstruction Using 4D PET/CT

F. Qiao^{1,2}, T. Pan², J. W. Clark¹, O. Mawlawi²
¹*Rice University, USA*; ²*M. D. Anderson Cancer Center, USA*

M11-249: The Visual Tracking System (VTS) for Patient Motion Detection in SPECT: Quality Control of the Stereo Calibration

P. P. Bruyant¹, M. A. Gennert², S. Nadella², M. A. King¹
¹*University of Massachusetts-Worcester, USA*; ²*Worcester Polytechnic Institute, USA*

M11-252: Development of Real 4D CT with Real-Time Reconstruction and Display

M. Endo, S. Mori, S. Kandatsu, S. Tanada, *National Institute of Radiological Sciences, Japan*; N. Sugihara, Y. Saito, A. Adachi, H. Miyazaki, *Toshiba Medical Systems Corp., Japan*

M11-255: Near Simultaneous Combined SPECT/CT Imaging Using EMCCD

V. V. Nagarkar, I. K. Shestakova, B. Singh, V. Gaysinskiy, *RMD Inc., USA*; K. Teo, M. Sun, W. C. Barber, B. Hasegawa, *University of California, San Francisco, USA*

M11-258: Noise Properties of Simultaneous Dual Tracer PET Imaging

J. Verhaeghe, Y. D'Asseler, S. Staelens, I. Lemahieu
ELIS-MEDISIP, Ghent, Belgium

M11-261: Ultra High Resolution 3D Model of the Murine Heart from Micro-CT and Serial Confocal Laser Scanning Microscopy Images

A. H. Poddar¹, A. Krol², J. Beaumont¹, R. L. Price³, M. A. Slamani⁴, J. Fawcett¹, I. L. Coman⁵, E. D. Lipson¹, D. H. Feiglin²
¹*Syracuse University, USA*; ²*SUNY Upstate Medical University, USA*; ³*School of Medicine, USA*; ⁴*ITT Industries, USA*; ⁵*Ithaca College, USA*

M11-264: Interactive Fusion and Contrast Enhancement for Whole Body PET-CT Data Using Multi-Image Pixel Compositing

C. Chan¹, J. Kim¹, D. Feng^{1,2}, W. Cai¹
¹*The University of Sydney, Australia*; ²*The Hong Kong Polytechnic University, China*

M11-267: Variance Reduction on Randoms from Delayed Coincidence Histograms for the HRRT

L. Byars¹, M. Sibomana², Z. Burbar², J. Jones², W. C. Barker³, J.-S. Liow³, R. E. Carson⁴, C. Michel²
¹*Byars Consulting, USA*; ²*CPS Innovations, Inc., USA*; ³*National Institute of Health, USA*; ⁴*Yale PET Center, USA*

M11-270: The jPET-D4: Detector Calibration and Acquisition System of the 4-Layer DOI-PET Scanner

E. Yoshida¹, T. Yamaya¹, M. Watanabe², N. Inadama¹, T. Tsuda^{3,1}, K. Kitamura^{4,1}, T. Hasegawa⁵, T. Obi⁶, H. Haneishi³, H. Murayama¹
¹*National Institute of Radiological Sciences, Japan*; ²*Hamamatsu*

Photonics K.K., Japan; ³*Chiba University, Japan*; ⁴*Shimadzu Corporation, Japan*; ⁵*Kitasato University, Japan*; ⁶*Tokyo Institute of Technology, Japan*

M11-273: Normalization for the ClearPET Neuro

S. Weber, B. Gundlich, M. Khodaverdi
Central Institute for Electronics, Forschungszentrum Juelich, Germany

M11-276: Using Bootstrap Identifiability as a Metric for Model Selection for Dynamic [11C]DASB PET Data

R. T. Ogden, A. Ojha, K. Erlandsson, R. L. van Heertum, J. J. Mann, R. V. Parsey
Columbia University, USA

M11-279: Noise Comparison for Iterative Reconstruction Using a Pin-Hole Collimator and a Rotating-Slit Collimator

B. Zhang, G. L. Zeng, *University of Utah, U.S.A*

M11-282: Angular-Dependent Axial-Shift Correction for Pinhole SPECT

S. D. Metzler, *University of Pennsylvania, USA*; R. J. Jaszczak, K. L. Greer, J. E. Bowsher, *Duke University Medical Center, USA*

M11-285: Design of a Novel Pinhole Collimator System for SPECT Imaging of Small Animals with Different Sizes

S. P. Mok, Y. Wang, B. M. W. Tsui
Johns Hopkins Medical Institutions, USA

M11-288: Derivation and Implementation of a Simple Method for Geometric Calibration in Multi-Pinhole SPECT

Y. Wang¹, S.-P. Mok², B. M. W. Tsui¹
¹*Johns Hopkins Medical Institutions, USA*; ²*Johns Hopkins School of Public Health, USA*

M11-291: System Calibration and Statistical Image Reconstruction for the U-SPECT-I Stationary Pinhole System

F. van der Have, B. Vastenhout, M. Rentmeester, F. J. Beekman
University Medical Centre Utrecht, The Netherlands

M11-294: Simulation and Validation of Point Spread Functions in Pinhole Imaging

T. Funk¹, M. Sun^{1,2}, E. W. Izaguirre¹, B. H. Hasegawa^{1,2}
¹*University of California, San Francisco, USA*; ²*University of California, Berkeley, USA*

M11-297: Imaging Dose: Calibration of Polymer Gel Dosimeters for use in Targeted Radionuclide Therapy

J. I. Gear, G. D. Flux, E. Charles-Edwards, M. Partridge, R. J. Ott, *The Institute of Cancer Research and Royal Marsden NHS Foundation Trust, Surrey*; G. Cook, *The Royal Marsden NHS Foundation Trust, Surrey*

M11-300: Generalized 5D Dynamic and Spectral Factor Analysis

G. El Fakhri¹, A. Sitek², J. Ouyang¹, R. E. Zimmerman¹
¹*Harvard Medical School and Brigham & Women's Hospital, USA*; ²*Lawrence Berkeley National Laboratory, USA*

M11-303: A New Component Approach Efficiency Normalization for 3D PET

W. Wang, Z. Hu, D. Gagnon, *Philips Medical Systems, USA*

M11-306: A Microvolumetric Blood Counter for Pharmacokinetic Pet Studies in Small Animals

L. Convert, J. Cadorette, G. Morin-Brassard, D. Rouleau, E. Croteau, M. Archambault, R. Fontaine, R. Lecomte
Sherbrooke University, Canada

M11-309: Graph-Based Mumford-Shah Segmentation of Large Dynamic PET Datasets with Application to Input Function Estimation

B. J. Parker, *University of Sydney, Australia*

M11-312: Evaluation of a New Method for Absolute in Vivo Quantitation of Tumor and Organ Activity from Conjugate View Planar Images

B. He, E. C. Frey, W. P. Segars
Johns Hopkins Medical Institutions, USA

M11-315: Quantitative Accuracy Considerations in Dynamic State-of-the-Art PET Imaging

A. Rahmim, *Johns Hopkins University, USA*; J.-C. Cheng, S. Blinder, M. Camborde, V. Sossi, *University of British Columbia, Canada*

M11-318: Simultaneous Estimation of Blood Flow Distribution and Instrumentation Noise from Dynamic H215O PET Study with Stochastic Differential Equations

