

# IEEE

Knoxville, Tennessee (USA)



30 October - 6 November 2010 – Knoxville Convention Center

## CONFERENCE PROGRAM

**NUCLEAR SCIENCE SYMPOSIUM**

**MEDICAL IMAGING CONFERENCE**

**ROOM TEMPERATURE SEMICONDUCTOR  
X-RAY AND GAMMA-RAY DETECTORS**

**SHORT COURSES**

**INDUSTRIAL PROGRAM**

**TOPICAL WORKSHOPS**

[www.nss-mic.org/2010](http://www.nss-mic.org/2010)

email: [nssmic2010@ametek.com](mailto:nssmic2010@ametek.com)

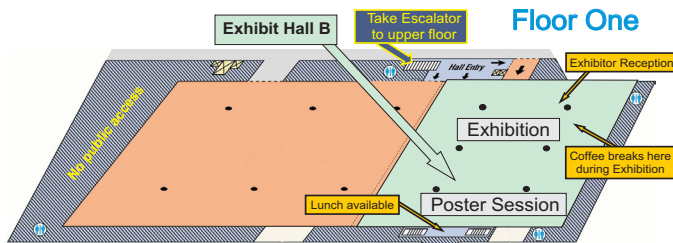
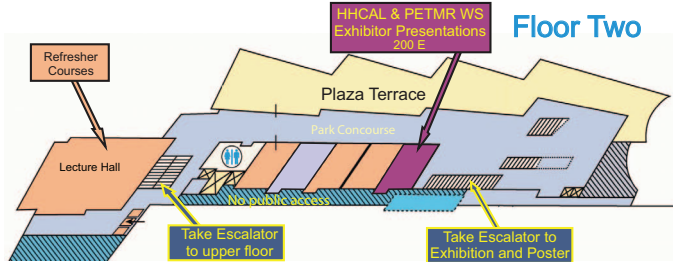
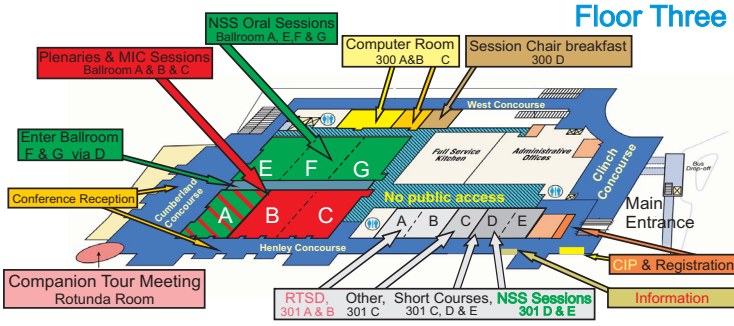




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# Knoxville Convention Center

## CONFERENCE-AT-A-GLANCE



Friday 30 October	Saturday 30 October	Sunday 31 October
Registration 17:00 - 20:00	Registration 07:30 - 09:30 15:30 - 18:30	Registration 07:30 - 09:30 15:30 - 18:30
08:30	<p><b>Short Courses</b> Radiation Detection and Measurement Room 301-C</p> <p>-----</p> <p>Integrated Circuit Front-Ends for Nuclear Pulse Processing Room 301-E</p>	<p><b>Short Courses</b> Radiation Detection and Measurement Room 301-C</p> <p>-----</p> <p>Advanced Photodetectors Room 301-A</p> <p>Image Quality in Adaptive and Multimodality Imaging Room 301-E</p>
10:00	Coffee Break	
10:30	<p><b>Short Courses</b> Radiation Detection and Measurement Room 301-C</p> <p>-----</p> <p>Integrated Circuit Front-Ends for Nuclear Pulse Processing Room 301-E</p>	<p><b>Short Courses</b> Radiation Detection and Measurement Room 301-C</p> <p>-----</p> <p>Advanced Photodetectors Room 301-A</p> <p>Image Quality in Adaptive and Multimodality Imaging Room 301-E</p> <p><b>Workshop</b> Homogeneous Hadronic Calorimeter Detector Concept Room 200-E Starts at 10:00</p>
12:00	Lunch	
13:30	<p><b>Short Courses</b> Radiation Detection and Measurement Room 301-C</p> <p>-----</p> <p>Integrated Circuit Front-Ends for Nuclear Pulse Processing Room 301-E</p>	<p><b>Short Courses</b> Radiation Detection and Measurement Room 301-C</p> <p>-----</p> <p>Advanced Photodetectors Room 301-A</p> <p>Image Quality in Adaptive and Multimodality Imaging Room 301-E</p> <p><b>Workshop</b> Homogeneous Hadronic Calorimeter Detector Concept Room 200-E</p>
15:00	Coffee Break	
15:30	<p><b>Short Courses</b> Radiation Detection and Measurement Room 301-C</p> <p>-----</p> <p>Integrated Circuit Front-Ends for Nuclear Pulse Processing Room 301-E</p>	<p><b>Short Courses</b> Radiation Detection and Measurement Room 301-C</p> <p>-----</p> <p>Advanced Photodetectors Room 301-A</p> <p>Image Quality in Adaptive and Multimodality Imaging Room 301-E</p> <p>Short Courses End: 17:00</p> <p><b>Workshop</b> Homogeneous Hadronic Calorimeter Detector Concept Room 200-E</p>
17:00		
18:00		