U. Ruotsalainen¹, J. A. Niemi^{1,2}, K. Ruohonen²
¹*Institute of Signal Processing, Tampere University of Technology, Finland*; ²*Institute of Mathematics, Tampere University of Technology, Finland*

M11-321: Evaluation of Error on Parameter Estimates in the Quantitative Analysis of Receptor Studies with Positron Emission Tomography

Y. Ikoma¹, H. Ito¹, T. Yamaya¹, K. Kitamura², A. Takano¹, H. Toyama³, T. Suhara¹
¹*National Institute of Radiological Sciences, JAPAN*; ²*Shimadzu Corporation, JAPAN*; ³*International University of Health and Welfare, JAPAN*

M11-324: Evaluation of MAP Image Reconstruction with Positron Range Modeling for 3D PET

B. Bai¹, R. Laforest², A. M. Smith¹, R. M. Leahy³
¹*CTI Concorde Microsystems, U.S.A.*; ²*Washington University Medical School, U.S.A.*; ³*University of Southern California, U.S.A*

M11-327: Modeling the Distance-Dependent Blurring in Transmission Imaging in the Ordered-Subset Transmission (OSTR) Algorithm by Using an Unmatched Projector/Backprojector Pair

B. Feng, M. A. King, H. C. Gifford, *University of Massachusetts Medical School, USA*; G. L. Zeng, *Univer of Utah, USA*; J. A. Fessler, *University of Michigan, USA*

M11-330: Communication Optimization and Auto Load Balancing in Parallel OSEM Algorithm for Fully 3-D SPECT Reconstruction

T. Ma, R. Zhou, Y. Jin, *Tsinghua University, China*

M11-333: A Rebinning-Type Backprojection-Filtration Algorithm for Region of Interest Reconstruction in Fan-Beam CT with Improved Noise Properties

L. Yu, D. Xia, Y. Zou, E. Y. Sidky, X. Pan, C. A. Pelizzari
The University of Chicago, USA

M11-336: Quasi Pseudo-Inverse Reconstruction Technique for Rotating PET Scanners

J. Sánchez-González¹, S. España², M. Abella¹, J. J. Vaquero¹, E. Lage¹, J. Pascau¹, M. Desco¹
¹*Unidad de Medicina y Cirugía Experimental, Hospital GU Gregorio Marañón, Spain*; ²*Universidad Complutense, Spain*

M11-339: A Study of Different Minimization Approaches for Iterative Reconstruction in X-Ray CT

B. De Man, S. Basu, *GE Global Research, USA*; J.-B. Thibault, J. Hsieh, *GE Healthcare, USA*; J. A. Fessler, *University of Michigan, USA*; C. Bouman, *Purdue University, USA*; K. Sauer, *University of Notre Dame, USA*

M11-342: Analytical Reconstruction Algorithm with Constant Attenuation Compensation Using 180o Acquisition Data

Q. Tang, G. L. Zeng, *University of Utah, USA*

M11-345: Modified Simultaneous Iterative Reconstruction Technique for Faster Parallel Computation

T. M. Benson, J. Gregor, *University of Tennessee, USA*

M11-348: Quest for a Simple Cone-Beam Image Reconstruction Framework for Available Cone-Beam CT Systems

G.-H. Chen^{1,2}, T. Zhuang¹, B. Nett¹, S. Leng¹
¹*Department of Medical Physics, University of Wisconsin-Madison, United States of America*; ²*Department of Radiology, University of Wisconsin-Madison, United States of America*

M11-351: A Generalized Hann Window for Apodization of Filtered Backprojection Images

C. W. Stearns, *GE Healthcare, USA*

M11-354: PET Image Reconstruction Using Anatomical Information Through Mutual Information Based Priors

S. Somayajula, E. Asma, R. M. Leahy
University of Southern California, USA

M11-357: Improving the Temporal Resolution of Tomographic Images Using a PI-Line Based Backprojection Filtration Algorithm

M. T. King, X. Pan, M. Giger, *University of Chicago, USA*

M11-360: Analytic Calibration of Cone-Beam Scanners

R. Clackdoyle, G. Strubel, C. Mennessier
Laboratoire TSI, CNRS UMR 5516, France

M11-363: Optimizing Detector Size in X-Ray Imaging

M. Kachelriess, W. A. Kalender
Institute of Medical Physics (IMP), Germany

M11-366: Atomic Number Measurement Precision of Spectral Decomposition Methods for CT

B. J. Heismann, *Siemens Medical Solutions, Germany*

M11-369: A Simple Analytic Method for Tomography Calibration

C. Mennessier, *CPE, 69616*; R. Clackdoyle, *TSI, 42000*

M11-372: Noise Reduction by Temporal Estimation in Perfusion Computed Tomography

P. Montes, *University of Heidelberg, Germany*; G. Lauritsch, *Siemens AG Medical Solutions, Germany*

MIC Dinner

Saturday, Oct. 29 19:00-22:00, location to be announced at conference

The Medical Imaging Conference dinner will be an outdoor dinner event taking full advantage of the venue. Details were not finalized when this program book went to press, but several locations and options are under consideration to reflect the location and culture of Puerto Rico.

NSS-MIC JOINT SESSION

J01 NSS-MIC Joint Session 1

Wednesday, Oct. 26 08:00-10:00, Pablo Casals Ballroom

Session Chairs: **William Moses**, *Lawrence Berkeley National Laboratory*
Mark Cunningham, *Lawrence Livermore National Laboratory*

J01-1: Multi-Pinhole SPECT Imaging with Silicon Strip Detectors

T. E. Peterson, *Vanderbilt University, USA*; L. R. Furenlid, D. W. Wilson, *University of Arizona, USA*

J01-2: The Feasibility of In-Beam PET for Therapeutic Beams of ^3He

F. Fiedler¹, P. Crespo¹, K. Parodi², M. Sellesk^{1,3}, W. Enghardt¹
¹*Forschungszentrum Rossendorf, Germany*; ²*Northeast Proton Therapy Center, USA*; ³*TU Bergakademie Freiberg, Germany*

J01-3: Counting and Integrating Readout for Direct Conversion X-Ray Imaging - Concept, Realization and First Prototype Measurements

E. Kraft¹, P. Fischer^{1,2}, M. Karagounis¹, M. Koch¹, H. Krueger¹, I. Peric^{1,2}, N. Wermes¹, C. Herrmann³, A. Nascetti^{3,4}, M. Overdick³, W. Ruetten³

¹*Physikalisches Institut der Universität Bonn, Germany*; ²*Institut für Technische Informatik der Universität Mannheim, Germany*; ³*Philips Research Laboratories, Germany*; ⁴*La Sapienza, University of Rome, Italy*

J01-4: Tomographic Imaging with Coded Apertures from a Single Projection: Experimental Results

J. D. Idoine, *Kenyon College, USA*; D. Schellingerhout, *M.D. Anderson Cancer Hospital, USA*; R. Accorsi, *Children's Hospital of Philadelphia, USA*; R. C. Lanza, *Massachusetts Institute of Technology, USA*; J. V. Frangioni, *Beth Israel Deaconess Medical Center, USA*

J01-5: 8-Layer DOI Encoding of 3-Dimensional Crystal Array

M. Hamamoto¹, H. Murayama², N. Inadama², T. Tsuda³, Y. Ono³, T. Yamaya², E. Yoshida², K. Shibuya², F. Nishikido¹, J. Kikuchi¹, T. Doke¹

¹*Waseda university, Japan*; ²*National Institute of Radiological Sciences, Japan*; ³*Chiba University, Japan*

J01-7: CMOS-Based, Position-Sensitive Solid-State Photomultiplier

C. J. Stapels¹, M. R. Squillante¹, G. Entine¹, J. Christian¹, F. L. Augustine², W. G. Lawrence¹

¹*Radiation Monitoring Devices, USA*; ²*Augustine Engineering, USA*

J01-8: Visual Performance of Scintillating Film for Monitoring the Position of Radiation Source in Nondestructive Testing

K. J. Lee, J. I. Yun, B. G. Park, Y. M. Hwang, *FNC Technology Co., Republic of Korea*; S. Kim, *Cheju National University, Republic of Korea*; B. S. Lee, *Konkuk University, Republic of Korea*

J02 NSS-MIC Joint Session 2

Wednesday, Oct. 26 10:30-12:00, Pablo Casals Ballroom

Session Chairs: **Kanai Shah**, *RMD*
Lodovico Ratti, *University of Pavia*

J02-1: Investigation of a Continuous Crystal PSAPD-Based Gamma Camera

P. Després¹, W. C. Barber¹, M. McClish², T. Funk¹, K. S. Shah², B. H. Hasegawa¹

¹Physics Research Lab, USA; ²Radiation Monitoring Devices Inc., USA

J02-2: Fabrication and Experimental Evaluation of a 0.5 mm LSO Array for Use in Small Animal PET Imaging

J. R. Stickel¹, K. Vaigneur², S. R. Cherry¹

¹University of California at Davis, USA; ²Agile Engineering Inc, USA

J02-4: Design and Simulation Study for Full Size Liquid Xe Scintillation TOF-PET System

F. Nishikido, J. Kikuchi, T. Doke, H. Takahashi
Waseda University, Japan

J02-5: Design of a High-Resolution PET Detector Using Avalanche Photodiodes

K. C. Burr, A. Ivan, J. W. LeBlanc, GE Research, USA; R. Farrell, K. S. Shah, Radiation Monitoring Devices, Inc., USA

J02-6: An APD-Based Detector for High-Resolution PET Insert

Y.-C. Tai, H. Wu, M. Janecek, D. Pal, J. A. O'Sullivan, Washington University in St. Louis, USA; B. A. Swann, S. Siegel, CTI-Concorde Microsystems, Inc., USA

W1 Computing for the LHC: Crunch Time!

Wednesday, Oct. 26 10:20-12:00, Poinsettia Ballroom, Salons A, B, C
Session Chair: **Paolo Calafiura**, Lawrence Berkeley National Laboratory

LHC Workshop

Session Chair: **Lorenzo Fabris**

Wednesday, Oct. 26, 10:20-12:00, Poinsettia Ballroom, Salons A, B, C

On July 2007 hundreds of MB/s of raw data will start flowing from the four experiments at the CERN Large Hadron Collider. Thousands of physicists will start sifting through multi-Petabyte data stores looking for the Higgs boson and for evidence of new physics. In this workshop we will try to assess how ready are the four experiments computing and software systems to support them.

· Is the new Object-Oriented simulation, reconstruction and analysis software ready? Do physicists find the new software usable? Can the software be used to understand and debug the detector while it is being build?

· How successful has the model of shared software development been? Is the effort put in common projects like CLHEP, Geant 4, ROOT/SEAL, Gaudi, or POOL paying off?

· Will the new GRID-centric distributed computing systems be deployed in time? How are the assumptions in the experiments computing models being tested? Are there contingency plans if they turn out to be too optimistic?

J03 NSS-MIC Joint Poster Session

Wednesday, Oct. 26 16:00-17:30, Grand Caribbean East and South Foyer

Session Chairs: **Vivek Nagarkar**, RMD, Inc.

Thomas Niedermayr, Lawrence Livermore National Laboratory

J03-1: Studies of CZT for PET Applications

P. Vaska, A. Bolotnikov, G. Carini, G. Camarda, J.-F. Pratte, F. A. Dilmanian

Brookhaven National Laboratory, U.S.A.

J03-2: 60 mm diameter Lu0.4Gd1.6SiO5:Ce (LGSO) single crystals and their improved scintillation properties

T. Usui, S. Shimizu, N. Shimura, K. Kurashige, Y. Kurata, K. Sumiya, N. Senguttuvan, A. Gunji, M. Kamada, H. Ishibashi

Hitachi Chemical Co., Ltd., Japan

J03-3: A Scintillating-Gas Filled GEM Detector as a Beam Monitor Chamber in Radiation Therapy

A. Simon, E. Seravalli, R. Kreuger, J. Hendrikse, K. van Eijk, Delft University of Technology, NL; E. Loef, B. Heijman, Erasmus MCI Daniel den Hoed Cancer Center, NL

J03-4: Scintillation Properties of LuYAP and LYSO Crystals Measured with MiniACCOS, an Automatic Crystal Quality Control System

J. Trummer, D. Aimard, E. Auffray, G. Chevenier, P. Lecoq, P. Sempere-Roldan, O. Teller
CERN, Switzerland

J03-5: High Resolution, High Sensitivity Detectors for Functional Molecular Imaging with Radionuclides: the Role of Scintillator Pixel Size, Photodetector Anode Dimension, Collimation Technique and Readout.

F. Garibaldi, E. Cisbani, S. Colilli, F. Cusanno, R. Fratoni, F. Giuliani, M. Gricia, S. Lomeo, M. Lucentini, F. Santavenere, Istituto Superiore di Sanita', Italy; S. Majewski, Jefferson Lab, USA; M. N. Cinti, R. Pani, R. Pellegrini, University of Rome - La sapienza, Italy; R. Accorsi, Children Hospital, USA; R. Lanza, MIT, USA; B. Tsui, Johns Hopkins, USA

J03-6: Growth of PbWO4:PbF2 Crystal with High Light Yield

P. Yang, Kunming Institute of Physics, China

J03-7: A New Class of Low-Cost, High-Performance, Radiation Detectors

P. S. Friedman, Integrated Sensors, LLC, USA

J03-8: Comparative Study of Scintillators for PET/CT Detectors

A. Nassalski¹, D. Möckel², M. Balcerzyk¹, M. Kapusta¹, M. Sobiella², U. Wolf², W. Enghardt², M. Moszyński¹

¹Soltan Institute for Nuclear Studies, Poland; ²Forschungszentrum Rossendorf, Germany

J03-9: Crystal Identification Based on Recursive-Least-Squares and Least-Mean-Squares Autoregressive (AR) Models for Small-Animal PET

H. Semmaoui, N. Viscogliosi, F. Bèlanger, J.-B. Michaud, R. Lecomte, R. Fontaine
Université de Sherbrooke, Canada

J03-10: A Comparison of BGO, GSO, MLS, LGSO, LYSO and LSO Scintillation Materials for High-Spatial-Resolution Animal PET Detectors