	Monday 1 November	Tuesday 2 November
	Registration 07:30 - 17:00	Registration 07:30 - 19:00
08:30	<p><u>Short Courses</u> Medical Image Reconstruction Room 301-D ----- Molecular Imaging Room 301-E</p> <p style="background-color: #ADD8E6;"><u>NSS Plenary Session</u> Ballrooms B+C Starts: 08:15</p>	<p>Oral Sessions NSS Sessions Ballrooms A,E,F Starts: 08:00 ----- NSS/MIC Joint Session I Ballrooms B+C ----- RTSD Sessions Rooms 301-A+B ----- Exhibitor Technical Sessions Room 200-E</p> <p style="background-color: #FFDAB9;"><u>NSS Poster Session</u> Exhibit Hall B</p>
09:30	Coffee Break	
10:00	<p><u>Short Courses</u> Medical Image Reconstruction Room 301-D ----- Molecular Imaging Room 301-E</p> <p style="background-color: #ADD8E6;"><u>NSS Plenary Session</u> Ballrooms B + C Ends: 11:30</p>	<p style="background-color: #90EE90;">Coffee Break</p> <p>Oral Sessions NSS Sessions Ballrooms A,E,F ----- NSS/MIC Joint Session II Ballrooms B+C ----- RTSD Sessions Rooms 301-A+B ----- Exhibitor Technical Sessions Room 200-E</p> <p style="background-color: #FFDAB9;"><u>NSS Poster Session</u> Exhibit Hall B</p>
11:30	Lunch	NSS Refresher Course Lecture Hall 12:15 - 13:15
	NSS Lunch Ballroom F+G 11:30 - 13:30	Lunch
13:30	<p><u>Short Courses</u> Medical Image Reconstruction Room 301-D ----- Molecular Imaging Room 301-E</p> <p style="background-color: #D2691E;"><u>Workshop</u> PET-MR Room 200-D+E</p> <p style="background-color: #C0C0E0;"><u>Oral Sessions</u> NSS Sessions Ballrooms A,B,C,E ----- RTSD Sessions Rooms 301-A+B</p>	<p>Exhibition Exhibit Hall B 12:00 - 21:00</p> <p>Oral Sessions NSS Sessions Ballrooms A,E,F ----- NSS/MIC Joint Session III Ballrooms B+C ----- RTSD Sessions Rooms 301-A+B ----- Exhibitor Technical Sessions Room 200-E</p> <p style="background-color: #FFDAB9;"><u>NSS Poster Session</u> Exhibit Hall B</p>
15:30	Coffee Break	
16:00	<p><u>Short Courses</u> Medical Image Reconstruction Room 301-D ----- Molecular Imaging Room 301-E</p> <p>Short Courses End: 17:00</p> <p style="background-color: #C0C0E0;"><u>Oral Sessions</u> NSS Sessions Ballrooms A,B,C,E ----- RTSD Sessions Rooms 301-A+B</p> <p style="background-color: #D2691E;"><u>Workshop</u> PET-MR Room 200-D+E Ends: 21:00</p> <p style="background-color: #FFDAB9;"><u>NSS Poster Session</u> Exhibit Hall B</p>	<p>Exhibition Exhibit Hall B 12:00 - 21:00</p> <p>Oral Sessions NSS Sessions Ballrooms A,E,F ----- NSS/MIC/RTSD Joint Session Ballrooms B+C ----- RTSD Sessions Rooms 301-A+B ----- Exhibitor Technical Sessions Room 200-E Ends: 17:00</p> <p style="background-color: #FFDAB9;"><u>NSS Poster Session</u> Exhibit Hall B</p>
18:00		
19:00		Exhibits Reception Exhibit Hall B 19:00 - 21:00

	Wednesday 3 November	Thursday 4 November
	Registration 07:30 - 18:00	Registration 07:30 - 17:00
07:30		MIC Refresher Course Lecture Hall 07:30 - 08:15
08:30	Exhibition Exhibit Hall B 09:00 - 18:00	Exhibition Exhibit Hall B 09:00 - 18:00
	MIC Plenary Session Ballrooms B + C	Oral Sessions NSS Sessions Ballrooms A,E,F,G Rooms 300-D+E Starts: 08:00 ----- MIC Sessions Ballroom B, Ballroom C ----- RTSD Sessions Rooms 301-A+B ----- Exhibitor Technical Sessions Room 200-E
	Oral Sessions NSS Sessions Ballrooms A,E,F,G Rooms 300-D+E Starts: 08:00 ----- RTSD Sessions Rooms 301-A+B	
	<u>NSS Poster Session</u> Exhibit Hall B	
10:00	Coffee Break	
10:30	Exhibition Exhibit Hall B 09:00 - 18:00	Exhibition Exhibit Hall B 09:00 - 18:00
	MIC Awards Plenary Ballrooms B + C	Oral Sessions NSS Sessions Ballrooms A,E,F,G Rooms 300-D+E ----- MIC Sessions Ballroom B, Ballroom C ----- RTSD Sessions Rooms 301-A+B ----- Exhibitor Technical Sessions Room 200-E
	Oral Sessions NSS Sessions Ballrooms A,E,F,G Rooms 300-D+E ----- RTSD Sessions Rooms 301-A+B ----- Exhibitor Technical Sessions Room 200-E	Oral Sessions NSS Sessions Ballrooms A,E,F,G Rooms 300-D+E ----- MIC Sessions Ballroom B, Ballroom C ----- RTSD Sessions Rooms 301-A+B ----- Exhibitor Technical Sessions Room 200-E
	<u>NSS Poster Session</u> Exhibit Hall B	<u>Workshop</u> Intellectual Property in Fundamental Research Room 200-A Ends: 12:30
12:00	NSS Refresher Course Lecture Hall 12:15 - 13:15	NSS Refresher Course Lecture Hall 12:15 - 13:15
	Lunch	RTSD Lunch "Star of Knoxville" 11:30 - 14:00
13:30	Exhibition Exhibit Hall B 09:00 - 18:00	Exhibition Exhibit Hall B 09:00 - 18:00
	Oral Sessions NSS Sessions Ballrooms A,E,F,G Rooms 300-D+E ----- RTSD Sessions Rooms 301-A+B ----- MIC Sessions Ballroom B+C	Oral Sessions NSS Sessions Ballrooms A,E,F,G Rooms 300-D+E ----- RTSD Sessions Rooms 301-A+B ----- Exhibitor Technical Sessions Room 200-E
	<u>NSS Poster Session</u> Exhibit Hall B	<u>MIC Poster Session I</u> Exhibit Hall B
15:30	Coffee Break	
16:00	Exhibition Exhibit Hall B 09:00 - 18:00	Exhibition Exhibit Hall B 09:00 - 18:00
	Oral Sessions NSS Sessions Ballrooms A,E,F,G Rooms 300-D+E ----- RTSD Sessions Rooms 301-A+B ----- MIC Session Ballroom B+C ----- Exhibitor Technical Sessions Room 200-E Ends: 17:00	Oral Sessions NSS Sessions Ballrooms A,E,F,G Rooms 300-D+E ----- RTSD Sessions Rooms 301-A+B ----- MIC Session Ballroom B+C ----- Exhibitor Technical Sessions Room 200-E Ends: 17:00
18:00		GOLD Reception Room 200-A 18:00 - 20:00
19:00	Conference Reception Cumberland Concourse Opens: 19:00	Women in Engineering Room 200-B 18:00 - 20:00