R. A. Ramirez

University of Texas M.D. Anderson Cancer Center, U.S.A

J03-11: Multi-CFD Timing Estimators for PET Block Detectors

M. G. Ullisch, W. W. Moses

*Lawrence Berkeley National Laboratory, USA***J03-12: Silicon PIN Photodiode Array for Medical Imaging Applications: Structure, Optical Properties and Temperature Coefficients**A. O. Goushcha, B. Tabbert, I. Goushcha, *Semicoa, USA***J03-13: Acquiring 1000 Frames per Second with an Imaging Photon-Counting Read-Out System**M. Maiorino¹, G. Blanchot¹, M. Chmeissani¹, J. Garcia¹, M. Lozano², R. Martinez², G. Pellegrini², C. Puigdenogles¹, M. Ullan²¹IFAE - Institut de Física d'Altes Energies, SPAIN; ²Centro Nacional de Microelectrónica – IMB-CNM-CSIC, SPAIN**J03-14: A Prototype Anger-Type Detector for PET Using LSO and Large-Area APDs**S. Krishnamoorthy, *Stony Brook University, U.S.A.*; P. Vaska, S. Stoll, M. Purschke, J.-F. Pratte, C. Woody, D. Schlyer, P. O'connor, *Brookhaven National Laboratory, U.S.A.***J03-15: Real-Time Coincidence Detection System for Digital High Resolution APD-based Animal PET Scanner**M.-A. Tétrault, M. D. Lepage, N. Viscogliosi, F. Bélanger, C. Pépin, R. Fontaine, R. Lecomte
*Université de Sherbrooke, Canada***J03-16: Optimization of the Integration Time of Pulse-Shape Analysis for Dual-Layer GSO Detector with Different Amount of Ce**S. Yamamoto^{1,2}, H. Mashino³¹Kobe City College of Technology, Japan; ²Institute of Biomedical Research and Innovation, Japan; ³Appolomec, Japan**J03-18: New Prospects for Time-of-Flight PET with LSO Scintillators**M. Moszynski¹, M. Kapusta¹, A. Nassalski¹, T. Szczesniak¹, D. Wolski¹, L. Eriksson^{2,3}, C. Melcher^{4,5}¹Soltan Institute for Nuclear Studies, Poland; ²CPS Innovations, USA; ³Karolinska Institute, Sweden; ⁴CTI Molecular Imaging, Inc., USA; ⁵University of Tennessee, USA**J03-19: The Architecture of LabTEPm, a Small Animal APD-Based Digital PET Scanner**R. Fontaine, F. Bélanger, N. Viscogliosi, H. Semmaoui, M.-A. Tétrault, J.-B. Michaud, C. Pepin, J. Cadorette, R. Lecomte
*Université de Sherbrooke, Canada***J03-20: A New Method to Determine the Depth-of-Interaction Function**

Y. Shao, R. Yao

*State University of New York at Buffalo, USA***J03-21: Neutron Radiography with Isotropic Illumination by Diffuse Source**J. Jakubek, T. Holy, S. Pospisil, J. Uher, Z. Vykydal, *Institute of Experimental and Applied Physics of the Czech Technical University, Czech Republic*; V. Rypar, *Nuclear Research Institute, Czech Republic***J03-22: High Resolution GSO Block Detectors Using PMT-Quadrant-Sharing Design for Human Whole Body and Breast PET Application**S. Kim, W.-H. Wong, H. Li, Y. Zhang, S. Xie, R. Ramirez, Y. Wang, J. Uribe, H. Baghaei, J. Liu, S. Liu
*The University of Texas M. D. Anderson Cancer Center, USA***J03-23: Extraction of Distorted Field Parameters Using Relocation Vectors: PET and NMR Case Study**L. Pichl, *International Christian University, Japan*; S. Czanner, J. Jovicich, *Massachusetts General Hospital, Harvard Medical School, USA*; M. Tachikawa, *Yokohama City University, Japan*; R. J. Buenker, *Bergische Universitaet Wuppertal, Germany*; M. Kimura, *Kyushu University, Japan***J03-24: Timing in Silicon Pad Detectors for Compton Cameras and High Resolution PET**N. H. Clinthorne¹, D. Burdette², E. Chesi³, K. Honscheid², S. Huh¹, H. Kagan², C. Lacasta⁴, G. Llosa⁴, M. Mikuz⁵, S. Smith², A. Studen⁵, P. Weilhammer^{3,6}¹University of Michigan, USA; ²Ohio State University, USA; ³CERN, Switzerland; ⁴IFIC / CSIC, Spain; ⁵Institut Jozef Stefan, Slovenia; ⁶University of Perugia, Italy**J03-25: Detailed Monte Carlo Investigation of a Proton Computed Tomography System**P. G. A. Cirrone, G. Cuttone, F. Di Rosa, G. Russo, G. Candiano, *Laboratori Nazionali Del Sud, Italy*; N. Randazzo, V. Sipala, *Italian Institute for Nuclear Physics, Italy*; J. Feldt, H. F. W. Sadrozinski, A. Seiden, D. C. Williams, *Santa Cruz Institute for Particle Physics, US*; V. Bashkirov, R. Schulte, *Loma Linda University Medical Center, US*; M. Bruzzi, D. Menichelli, M. M. Scaringella, *Energetic Department, Italy***J03-26: In-Situ Position Calibration of Monolithic scintillation Detectors for High-Resolution PET**P. Bruyndonckx¹, C. Lemaître¹, D. R. Schaart², M. C. Maas², Y. Wu¹, M. Krieger¹, O. Devroede¹, S. Tavernier¹, D. Wisniewski¹, M. Wisniewska¹, Y. Wang³¹Vrije Universiteit Brussel, Belgium; ²Delft University of Technology, The Netherlands; ³University of Science and Technology of China, China**J03-27: Cobaltotherapy Dosimetric Calculations over a Voxelized Water Phantom. Validation of Different Monte Carlo Models and Methodologies ...**R. Miró¹, B. Juste¹, S. Gallardo¹, A. Santos², G. Verdú¹¹Polytechnic University of Valencia, Spain; ²Hospital Provincial de Castelló, Spain**J03-28: Measurement of 32 × 8 × 4 LYSO Crystal Responses of DOI Detector for jPET-RD**T. Tsuda^{1,2}, H. Murayama², K. Kitamura^{2,3}, N. Inadama², T. Yamaya², E. Yoshida², F. Nishikido⁴, M. Hamamoto^{2,4}, H. Kawai¹, Y. Ono^{1,2}¹Chiba University, JAPAN; ²National Institute of Radiological Sciences, JAPAN; ³Shimadzu Corporation, Japan; ⁴Waseda University, JAPAN**J03-29: Micro-Focus X-Ray Experimental System for multimode of NDT**Z. Huang, Z. Li, K. Kang, *Tsinghua University, China*

J03-30: rPET Detectors Design and Data Processing

J. J. Vaquero, E. Lage, L. Ricón, J. Pascau, J. Sánchez, M. Abella, M. Desco

Unidad de Medicina y Cirugía Experimental, Hospital GU Gregorio Marañón, Spain

J03-31: SURGICAL GAMMA PROBE with TIBr SEMICONDUCTOR for IDENTIFICATION of SENTINEL LYMPH NODE

F. E. D. Costa, I. B. Oliveira, P. R. Rela, M. M. Hamada

Institute for Nuclear Energetic Research, Brazil

J03-32: Novel Lead-Walled Straw PET Detector for Specialized Imaging Applications

N. N. Shehad, A. Athanasiades, L. Sun, J. L. Lacy

Proportional Technologies, USA

J03-33: Development of Neutron Imaging Detector Using Capillary Phenomena and Liquid Scintillator

S. Gunji, Y. Yamashita, H. Sakurai, F. Tokanai, Y. Ishigaki

Yamagata University, Japan

J03-34: Sub-Millimeter Intrinsic Spatial Resolution PET Detector Designs Using Geiger-Mode Avalanche Photodetectors