	Friday 5 November	Saturday 6 November
	Registration 07:30 - 12:00 15:00 - 17:00	Registration 07:30 - 09:00
07:30	MIC Refresher Course Lecture Hall 07:30 - 08:15	MIC Refresher Course Lecture Hall 07:30 - 08:15
08:30	Oral Sessions MIC Sessions Ballroom A Ballroom B+C ----- RTSD Sessions Rooms 301-A+B	Oral Sessions MIC Sessions Ballroom A Ballroom B+C
	Workshop He-3 Alternatives for Neutron Detection Ballroom E	
10:00	Coffee Break	
10:30	Oral Sessions RTSD Sessions Rooms 301-A+B	MIC Poster Session IV Lecture Hall Exhibit Hall B
	MIC Poster Session II Lecture Hall Exhibit Hall B	
	Workshop He-3 Alternatives for Neutron Detection Ballroom E	
12:00	Lunch	
13:30	Oral Sessions RTSD Sessions Rooms 301-A+B	MIC Poster Session V Lecture Hall Exhibit Hall B
	MIC Poster Session III Lecture Hall Exhibit Hall B	
	Workshop He-3 Alternatives for Neutron Detection Ballroom E Starts at 13:00	
15:30	Coffee Break	
16:00	Oral Sessions MIC Session Ballroom B+C ----- RTSD Sessions Rooms 301-A+B	Oral Sessions MIC Session Ballroom B+C
18:00		
19:00	MIC Dinner "The Foundry" 19:00 - 22:30	

WELCOME FROM THE GENERAL CHAIR

Welcome to the 2010 IEEE Nuclear Science Symposium, Medical Imaging Conference, and Room Temperature Semiconductor X- and Gamma-Ray Detectors Workshop to be held from October 31 to November 6 in Knoxville, Tennessee at the spacious and modern Knoxville Convention Center. The second meeting in the long history of this conference was held in Oak Ridge in 1955. This area is home to many researchers, laboratories, and commercial companies that have contributed significantly to the fields of interest of the conference. In the years since 1955 this meeting has grown to become the largest single conference with the broadest range of coverage of the field of radiation instrumentation and applications.



The NSS-MIC-RTSD joint conference offers an outstanding opportunity for scientists and engineers interested or actively working in the fields of nuclear science, radiation instrumentation, detectors, software, and applications of these technologies to solve real-world problems, to meet and discuss ideas with colleagues from around the world. The joint conference presents state-of-the-art and up-to-the-minute scientific information through the regular oral and poster presentations. There will be short courses held before the meeting and refresher courses held during the meeting to review current topics of special interest. Several single subject workshops related to the meeting will be held in conjunction with the main conference.

In addition, we will have the Special Session on Women in Engineering and the Graduates Of the Last Decade (GOLD) Session, both of which have been so successful in past meetings. Check the conference web site regularly for further information as details for these workshops, short courses, and sessions are updated.

The scientific program chairs have organized an outstanding program of oral and poster presentations. The program chairs have selected the best from the many submissions (740 for NSS, 604 for MIC, and 157 for RTSD). The poster area has been increased significantly over past years for better viewing and discussions.

An excellent commercial exhibit, featuring state-of-art products and services from a wide range of vendors, will take place during the main part of the meeting. This is a good opportunity for you to discover new products and influence the development of the next generation of products.

An excellent companion program has been assembled to highlight the special features of East Tennessee. Technical tours have also been arranged to local laboratories and companies.

On behalf of the Organizing Committee and the IEEE Nuclear and Plasma Sciences Society, I encourage you to make plans now to attend this year's Nuclear Science Symposium, Medical Imaging Conference, and Room Temperature Semiconductor Detector Workshop and look forward to welcoming you to Knoxville.

Ron Keyser  
General Chair

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Pre-registration is advisable to save time and money, and to ensure your registration package will be available for collection when you arrive. The preferred registration method is through the conference web site, as it places your details directly into our database, and where you can pay by Visa, MasterCard, American Express or Discover through our secure web server. Checks or money orders must be drawn on or paid through a U.S. bank and be in U.S. dollars. Note: Checks WILL NOT be accepted as payment on site. On-site payment will be through credit card, money order or cash only. Wire transfers will be accepted only under special circumstances, and will be charged a \$25 service fee. For wire transfer information please contact TDMG (see below). NOTE: Registration and payment must be received by October 15, 2010 to qualify for reduced registration, lunch, tours, dinner and short course fees.



Christina Sanders  
Registration Chair

### Online Registration

Click on the Conference Registration link at: <https://www.nss-mic.org/2010> and follow the instructions.

You may update an existing registration at: [https://www.nss-mic.org/2010/registration/reg\\_rev.asp](https://www.nss-mic.org/2010/registration/reg_rev.asp).

### To make payment by mail

Send payment (made out to IEEE 2010 NSS/MIC) to:

IEEE 2010 NSS/MIC  
c/o TDMG Meetings Dept.  
110 Painters Mill Road, Suite 36  
Owings Mills, MD 21117 USA

Tel: 1 800 437 4589 (US and Canada only)  
+1 410 363 1300 (08:30-17:30 ET)  
Fax: +1 410 559 0160 (attn: IEEE 2010 NSS/MIC)

### On-site Registration

To alleviate long lines and minimize hand-written registration forms, all on-site registration will be done via the online registration page. If you choose to register on-site, you must first register yourself online at one of the PCs in the registration area or the computer room, then proceed to the "On-site Registration" booth of the Registration desk with your printed receipt, where you will obtain your name tag, conference bag and any tickets you may have purchased. A name tag is required to attend all conference events, so you must visit the Registration desk after you have electronically registered. You may do this via any computer with internet access. Note: The registration site will be closed on Thursday, October 28 at 12:00 EDT and will reopen on Friday, October 29 at 17:00 EDT.

An acknowledgement of your registration will be sent upon its receipt and payment. Please address any questions via e-mail to [IEEE@traveldest.com](mailto:IEEE@traveldest.com) (Attn: IEEE 2010 NSS/MIC) or by phone.

### Registration Hours at the Conference

Registration and general information will be available during the following times at the IEEE Registration Desk located in the Clinch Concourse.