R. S. Miyaoka, T. K. Lewellen

University of Washington, USA

J03-35: A Method to Quantitate Rate Constant of Photoassimilation within Leaf Using Carbon-11-Labeled Carbon Dioxide and Positron Emitting Tracer Imaging System

N. Kawachi, S. Ishii, K. Sakamoto, S. Fujimaki, N. S. Ishioka, N. Suzui, S. Matsuhashi

Takasaki Radiation Chemistry Research Establishment, Japan Atomic Energy Research Institute, Japan

J03-36: High-Sensitive X-Ray Detectors Using Gas Discharge with Extreme Dense Structure for Amplification and Visualization of X-Ray Images

Y. V. Alkhimov¹, V. K. Kuleshov², Y. D. Kim¹

¹Ajou University, Korea; ²Tomsk Polytechnic University, Russia

J03-37: Application of an Ultra-Miniature Thermal Neutron Monitor for BNCT Irradiation Field Study

M. Ishikawa, *The University of Tokyo, Japan*; H. Kumada,

K. Yamamoto, *Japan Atomic Energy Research Institute,*

Japan; J. Kaneko, *Hokkaido University, Japan*

J03-38: Performance Study of New, Fast Hamamatsu R9779 Photomultiplier

F. Bauer^{1,2}, M. Aykac², M. Loope², C. W. Williams², L. Eriksson^{1,2}, M. Schmand²

¹University of Stockholm, Sweden; ²CPS Innovations, Inc., USA

J03-39: Radioisotope-Production Facility at JAERI-TIARA to be Used in Medical and Plant Physiological Research

N. S. Ishioka, S. Watanabe, H. Matsuoka, S. Matsuhashi

Japan Atomic Energy Research Institute, Japan

J03-40: ΔOSI: a Prototype Microstrip Dosimeter for Characterisation of Medical Radiotherapy and Radiosurgery Systems

C. Buttar¹, J. Conway², J. M. Homer³, S. Manolopoulos⁴,

I. Redondo-Fernandez¹, S. Walsh⁵, S. Young²

¹University of Glasgow, United Kingdom; ²Weston Park Hospital, United Kingdom; ³Electro Tubes Limited, United Kingdom; ⁴Rutherford Appleton Laboratory, United Kingdom; ⁵Micron Semiconductors, United Kingdom

J03-41: High Frame Rate X-Rays Imaging with a 256x256 Pixel Single Photon Counting Medipix2 Detector

G. Mettivier^{1,2}, M. C. Montesi^{1,2}, A. Sebastiano², P. Russo^{1,2}

¹Università di Napoli, Italy; ²Istituto Nazionale di Fisica Nucleare, Italy

J03-42: Charge Multiplexing Readout for Position Sensitive Avalanche Photodiodes

P. D. Olcott, C. S. Levin, J. Zhang

Stanford University, USA

J03-43: Single Pinhole and Coded Aperture Collimation Systems for High-Resolution Gamma-Ray Imaging in Nuclear Medicine: a Comparative Study

C. Fiorini^{1,2}, R. Accorsi³, G. Lucignani⁴

¹Politecnico di Milano, Italy; ²INFN, Italy; ³The Children's Hospital of Philadelphia, USA; ⁴Università degli Studi di Milano, Italy

J03-44: The Data Acquisition System of the RatCAP Conscious Small Animal PET Tomograph

M. L. Purschke¹, R. Fontaine², S. Junnakar³, S. Krishnamoorthy³,

P. O'connor¹, J.-F. Pratte¹, D. Schlyer¹, S. Stoll¹, P. Vaska¹,

A. Villanueva¹, C. Woody¹

¹Brookhaven National Lab, USA; ²Université de Sherbrooke, Canada; ³State University of New York at Sony Brook, USA

J03-45: Recent Developments in Pixelated Avalanche Photodiodes

J. D. Swain, S. Reucroft, Y. Musienko

Northeastern University, USA

J03-46: A FPGA Based Modular Coincidence Arbitrator Design for Compton Camera with Multiple Detection Blocks

L. Han, S. S. Huh, N. H. Clinthorne

University of Michigan, USA

J03-47: Optical Imaging Capillary Plate Gas Detector

F. Tokanai, M. Kaneko, H. Sakurai, S. Gunji, S. Kikuchi, *Yamagata*

University, Japan; T. Okada, T. Endo, Y. Fujita, T. Atsumi,

Y. Ohishi, *Hamamatsu Photonics K.K., Japan*; S. Kishimoto, *KEK,*

Japan; J. Suzuki, T. Oku, *JAERI, Japan*

J03-48: Reduced Parallel Anode Readout for 256 Ch FP PMT

R. Pani, M. N. Cinti, R. Pellegrini, M. Betti, P. Bennati, G. Trotta,

University of Rome, Italy; A. Del Guerra, *University of Pisa, Italy*

J03-49: A Reexamination of Silicon Avalanche Photodiode Gain and Quantum Efficiency

M. McClish, R. Farrell, K. Vanderpuye, K. S. Shah

Radiation Monitoring Devices, Inc., USA

J03-50: An Application-Specific Integrated Circuit for Positron Emission Tomography

J. F. Christian¹, W. G. Lawrence¹, C. J. Stapels¹, F. L. Augustine²,

M. R. Squillante¹, G. Entine¹

¹Radiation Monitoring Devices, Inc., USA; ²Augustine Engineering, USA

J03-51: Spectral Response of Pixellated Semiconductor X-Ray Detectors

C. Frojdh, H.-E. Nilsson, B. Norlin
Mid Sweden University, Sweden

J03-52: A Flexible, High-Rate USB2 Data Acquisition System for PET and SPECT Imaging

J. Proffitt, A. G. Weisenberger, S. Majewski, R. Wojcik, V. Popov, B. L. Welch, *Jefferson Lab, USA*; R. Raylman, *West Virginia University, USA*

J03-53: Effects of Temperature on the Performance of CZT Crystals

L. Zhang¹, Y. Li¹, S. Mao¹, Z. Deng², S. Li¹
¹*NUCTECH COMPANY LIMITED, China*; ²*Tsinghua University, China*

J03-54: Digital Pulse Shape Discrimination Methods for Phoswich Detectors

D. Wisniewski^{1,2}, M. Wisniewska^{1,3}, P. Bruyndonckx¹, M. Krieger¹, S. Tavernier¹, O. Devroede¹, C. Lemaire¹

¹*Inter-University Institute for High Energies, Belgium*; ²*Institute of Physics, Poland*; ³*on leave from School of Environmental Protection, Poland*

J03-55: Experimental Methods for Assessing the Imaging Properties of a Single Photon Counting Radiographic System

M. G. Bisogni^{1,2}, N. Belcarì^{1,2}, C. Carpentieri^{1,2}, E. Cicalini^{1,2}, A. Del Guerra^{1,2}, P. Delogu^{1,2}, M. E. Fantacci^{1,2}, G. Mettivier^{3,2}, M. C. Montesi^{3,2}, M. Novelli^{1,2}, D. Panetta^{1,2}, M. Quattrocchi^{1,2}, P. Russo^{3,2}, A. Stefanini^{1,2}

¹*Università di Pisa, Italy*; ²*INFN, Italy*; ³*Università di Napoli, Italy*

J03-56: Data Acquisition and Control Systems for SemiSPECT

L. R. Furenid, H. Kim, H. H. Barrett
University of Arizona, 85724

J03-57: Experimental Setup for High Resolution Radiography and Tomography

D. Vavrik, *Institute of Theoretical and Applied Mechanics, Czech Republic*; T. Holy, J. Jakubek, M. Jakubek, Z. Vykydal, *Institute of Experimental and Applied Physics, Czech Republic*