Friday,	October 29	17:00 - 20:00
Saturday,	October 30	07:00 - 09:30 15:30 - 18:30
Sunday,	October 31	07:00 - 09:30 15:30 - 18:30
Monday,	November 1	07:30 - 17:00
Tuesday,	November 2	07:30 - 19:00
Wednesday,	November 3	07:30 - 18:00
Thursday,	November 4	07:30 - 17:00
Friday,	November 5	07:30 - 12:00 15:00 - 17:00
Saturday,	November 6	07:30 - 09:00

### Symposium Registration Fees

	By Oct. 15	After Oct. 15
IEEE Member <sup>1</sup>	\$500	\$600
Non-IEEE Member	\$650	\$750
IEEE Student <sup>1,2</sup>	\$200	\$250
Non-IEEE Student <sup>2</sup>	\$300	\$350
One Day Only <sup>3</sup>	\$200	\$200
IEEE Retired/Unemployed <sup>1</sup>	\$200	\$250
IEEE Life Member <sup>1,4</sup>	No Charge	
Continuing Education Program Only	No Charge	
Exhibits Only	No Charge	

<sup>1</sup> IEEE member number required at registration.

<sup>2</sup> Proof of student status required at registration.

<sup>3</sup> Valid for one occurrence only – if more than one day, full registration will be charged.

<sup>4</sup> Life members must contact the Registration Chair prior to registering to receive their fee waiver.

### Short Course Fees

	By Oct. 15	After Oct. 15
SC1 Integrated Circuit Front-Ends for Nuclear Pulse Processing	\$275	\$325
SC2 Radiation Detection and Measurement	\$475	\$525
SC3 Advanced Photodetectors	\$275	\$325
SC4 Image Quality in Adaptive and Multimodality Imaging	\$275	\$325
SC5 Medical Image Reconstruction	\$275	\$325
SC6 Molecular Imaging	\$275	\$325

IEEE Members receive a \$25 discount.

### Companion Tour Fees

Tour Name	Date	By Oct 15*
1. Fly Fishing On The Little River	Sat., Oct. 30	\$315.00
2. A Picnic in the Park	Mon., Nov. 1	\$75.00
3. Smoky Mountain Premier Craft Tour	Mon., Nov. 1	\$80.00
4. Biltmore Estate	Tue., Nov. 2	\$125.00
5. Knoxville Zoo and the Red Panda Exhibit	Wed., Nov. 3	\$70.00
6. On Top of Old Smoky	Wed., Nov. 3	\$80.00
7. Tuckaleechee Caverns and Smoky Mountain Heritage Center	Thur., Nov. 4	\$85.00
8. Taste of the South – BBQ Cook Off Cooking Class	Thur., Nov. 4	\$105.00
9. A Step Back in Time – The Museum of Appalachia	Fri., Nov. 5	\$80.00

\*There may be limited late or on-site registration for an additional \$15 fee.

### Luncheon/Dinner Fees

	By Oct. 15	After Oct. 15
NSS Luncheon (Mon., Nov. 1)	\$35	\$45
RTSD Luncheon (Thurs., Nov. 4)	\$35	\$45
MIC Dinner (Fri., Nov. 5)	\$75	\$85

### Cancellation and 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 15 deadline, your registration will be cancelled. In order to process refunds (less a \$50 cancellation fee), cancellations must be received in writing by October 22, 2010. No refunds will be issued thereafter.

### IEEE Membership

An IEEE membership desk will be located in the Clinch Concourse near the Registration Desk. Staff will be available to answer questions concerning the benefits of membership. By joining during the conference, non-members will receive a \$50 discount for a new IEEE membership, plus one year's free membership in the Nuclear and Plasma Sciences Society. Students joining at the conference will receive a year's free membership if they provide a statement from their mentor that they are full-time students.

New memberships obtained on-site will not qualify you for discounted registration at this conference. To qualify for the reduced member-only rates you must become a member prior to registering and prior to the start of the conference (and provide proof of your membership).



## GENERAL INFORMATION

### Hotels & Convention Center

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Six hotels in the neighborhood of the Knoxville Convention Center have special rates for attendees. The special rates are selected when booking from the website or by telephone. The Headquarters hotel is the Hilton. For additional information and our special conference rate, please check our website. Please do not forget that all the conference hotels on our website provide free wireless internet to attendees in their room.

The free City of Knoxville trolley service serves all hotels and the entertainment and dining district during the day.

IEEE 2010 NSS-MIC-RTSD conference will be held in the Knoxville Convention Center, located in World Fair Park, site of the 1982 World's Fair. The convention center contains 200,000 sq. ft. of space, including 120,000 sq. ft. of exhibit space. There are 14 meeting rooms, a lecture hall, and a 27,000 sq. ft. ballroom.

For more information on the town of Knoxville, and for travel options, please see the links on our Website.



### Web Site

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Information for the up-to-date conference program: NSS, MIC, RTSD as well as Workshops, short courses, and tours can be found at: <http://www.nss-mic.org/2010>.

### Airport Shuttle Transportation

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Special rates for transportation from the Knoxville airport to the downtown hotels have been arranged with Chariots of Hire. One Way Service is \$18 per person and round trip \$30 if you make a reservation by October 18, 2010. After the deadline, it is \$34.00 per person for a round trip.

To make advance reservations use the website: <http://www.chariotsof-hire.com/shuttle.htm> Please check the conference website for further information.

### Parking

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No parking is available at the Convention Center. However, parking is available near the center in public parking areas. The Holiday Inn Select parking garage is directly across the street from the Convention Center and is available for public parking. A selection of additional parking is marked on the map in your conference bag.

### Food & Drinks

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Lunch will be available in the Poster and Exhibit area on Tuesday through Friday. Additional Food Carts will be in the Park Concourse.

There are a number of restaurants in the downtown area. Market Square is located three blocks east of the Convention Center. There are a number of restaurants in a 3 block radius of the Center. Click the "Knoxville" link on the Conference website where you will then find the Knoxville Tourism link to get information on shopping, entertainment and dining choices in the area.

### Weather

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Autumn is a particularly pleasant season in Knoxville, with daytime temperatures of around 21°C / 70°F.

### Smoking Policy

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

### Electronic Recording Policy

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Flash photography and audio or video recording are strictly prohibited during all oral and poster sessions. Non-flash photography in an oral presentation is allowed only with the prior permission of the session chair. Non-flash photography of a poster presentation is allowed only with the prior permission of the author(s).

### Message board

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

### Computer Access

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Rooms 300A and 300B will be set up with computers, printers, and technical support. The facility is intended for use by all attendees to carry out final editing of their presentations and papers and to retrieve e-mail. Microsoft Office 2007 will be loaded on all computers. In addition, Room 300C will be available for wired/wireless Internet access.

## Area Restaurants

### Convention Center Area

Restaurant	Cuisine	Address	Telephone
Butcher Shop	Steakhouse/ American	806 World's Fair Park	(865) 637-0204
Chesapeake's	Seafood/American	500 Henley St.	(865) 673-3433
Le Parigo	French	416 Clinch Ave.	(865) 525-9214
Sam's Café	American	603 Main Ave.	(865) 525-8816
Starbucks	Coffee/Bakery	501 W. Church Ave.	(865) 523-2300

### Gay Street Area

Restaurant	Cuisine	Address	Telephone
Arby's	Fast Food	430 Gay St.	(865) 525-4101
Bistro at the Bijou	American/ Southern	807 S. Gay St.	(865) 544-0557
Chick-Fil-A	American	800 Gay St.	(865) 525-9480
Club LeConte	French	800 Gay St.	(865) 523-0405
Coffee & Chocolate	Coffee/ American	327 Union Ave.	(865) 688-9244
Coolato Gelato	Dessert/ Coffee	524 Gay St.	(865) 971-5444
Dazzo's	Pizza	710 Gay St.	(865) 525-2105
Downtown Grill & Brewery	American/Bar	424 S. Gay St.	(865) 633-8111
Downtown Grind	Coffee Shop	418 Gay St.	(865) 524-4747
French Market	Dessert/Coffee	530 Gay St.	(865) 540-4372
Garrett's Deli	Deli/Sandwich Shop	800 S. Gay St.	(865) 540-4141
Higher Grounds	Coffee/ Breakfast	625 Gay St.	(865) 329-9972
Laurel Mountain Eatery	Coffee Shop/ Sandwich Shop	722 S. Gay St.	(865) 673-9135
Lenny's	Deli	522 Gay St.	(865) 521-8380
Lunchbox	Deli/ Sandwiches	800 Gay St.	(865) 525-7421
Mirage	Middle Eastern	718 Gay St.	(865) 521-5588
Nama Sushi Bar	Asian	135 S. Gay St.	(865) 633-8539
Ollantay's Havana Nights	Cuban	137 Gay St.	(865) 525-2600
Pete's Coffee Shop	American	524 Union Ave.	(865) 523-2860
Petro's	American	800 Gay St.	(865) 546-9600
Regas Restaurant	Steakhouse/ Seafood	318 N. Gay St.	(865) 637-3427
S & W Grand	American	516 Gay St.	(865) 566-9800
Sapphire	American/Sushi	428 S. Gay St.	(865) 637-8181
The Parlor at the Knoxville Visitor Center	American	301 S. Gay St.	

### Market Square Area

Restaurant	Cuisine	Address	Telephone
Café Four	Coffee/ American	4 Market Square	(865) 544-4144
Cocoa Moon	International	19 Market Square	(865) 521-3880
Koi Fusion	Asian/French	19 Market Square	(865) 521-3888
La Costa	Nuevo/Latino	31 Market Square	(865) 566-2300
Latitude 35	American	16 Market Square	(865) 566-0721
Marble Slab Creamery	Dessert/ Coffee	14 Market Square	(865) 540-1563
Market Square Kitchen	Deli/American	1 Market Square	(865) 546-4212
Oodles Uncorked	Italian/American	20 Market Square	(865) 521-0600
Preservation Pub	American/ Bar	28 Market Square	(865) 524-2224
Rita's Ice	Dessert/Coffee	26 Market Square	(865) 673-4888
Sangria's Tapas	Spanish	35 Market Square	(865) 951-0165
Shonos in City	Japanese/Asian	5 Market Square	(865) 544-5800
Soccer Taco	Mexican	9 Market Square	(865) 544-4471
Steamboat Sandwiches	American	7 Market Square	(865) 546-3333
Subway	Deli	25 Market Square	(865) 524-9446
Tomato Head	Pizza/Vegetarian	12 Market Square	(865) 637-4067
Trio Café	American/Sandwich Shop	13 Market Square	(865) 246-2270

### Volunteer Landing Area

Restaurant	Cuisine	Address	Telephone
Calhoun's on the River	BBQ/American	400 Neyland Dr.	(865) 673-3355
Ruth's Chris	Steakhouse/ Seafood	50 Volunteer Landing	(865) 546-4696

### The Old City Area

Restaurant	Cuisine	Address	Telephone
Barley's Taproom & Pizzeria	Pizza/Burgers	200 E. Jackson Ave.	(865) 521-0092
Crown & Goose	Pub/European	123 S. Central St.	(865) 524-2100
DaVinci's Pizzeria & Calzones	Pizza	113 S. Central St.	(865) 637-5040
Knoxville Pearl	Cereal Bar	108 Jackson Ave.	(865) 323-9303
Manhattan's	Southern / American	101 Central Ave.	(865) 525-2333
Melting Pot	Fondue/American	111 N. Central Ave.	(865) 971-5400
Night Owl Café	Vegetarian/ American	119 Central Ave.	(865) 474-9866
Old City Java	Coffee Shop/ American	109 S. Central St.	(865) 523-9817
Patrick Sullivan's Steakhouse & Saloon	Steakhouse/ American	100 N. Central Ave.	(865) 637-4255
Remedy Coffee	Coffee/American	125 Jackson Ave.	(865) 329-9400
Urban Bar & Urban Café	American/Bar	109 N. Central St.	(865) 546-2800