J03-58: Timing Calibration in PET Using a Time Alignment Probe

W. W. Moses, *E. O. Lawrence Berkeley National Laboratory, USA*; C. J. Thompson, *Montreal Neurological Institute, Canada*

J03-59: Sub-Pixel Position Resolution with Pixellated CZT Detectors

T. Narita, *College of the Holy Cross, USA*

J03-60: LaBr3:Ce Scintillation Camera

R. Pani¹, M. N. Cinti¹, R. Pellegrini¹, F. deNotaristefani², P. Bennati¹, M. Betti¹, G. Trotta¹, M. Mattioli¹, F. Garibaldi³, V. Orsolini Cencelli², G. Moschini⁴, F. Navarra⁵

¹*University of Rome - La Sapienza- INFN, Italy*; ²*University of Rome - III - INFN, Italy*; ³*ISS- INFN, Italy*; ⁴*University of Padova-INFN, Italy*; ⁵*University of Bologna-INFN, Italy*

J03-61: Performance of a Large Area Si PIN Photodiode Array

R. Orito¹, K. Hattori², H. Kubo², K. Miuchi², T. Nagayoshi³, H. Nishimura², Y. Okada², H. Sekiya², A. Takada², A. Takeda⁴,

T. Tanimori²

¹*Kobe University, Japan*; ²*Kyoto University, Japan*; ³*Waseda University, Japan*; ⁴*ICRR, Japan*

J03-62: A Full Ray-Tracing Gamma-Ray Camera Using a Gas Micro-Tracking Device

T. Tanimori¹, K. Hattori¹, H. Kubo¹, K. Miuchi¹, T. Nagayoshi², H. Nishimura¹, Y. Okada¹, R. Orito³, H. Sekiya¹, A. Tadaka¹, K. Ueno¹

¹*Kyoto University, Japan*; ²*Waseda University, Japan*; ³*Kobe University, Japan*

J03-63: Another DQE of Medipix 2 Systems? Interpretation and Measurements

U. Stoehr, A. Zwerger, J. Ludwig, M. Fiederle
Freiburg University, Germany

J03-64: Experimental Evaluation of PET Inserts on Reducing the Acolinearity Effect and Improving Image Resolution

H. Wu, M. Janecek, D. Pal, J. O'Sullivan, Y.-C. Tai
Washington University in St. Louis, US

J03-65: Microdosimetric Characteristics of Micro X-Ray Beam for Single Cell Irradiation

T. Kuchimaru, Y. Higashino, F. Sato, T. Iida
Graduate School of Engineering, Osaka University, Japan

J03-66: SiliPET: Design of an Ultra High Resolution Small Animal PET Scanner Based on Stacks of Semi-Conductor Detectors

N. Cesca, G. Di Domenico, M. Gambaccini, E. Moretti, N. Sabba, G. Zavattini
University of Ferrara, Italy

J03-67: GUI Toolkit of Geant4 Simulator to Design and Evaluate a Beam Line of Medical Linac

H. Yoshida^{1,2}, E. Suzuki^{1,2}, A. Kimura^{3,2}
¹*Naruto University of Education, Japan*; ²*JST, Japan*; ³*Ritsumeikan University, Japan*

J03-68: The Medipix2 Quad Imager for High Rate Counting of Quanta in 512x512 Pixel Matrix

X. Llopert¹, R. Ballabriga¹, T. Boerkamp², M. Campbell¹, A. Fornaini², E. Heijne¹, L. Tlustos¹, H. Verkooyen², J. Visschers²
¹*CERN, Switzerland*; ²*NIKHEF, The Netherlands*

J03-69: Intrinsic Defects and Radioluminescence in Lead Tungstate Crystals.

S. K. U. Ismoilov¹, M. K. Ashurov², A. F. Rakov¹
¹*Institute of Nuclear Physics AS Uz, Uzbekistan*; ²*SIA Phonon, Uzbekistan*

J03-70: Effect of Temperature on the Stability and Performance of an LSO-APD PET Scanner

V. Spanoudaki, D. P. McElroy, K. Zell, S. I. Ziegler
Klinikum rechts der Isar, Germany

J03-71: Influence of Sensor Arrangements and Scintillator Crystal Properties on the 3D Precision of Monolithic Scintillation Detectors in PET

P. E. Ojala^{1,2}, A. Boussethem², L. Eriksson^{2,3}, A. Brahme¹, C. Bohm²

¹Karolinska Institutet & Stockholm University, Sweden; ²Stockholm University, Sweden; ³CPS Innovations, USA

J03-72: Using the Physics-Based Rendering Toolkit (pbrt) for Medical Reconstruction

S. Bergner¹, A. Celler², T. Moeller¹

¹Simon Fraser University, Canada; ²University of British Columbia, Canada

J03-73: A Modular Prototype Detector for Scintimammography Imaging

L. Stebel, S. Carrato, *University of Trieste, Italy*; G. Cautero, *Sincrotrone-Trieste SCpA, Italy*; N. Cirulli, G. U. Pignatelli, *University of Perugia, Italy*; C. Marzocca, A. Tauro, A. Dragone, F. Corsi, *Polytechnic of Bari, Italy*; G. Dalla Betta, *University of Trento, Italy*; A. Fazzi, V. Varoli, *Politecnico di Milano, Italy*; F. Cusanno, F. Garibaldi, *Istituto Superiore di Sanità, Italy*

J03-74: A Filtered Back-Projection Algorithm for Compton Telescopes

D. L. Gunter^{1,2}, L. Mihailescu¹, M. Burks¹, K. Vetter¹

¹Lawrence Livermore National Laboratory, US; ²Vanderbilt University, USA

J03-75: Development and Test of TAB Bonded Microcables for Silicon Detectors in a Compton Prostate Probe

C. Lacasta¹, J. Bernabeu¹, G. Llosa¹, P. Modesto¹, N. H. Clinthorne², W. L. Rogers², Y. Dewaraja², L. Zhang², A. Studen³, M. Mikuz³, D. Zontar³, E. Chesi^{4,5}, K. Honscheid⁴, H. Kagan⁴, P. Weilhammer⁵
¹IFIC, *CSIC-UVeG, Spain*; ²University of Michigan, USA; ³Jozef Stefan Institut, Slovenia; ⁴Ohio State University, USA; ⁵CERN, Switzerland

J03-76: Validation of SORTEO Monte Carlo Simulations for the Geometry of the Concorde MicroPET R4 System

C. Lartizen¹, A. Goertzen², A. Reilhac³, N. Costes³, I. Magnin¹, G. Giménez³, A. C. Evans²

¹CNRS, UMR5515, France; ²Montreal Neurological Institute, Canada; ³CERMEP, France

J03-78: Monte Carlo Simulation Based Optimisation of an Animal PET Scanner Design Based on Pixelated CZT Detectors

D. Visvikis, T. Lefevre, *LaTIM, CHU Morvan, France*; G. Kontaxakis, *Universidad Politécnica de Madrid, Spain*; D. Darambara, *Department of Engineering and Physical Sciences, University of Surrey, England*

J04 NSS-MIC Joint Session 3

Wednesday, Oct. 26 17:30-19:30, Pablo Casals

Session Chairs: **Martin Tornai**, *Duke University Medical Center*
Douglas Wagenaar, *Siemens Medical*