### University of Tennessee Area

Restaurant	Cuisine	Address	Telephone
Burger King	Fast Food	1502 W. Cumberland Ave.	no listing
Buffalo Wild Wings Grill & Bar	BBQ/Bar	1912 W. Cumberland Dr.	(865) 524-9464
Cool Beans	Burgers/American	1817 Lake Ave.	(865) 522-6417
Copper Cellar	Steakhouse/ American	1807 W. Cumberland Ave.	(865) 673-3411
Cumberland Grill	American	1807 W. Cumberland Ave.	(865) 673-3411
Domino's	Pizza	2104 Cumberland Ave.	(865) 673-3030
Dynasty Express	Asian	1607 Cumberland Ave.	(865) 544-0256
El Charro	Mexican	811 22nd St.	(865) 525-9808
Firehouse Subs	Subs	1708 W. Cumberland Ave.	(865) 673-0864
Golden Roast Espresso	Dessert/ Coffee	825 Melrose Place	(865) 544-1004
Gus's Good Times Deli	Deli/Burgers	815 Melrose Place	(865) 525-9485
Guthrie's	American	2135 Cumberland Ave.	(865) 249-8340
Hibachi Factory	Japanese	1815 W. Cumberland Ave.	(865) 521-6555
House of Dragon	Asian	1907 Cumberland Ave.	(865) 546-2565
Jimmy John's	Deli/American	1903 W. Cumberland Ave.	(865) 637-1414
Krystal	Fast Food	1718 W. Cumberland Ave.	(865) 523-2781
MacLeod's	Deli/American	1931 Cumberland Ave.	(865) 546-2103
McAlister's Deli	American/Deli	1801 W. Cumberland Ave.	(865) 633-8001
McDonald's	Fast Food	1720 W. Cumberland Ave.	(865) 6374148
Mellow Mushroom	Pizza/Sub Sandwiches	2109 W. Cumberland Ave.	(865) 524-7979
MK's	American	1109 White Ave.	(865) 971-4663
Moe's Southwest Grill	Mexican/Southwestern	1800 W. Cumberland Ave.	(865) 637-2700
Niro's Gyro's	Deli	711 S. 17th St.	(865) 546-5868
Old College Inn	Burgers/American	2204 W. Cumberland Ave.	(865) 523-4597
Oscar's	Italian/American	1840 W. Cumberland Ave.	(865) 584-4900
Panera Bread	Bakery/Coffee Shop	2000 W. Cumberland Ave.	(865) 524-2253
Papa John's	Pizza	1819 Lake Ave.	(865) 522-7272
Penn Station	Deli/ American	2121 Cumberland Ave.	(865) 525-0000
Pita Pit	American	2121 Cumberland Ave.	(865) 524-7482
Quizzo's	Deli/American	1517 White Ave.	(865) 525-0815
Roaming Gnome	American/Bar	716 20th St.	(865) 249-7703
Starbucks	Coffee/Bakery	2017 W. Cumberland Ave.	(865) 673-0843
Stefanos	Pizza	1937 W. Cumberland Ave.	(865) 522-4151
Subway	Subs	2104 W. Cumberland Ave.	(865) 522-4164
Spot	Vegetarian/ American	1909 W. Cumberland Ave.	(865) 637-4663
Taco Bell	Mexican	1900 W. Cumberland Ave.	(865) 525-5099
Tappatios	Mexican	811 22nd St.	(865) 249-6764
Trino's Pizza & Grill	Pizza/Grill	1707 W. Cumberland Ave.	(865) 544-4421
Wendy's	Fast Food	1816 W. Cumberland Ave.	(865) 637-4148
Wing Zone	American/BBQ	2121 Cumberland Ave.	(865) 637-2473
Yama Tora Japanese Restaurant	Japanese	1931 Cumberland Ave.	(865) 951-2952
Zaxby's	Chicken	2024 Cumberland Ave.	(865) 545-4416

## COMPANION PROGRAM

A warm welcome to Knoxville!

East Tennessee and the Smoky Mountains offer a broad variety of cultural, historical, and natural attractions. The companion program provides a daily selection of trips to places of interest. This year the tour price includes lunch.

All tours will depart from and return to the Companion Program Meeting Area in the Rotunda Room on the third floor of the Knoxville Convention Center. This meeting area will be available as a lounge for all registered companions to gather during the conference. Information about the Knoxville area will also be available for individuals and families to plan trips and excursions other than those offered in the Companion Program.

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



Merry Keyser



Carolyn Hoffman

Merry Keyser  
Companion Program Chair  
E-mail: MerryKeyser@ieee.org

Carolyn Hoffman  
Companion Program Co-Chair  
E-mail: Carolyn.Hoffman@verizon.net

Tour Name	Date	By Oct 15
1. Fly Fishing On The Little River	Sat., Oct. 30	\$315.00
2. A Picnic in the Park	Mon., Nov. 1	\$75.00
3. Smoky Mountain Premier Craft Tour	Mon., Nov. 1	\$80.00
4. Biltmore Estate	Tues., Nov. 2	\$125.00
5. Knoxville Zoo and the Red Panda Exhibit	Wed., Nov. 3	\$70.00
6. On Top of Old Smoky	Wed., Nov. 3	\$80.00
7. Tuckaleechee Caverns and Smoky Mountain Heritage Center	Thurs., Nov. 4	\$85.00
8. Taste of the South – BBQ Cook Off Cooking Class	Thurs., Nov. 4	\$105.00
9. A Step Back in Time – The Museum of Appalachia	Fri., Nov. 5	\$80.00

Please note:

- Individual tours are subject to cancellation and refund of tour fees if an insufficient preregistration is achieved prior to October 15, 2010. The fees in the table above are set for early

registration. There may be limited late or on-site registration for an additional \$15 fee.

- All tours are going to areas where there are few opportunities to purchase lunch. Consequently either a box lunch or a restaurant lunch is included in the tour fee.
- Tour programs and hours may be modified due to last minute logistics issues.
- Please notify us of participants with special needs or dietary requirements.
- Each tour will have an experienced tour guide and also a hostess from the Companion Program committee.
- A detailed data sheet for each tour may be found on the conference website.

### Tour #1 Fly Fishing on the Little River

**Sunday, October 30, 08:30 – 17:00**

Join our river guides for a spectacular day of fly fishing on this beautiful river in the Smoky Mountains. The day starts with breakfast at the Knoxville Convention Center at 8:00 am with an 8:30 am departure for the mountains. Little River Outfitters in Townsend will provide the fly tying and fly fishing instruction. This clinic is suitable for both novices and experts. The tour fee includes transportation, all equipment, the required Tennessee fishing license and a box lunch. There are a limited number of participants for this class so remember to register early to obtain a place.

### Tour #2 A Picnic in the Park

**Monday, November 1, 09:00 – 15:00**

This tour provides an opportunity for a moderate level, two hour hike in the Great Smoky Mountains National Park. The day starts with breakfast at the Knoxville Convention Center at 8:00 am with a 9:00 am departure for the Sugarland Visitors Center in the park. Do not forget your sturdy walking shoes and your camera. The tour fee includes a boxed picnic lunch.

### Tour #3 Smoky Mountain Premier Craft Tour

**Monday, November 1, 08:30 – 15:30**

The day starts with breakfast at the Knoxville Convention Center at 8:00 am with an 8:30 am departure for the Arts & Crafts Community in Gatlinburg. You will enjoy browsing the shops and visiting with the artists and craftsmen in their workshops and studios. Lunch will be at the Wild Plum Tea Room and on the return journey there will be a stop at the Cherry Pit Quilt Shop for a demonstration. This tour is an easy level activity but layered clothing for indoors and outdoors is recommended.

### Tour #4 Biltmore Estate

**Tuesday, November 2, 08:00 – 17:00**

Following an early breakfast at 7:30 am at the Knoxville Convention Center this tour departs at 8:00 am for Asheville, NC to visit the spectacular home of George Vanderbilt. This French Renaissance-style house

remains America's largest privately owned home. On a self guided tour inside the house you will see the stunning elegance the family, their servants and retainers lived in during the Gilded Age in America. Also enjoy the beautiful gardens and landscaping designed by Olmstead Law, see the working farm and enjoy visiting the Biltmore Winery. This tour includes lunch in the Stables Restaurant. Wear comfortable shoes and do not forget your camera.

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#### Tour #5 Knoxville Zoo and the Red Panda Exhibit

**Wednesday, November 3, 09:30 – 15:30**

The day starts with breakfast at the Knoxville Convention Center at 8:30 am with a 9:30 am departure for the short journey to the Knoxville Zoo. The Zoo is an accredited AZA institution and a participant in AZA's Species Survival Plans for several select animals. Ninety-three red panda cubs have been born at Knoxville Zoo, more than any other zoo in the Western Hemisphere. Enjoy a guided tour of the Red Panda Exhibit and other select exhibits given by a Zoo Staff member. There will be free time to explore the rest of the zoo and to enjoy lunch. This is an outdoor activity so wear layered clothing and comfortable shoes. Do not forget your camera.

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#### Tour #6 On Top of Old Smoky

**Wednesday, November 3, 09:00 – 15:30**

This tour takes a guided hike to the highest point in the Great Smoky Mountains National Park. Following breakfast at 8:00 am at the Knoxville Convention Center the tour will depart at 9:00 am for a visit to the Sugarland Visitors Center for an overview of park history. The tour continues on to Clingmans Dome where you will start the half mile paved but steep trail that leads to the observation tower on the summit. Fall is an especially beautiful time in the Smokies and on clear days views from the observation tower expand over a 100 miles. A picnic box lunch is included. Please be aware that the level of activity on this tour is considerable and sturdy walking shoes are required. Remember that at 6,000 feet it can be quite cool and wear layered comfortable clothing. There will be many photographic opportunities so do not forget your camera.

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#### Tour #7 Tuckaleechee Caverns and Smoky Mountain Heritage Center

**Thursday, November 4, 08:30 – 14:30**

The day starts with breakfast at the Knoxville Convention Center at 7:30 am with an 8:30 am departure for Tuckaleechee Caverns in Townsend, known as "the quiet side of the Smokies." You will explore the Caverns with a guide to learn how the unique formations came to be and how the caverns were used by Indians and settlers. Enjoy lunch at a local restaurant and then continue on to the Smoky Mountain Heritage Center to learn more about this region. This tour is considered to be a moderate level of activity. Temperature in the Caverns is a constant 58°F (14.4°C) so layered clothing is recommended.

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#### Tour #8 A Taste of the South – BBQ Cook Off Cooking Class

**Thursday, November 4, 10:30 – 14:30**

Whether it is chicken, pork or brisket; dry rub, spicy, or sweet, Bar B Que is synonymous with the south and a must have when you visit Tennessee. This tour departs from the Knoxville Convention Center at 10:30 am for a short drive to the Cooking Class. Enjoy a few fun filled hours of creative cooking and sampling BBQ. Of course you will sit down to enjoy the fruits of your labor and each participant will also receive a souvenir apron. There are a limited number of participants for this class so remember to register early to obtain a place.

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#### Tour #9 A Step Back in Time – The Museum of Appalachia

**Friday, November 5, 08:30 – 15:30**

The day starts with breakfast at the Knoxville Convention Center at 7:30 am with an 8:30 am departure for Norris. The first stop will be a self guided visit to the Museum of Appalachia, one of only a few Smithsonian affiliate museums in Tennessee. Stroll around the grounds to view exhibits and buildings and enjoy lunch at the museum restaurant. Later continue on to Norris State Park and the Lenoir Museum and an 18th Century Grist Mill and Threshing Barn. Your East Tennessee historical experience will conclude with a walking tour of the City of Norris; originally planned and built by the Tennessee Valley Authority to house the TVA personnel that were constructing Norris Dam. The town remains much the same as when it was originally built in 1936. This tour is a light level of activity but is both indoors and outdoors so layered clothing is recommended.

## TECHNICAL TOURS

This year our location in Knoxville, Tennessee provides the unique opportunity to offer several outstanding technical tour opportunities for our conference participants. Each of these locations has special entry requirements and it is essential that those interested pre-register for these events. Pre-registration will close two weeks prior to the conference on October 15, 2010. Please be aware that we are unable to offer any on-site registration for these tours and only those individuals who have pre-registered will be able to participate.

All Technical Tours will meet in the Rotunda Room in the Knoxville Convention Center to complete any necessary forms before departing for the bus.

For more information please contact:

Merry Keyser  
Companion Program Chair  
E-mail: MerryKeyser@ieee.org

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### Tour #1 - ORTEC Manufacturing Tour

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Wednesday, November 3, 2010, 13:00 (Approximately 3 hours)

A tour of ORTEC's manufacturing facilities in Oak Ridge, TN will give participants a glimpse of a unique detector growth and production facility. Participants will view the high purity germanium crystal growing station, see the zone refining station, and watch the mechanical preparation of these crystals. Along the tour, detector test stations will be observed as well as the Detective/IDM assembly area. The electronics manufacturing floor, ORTEC's US Global Service Center, and custom systems assembly area will all be seen and discussed. The tour will end with light refreshments. There are a limited number of participants for this tour so remember to register early to obtain a place. This tour will depart from the Knoxville Convention Center at 13:00 and return by 16:30.

Note: Due to the sensitivity of some of the manufacturing areas, it will be necessary to pre-register for this tour at least two weeks in advance of the conference. Name, Company, Citizenship and place and date of birth will be required and foreign nationals must present a US recognized source of identification, such as a passport. Participation in this tour is at AMETEK's discretion. A form will need to be completed before entering the facility. No photography or camera cell phones will be allowed during the tour.

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### Tour #2 - ORNL Spallation Neutron Source Tour

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Thursday, November 4, 2010, 13:30 (Approximately 2 hours)

Oak Ridge National Laboratory operates the Spallation Neutron Source (SNS), one of the world's foremost facilities for the study of materials. Built and funded by the U.S. Department of Energy Office of Basic Energy Sciences, SNS provides the most intense pulsed neutron beams in the world for scientific and industrial research and development. This tour will involve a visit to the SNS facility.