J04-1: Initial Performance of the RatCAP, a PET Camera for Conscious Rat Brain Imaging

P. Vaska¹, C. L. Woody¹, D. J. Schlyer¹, V. Radeka¹, P. O'connor¹, J.-F. Pratte¹, S. Shokouhi², S. P. Stoll¹, S. Junnarkar¹, M. Purschke¹, S. Southeikal², V. Dzordzhadze³, W. Schiffer¹, J. Neill⁴, M. Murphy⁴, T. Aubele³, R. Kristiansen⁴, A. Villanueva¹, S. Boose¹, A. Kandasamy¹, B. Yu¹, A. Kriplani², S. Krishnamoorthy², R. Lecomte⁵, R. Fontaine⁵

¹Brookhaven National Laboratory, U.S.A.; ²Stony Brook University,

U.S.A.; ³University of California, U.S.A.; ⁴Long Island University, U.S.A.; ⁵University of Sherbrooke, Canada

J04-2: Advanced Photodetectors for Hyperspectroscopy and Other Applications

I. D. Rodionov, *Reagent Research Center, Russia*; I. Crotti, *CERN, Switzerland*; P. Fonte, *ISEC and LIP, Portugal*; V. D. Peskov, *Pole University Leonard de Vinci, France*

J04-3: Evaluation of a EMCCD Detector for Emission-Transmission Computed Tomography

K. Teo¹, I. Shestakova², M. S. Sun¹, W. C. Barber¹, B. H. Hasegawa¹, V. V. Nagarkar²

¹University of California, San Francisco, USA; ²RMD Inc., USA

J04-4: An Integrated Multi-Sensor Dual-Modality Imaging Platform for Tissue-Specific X-Ray Breast Imaging and Tissue Characterisation

D. G. Darambara, P. J. Sellin, *University of Surrey, UK*; G. Maehlum, *IDEAS ASA, Norway*

J04-5: A Single Photon Emission Microscope System for Small Animal I-125 Imaging

L.-J. Meng, *University of Michigan, USA*

J04-6: Scintillation Properties of Perovskite Type Alkaline Earth Hafnates

E. V. Van Loef¹, W. M. Higgins¹, J. Glodo¹, C. Brecher², A. Lempicki², V. Venkataramani³, W. W. Moses⁴, S. E. Derenzo⁴, K. S. Shah¹

¹Radiation Monitoring Devices, USA; ²ALEM Associates, USA; ³General Electric, USA; ⁴E. O. Lawrence Berkeley National Laboratory, USA

J04-7: Development of a Mini-Gamma Camera Based on a Burle 85021 PSPMT

V. Popov, F. Barbosa, S. Majewski, B. L. Welch
Jefferson Lab, USA

J04-8: Diffraction Enhanced Tomography at Brazilian Synchrotron - LNLS

R. T. Lopes, H. S. Rocha, *Federal University of Rio de Janeiro, Brazil*; G. Tiraio, *Universidad Nacional de Córdoba, Argentina*; I. Mazaró, *Federal University of Paraná, Brazil*; L. F. Oliveira, *State University of Rio de Janeiro, Brazil*; C. Giles, *University of Campinas, Brazil*

WORKSHOPS

Knowledge Transfer and Management in the Technology Transfer Process

As seen by scientists, technology transfer experts, industry and venture capital firm representatives



Dr. Jean-Marie LeGoff



Dr. Uwe Bratzler

Invitation to Round Table/Panel Discussion, to all IEEE NSS/MIC Conference and Industrial Program Participants, Thursday, October 27, 2005, 2-4 pm, Magnolia Room

What are the factors and conditions leading from a new idea, accidental work by-product, spin-off or new invention or discovery to a new market product, technology or company?

Technology Transfer (TT) is a complex process involving a wide variety of issues; such as, scientific and technological learning and communication, finance, intellectual property, capability for the new technology or product to penetrate or create new markets. A variety of people and parties are involved in the process (researchers, industry, technical and financial project managers, venture capitalists, etc.), each of them having specific roles and goals. For the conception and construction of complex science apparatuses, for example, or with many of today's interconnected science subjects and projects, multidisciplinary interactions and communication are needed, and more often essential. All participants in the process share and create knowledge and innovation through a process where technological learning and knowledge management, common understanding and language are important factors. The absorptive capacity and the way in which knowledge is managed in TT projects are key parameters for success.

Inter-organizational TT projects are a good source to study the factors that may enable or hinder the knowledge transfer process. Knowledge management tools, cross-functional teams, the community of practices, and infrastructure for knowledge transfer made available, as well as the cultural and personal enablers for knowledge transfer specific to a project, may be optimized to leverage the outcomes.

The event is co-organized and co-chaired by Dr. Uwe Bratzler, scientist with industrial background and chair of the IEEE Trans-National Committee and Dr. Jean-Marie Le Goff, Group Leader of Technology Transfer at CERN. The agenda is as follows:

1. Welcome and introduction of the panel, participants and guest speakers.
2. Brief presentations (10-15 minutes) by experts of the TT process,

knowledge management and possible sources of funding of potential spin-offs and new market entries, as seen by:

- a TT office manager;
- a scientist having contributed to an outstanding recognized innovation in the field of Medical Imaging;
- a scientist contributing or having contributed to a TT-aimed project;
- an industry representative;
- a CEO of a start-up company or a CEO of a very successful company which started from a TT/spin-off process from science research;
- a venture capital firm representative.

Each of the experts will be asked to put forward a question to the other speakers in the matters discussed. Participants of the session are kindly invited to do the same, the goal being to create the basis for an interactive discussion.

3. Discussion session, followed by a summary and formal closing.

Proposals and a follow-up of the outcomes will be outlined and may serve as the basis for future actions. Participants and speakers are encouraged to share contact information (a list of participants will be handed around and will be made available to all participants after the meeting) for follow-up contacts and communication after this IEEE conference.

The session will take place in a room with limited capacity (max. 100 persons), therefore, (free) pre-registration is recommended to ensure you a seat. To register, please send an email to: Marilena.Streit-Bianchi@cern.ch stating that you are interested in participating in this event.

OpenGATE Workshop

The GATE workshop is organized by the OpenGATE collaboration and is mostly intended to the users and the developers of GATE. It will include an introduction regarding the OpenGATE collaboration, presentations of research activities based on Gate by GATE users, presentation of on-going developments performed by OpenGATE, and a discussion between GATE users and the OpenGATE members about the current limits of GATE and the actions to be taken to overcome them.

As the conference draws near, I am reminded of the importance of the many hard working members of the 2005 committee and their colleagues. It is a large commitment of time and work to put this conference on. It is not only the committee members, but also their institutions and colleagues that give them time to work for the conference. This is a long process that begins with the site selection committee and only ends after the final audit reports go back to IEEE after the conference has ended. I am particularly indebted to those who have gone before me in developing the approaches and general guidelines for putting a conference such as the NSS/MIC together. Needless to say, I offer my thanks to all of the committee members (I hope we managed to list all of them in this program booklet). Without the efforts of the technical chairs for NSS and MIC, the program would not exist. Without the efforts of the local arrangements chair and the treasurer, we would not have a viable venue for the conference. Without the efforts of our web master and conference editor, we would not have a proceedings and the review process would have been most painful indeed.

This is a meeting that relies on the efforts of volunteers. It builds from year to year with new tools (e.g., the web based review process and meeting registration tools) and new capabilities. We continue to find ways to provide more services such as wireless networking and to enhance the conference experience for all attendees. This year was no exception. The many volunteers have done their job and, in spite of the many problems that crop up, the conference will be held and the goals met.

We have listed the various sponsors—both academic and commercial—without whose support the conference could not be held. We have listed in the prior pages messages from the many chairs of the various major parts of the conference. We have also listed the many others who have contributed to the program as reviewers. In the end, we manage never to list all who have contributed and I apologize to those that we have not to included. I also extend my thanks to the families and friends of the committee members who have supported their many extra hours over weekends and weekdays to make this conference a reality. And I end with a plea for anyone who finds the NSS/MIC to be a significant and worthwhile meeting to explore becoming a volunteer to assure its continued future.

Tom K. Lewellen
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CONFERENCE PROGRAM TIME TABLE

	Pablo Casals Ballroom	Poinsettia Ballroom Salon C	Magnolia Ballroom	Grand Caribbean Ballroom Salons 1 & 2	Grand Caribbean Ballroom Salon 3	Grand Caribbean Ballroom Salon 5	Poinsettia Ballroom Salons A, B, C	Grand Caribbean East and South Foyer	Boardroom IV	Outside Event—location posted at conference
Monday, October 24										
09:30-12:00	NP NSS Plenary									
16:00-18:00	N1 Instrumentation for Homeland Security I	N2 Data Acquisition & Analysis Systems	N3 Instrumentation for Medical & Biological Research	N4 Solid State Tracking Detectors						
Tuesday, October 25										
08:00-10:00	N5 Scintillation Detectors I—Halides	N6 Neutron Imaging & Radiography	N7 Nuclear Techniques for Homeland Security	N8 Computing & Software for Experiments I: Data Processing & Analysis	N9 Photodetectors & Radiation Imaging I					
10:20-12:00		N10 Astrophysics & Space Instrumentation I	N11 Data Acquisition & Analysis Systems II		N13 Trigger & Front-End Systems					
12:00-14:00	NSS Lunch					Industrial Exhibits				
11:00-12:30				N12 Scintillation Detectors II—Materials & Applications						
14:30-16:00								N14 NSS Poster 1		
16:00-18:00			N15 Photodetectors & Radiation Imaging II	N16 Analog & Digital Circuits I	N17 Gas Detectors: GEM- based Instruments & Studies					
16:00-19:00						Industrial Exhibits				
19:00- 21:00						Exhibitor Reception				
Wednesday, October 26										
08:00-10:00	J01 NSS-MIC Joint Session 1		N18 Analog & Digital Circuits II	N19 Computing & Software for Experiments II: Simulation	N20 Instrumentation for Homeland Security II		N21 High Energy Physics Detectors I			
09:00-13:00						Industrial Exhibits				
10:20-12:00	J02 NSS-MIC Joint Session 2		N22 Accelerators and Beam Line Instrumentation	N23 Nuclear Measurements & Monitoring Techniques II	N24 Astrophysics & Space Instrumentation II		W1 Computing for the LHC: Crunch Time!			
12:00-17:00									Industrial Seminar	
16:00-17:30								J03 NSS-MIC Joint Poster Session		
16:00-18:00			N25 High Energy Physics Detectors II	N26 Radiation Damage Effects			N27 Solid State Detectors I			

CONFERENCE PROGRAM TIME TABLE

	Pablo Casals Ballroom	Poinsettia Ballroom Salon C	Magnolia Ballroom	Grand Caribbean Ballroom Salons 1 & 2	Grand Caribbean Ballroom Salon 3	Grand Caribbean Ballroom Salon 5	Poinsettia Ballroom Salons A, B, C	Grand Caribbean East and South Foyer	Boardroom IV	Outside Event—location posted at conference
16:00-20:00						Industrial Exhibits				
17:30-19:30	J04 NSS-MIC Joint Session 3									
19:30-22:00										Conference Reception
Thursday, October 27										
08:00-10:00	M01 MIC Plenary Session		N28 Nuclear Physics Instrumentation	N29 Solid State Detectors II	N30 Nuclear Measurements & Monitoring Techniques		N31 Gas Detectors: Basic Studies			
09:00-13:00						Industrial Exhibits				
10:20-12:00	M02 Breast Imaging		N32 Environmental Health & Safety Instrumentation		N33 Synchrotron Radiation Instrumentation		N34 Solid State Detectors III			
12:00-14:30			openGate workshop							
14:30-16:00			openGate workshop				N35 NSS Poster II			
15:30-17:30			openGate workshop				M03 Posters 1	Technology Transfer Roundtable		
16:00-18:00			N36 Gas Detectors: Applications in Large Experiments	N37 High Energy Physics Detectors III			N38 Scintillation Detectors III			
16:00-20:00						Industrial Exhibits				
17:30-19:30	M04 Whole body PET & PET/CT									
Friday, October 28										
08:00-10:00	M05 Image Reconstruction									
10:30-12:00	M06 Multimodality Imaging									
15:30-17:30							M07 Posters 2			
17:30-19:30	M08 Cardiac Imaging									
Saturday, October 29										
08:00-10:00	M09 Small Animal Imaging									
10:30-12:00	M10 Motion Compensation									
15:30-18:00							M11 Posters 3			
19:00- 22:00										MIC Dinner



2005 IEEE NUCLEAR SCIENCE SYMPOSIUM & MEDICAL IMAGING CONFERENCE

Continuing Education Program • Tours & Companion Program
Wyndham El Conquistador Resort, Fajardo, Puerto Rico • October 23-29, 2005



REGISTRANT INFORMATION (please type or print legibly):

Form fields for registrant information including Last Name/Family Name/Surname, First Name, Middle Initial, Name to Appear on Badge, Company/Organization, Mailing Address, City, State/Province, Zip/Postal Code, Country, Email Address, Telephone Number, and FAX Number.

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DEADLINE:

Friday, October 7, 2005 (After this date, you will have to register on-site at the meeting.)

CANCELLATION & REFUND POLICY

You are not officially registered until we receive your completed registration form and payment. If your payment is not received by the October 7th deadline, your registration will be cancelled. In order to process refunds, cancellations must be received in writing by October 7, 2005 (less \$25 cancellation fee). No refunds will be issued thereafter.

FEE SUMMARY:

Please indicate appropriate fees below, using fee schedule opposite:.

- 1. Registration \$ _____
2. Luncheon/Dinner \$ _____
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Total amount enclosed: \$ _____

Payment must be in US dollars. Only checks drawn on or payable through US banks may be used. Traveler's checks, money orders and the credit cards listed are acceptable. Do not send cash.

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FEE SCHEDULE:

Table with 3 columns: Fee Category, By Oct. 7, On-Site. Includes 1. REGISTRATION (NSS/MIC, Oct.23-29) with various membership options and their costs.

Table with 5 columns: Program Name, By Oct. 7, On-Site, Qty., Total. Includes 2. BANQUET PROGRAMS: NSS Luncheon and MIC Dinner.

Table with 5 columns: Program Name, Date, IEEE member, Non-member. Includes 3. CONTINUING EDUCATION PROGRAM with various course fees.

Note: Add \$50 per course for on-site registration.

Lunch is provided at all full-day courses. Refreshments provided at all courses.

Table with 6 columns: Program Name, Cost/Person, Date, Self, No. of Guests, Total Cost. Includes 4. TOURS & COMPANION PROGRAM (Oct. 23-29) with various excursion options.

Note: A \$10/tour added charge for all on-site reservations.

If you are bringing companions, list their name(s) and a contact email address:

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