For more information see the SNS website: [neutrons.ornl.gov](http://neutrons.ornl.gov)

Note: Due to U.S. government requirements, it will be necessary to pre-register for this tour at least two weeks in advance of the conference. Participants will need to bring a government-issued photo ID (e.g. a passport or drivers license).

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### Tour #3 - Siemens Healthcare Molecular Imaging Factory Tour

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Friday, November 5, 2010, 10:00 (Approximately 2 hours)

The Siemens Healthcare Molecular Imaging factory tour in Knoxville will demonstrate the factory production floor and processes associated with running a cutting edge medical manufacturing firm. All clinical PET imaging systems, all pre-clinical imaging systems, and all cyclotrons sold by Siemens are manufactured at this facility, to supply our world-wide customer needs. The three main areas of manufacture can be observed from a strategic position along a raised observation walkway, and then closer-up during a brief walk-through. Experts in each area of our manufacturing will be available to answer questions and offer insight specific to the discipline.

Note: Due to the sensitivity of some of the manufacturing areas, it will be necessary to pre-register for this tour at least two weeks in advance of the conference. Name, Company, and affiliation information will be collected during this process. Participation in this tour is at Siemens' discretion. A form will need to be completed before entering the facility. No photography or camera cell phones will be allowed during the tour.

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### Tour #4 - ORNL Spallation Neutron Source Tour

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Friday, November 5, 2010, 13:30 (Approximately 2 hours)

This is a repeat of Tour #2.



Spallation Neutron Source (SNS) at sunrise. Courtesy of the Oak Ridge National Laboratory.



### Oral Presentation Instructions

Oral presentation files must be in Windows-compatible PowerPoint or PDF format. Note that the laptops used for the presentations are under Windows XP with Powerpoint 2010 and the latest version of Acrobat Reader. The file for your talk must be loaded onto the central file server no later than 2 hours prior to the start of your session. For a talk in the first morning session, the file must be loaded the previous day. To do this, take the file, preferably on a USB flash drive, to the Computer Rooms 300A and 300B and one of the computer room staff members will assist you. Note that presenters will not be permitted to use their own laptops. Please check your presentation carefully before you leave the Computer Room.

Oral presentations are limited to 12 min plus 3 min for discussion. Please ensure that you stay on time; the session chairs have been instructed to keep the session strictly on schedule.

### Poster Presentation Instructions

All poster presentations will be in Exhibit Hall B on the lower level (Floor One). The maximum poster size is 34" (87 cm) wide and 44" (112 cm) tall. Fasteners to attach your poster to the panel will be available in the poster room. Your panel will be labeled with the session and number of your poster, also referred to as your "Paper ID."

Presenting authors are expected to be present at their poster during their session. Papers whose authors are not present at their poster during their assigned session are not eligible for publication in the conference record. Session chairs will verify your attendance during the assigned session.

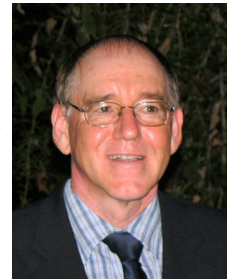
The NSS and MIC posters will share the same space with their respective display times shown in the table below. Note that the RTSD posters will remain up during the entire meeting. It is recommended that poster authors maximize by displaying their posters for the entire allotted period. At a minimum, the poster must be in place no later than 2 hours prior to the start of the assigned poster session.

	Install after	Remove before
NSS	Monday, 8:00	Wednesday, 16:00
MIC	Wednesday, 20:00	Saturday, 18:00
RTSD	Monday, 8:00	Friday, 18:00

Posters that are not removed on time may be subject to disposal.

### Conference Record

The *Conference Record* (CR) is the official repository for manuscripts presented at the 2010 Nuclear Science Symposium and Medical Imaging Conference. It will be published on CD-ROM, complimentary to all registered conference attendees. All Conference Record manuscripts will be made available online at <http://www.nss-mic.org/2010/ConferenceRecord> before the CD-ROMs are mailed out.



Klaus Ziock  
Guest Editor

The approved word processor templates, available in PDF, MS Word and LaTeX format can be downloaded from <http://www.nss-mic.org/2010/publications/templates.htm>.

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

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

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

The IEEE PDF eXpress service ([www.pdf-express.org](http://www.pdf-express.org)) will be available for the NSS-MIC authors between Oct. 18 and Nov. 13 2010. The required Conference ID for logging in to the web site is **nssmic10x**. Detailed instructions are available at: <http://www.nss-mic.org/2010/publications/PDFeXpress.html>

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

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

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

If you are not authorized to submit the IEEE Copyright Form, please start the approval process well before the submission deadline.

The deadline for the Conference Record manuscript submission is **November 13, 2010**.

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



- The paper (oral or poster) has been presented at the conference;
- The manuscript conforms to the page layout requirements specified in the online templates;
- The PDF file is IEEE Xplore-compatible;
- The PDF file and the electronic copyright form are received no later than the November 13th deadline.

#### Guest Editor

**Klaus Ziock**  
Oak Ridge National Laboratory  
Phone: +1-865 574 0272  
Email: ziockk@ornl.gov

The Guest Editor will be available in the Administrative Conference Room during the coffee breaks on Wednesday and Thursday to discuss any issues related to the Conference Record..

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#### Transactions on Nuclear Science (TNS)

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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](http://www.ieee.org) for a description of the publication. TNS discourages the submission of progress reports and manuscripts that are more suitable for distribution as an institution's internal document. We expect each manuscript to be cast in the context of the state of the art of its field (including appropriate motivation for the work), present a complete description of the work performed, and to present a set of conclusions supported by the measured and/or calculated data. The paper should be sufficiently complete that others with comparable equipment could repeat the work.

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

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

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

#### TNS Editor in Chief

**Paul Dressendorfer**  
Sandia National Laboratories (retired)  
[p.dressendorfer@ieee.org](mailto:p.dressendorfer@ieee.org), +1-505-292-5965

#### TNS Senior Editors

Radiation Instrumentation (NSS)  
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Nuclear Medical and Imaging Sciences (MIC)  
**Joel Karp**  
University of Pennsylvania Health System  
[joelkarp@mail.med.upenn.edu](mailto:joelkarp@mail.med.upenn.edu), +1-215-662-3073

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#### Transactions on Medical Imaging (TMI)

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

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

#### TMI Editor in Chief

**Milan Sonka**  
The University of Iowa  
Phone: +1-319-335-6052  
Email: [milan-sonka@uiowa.edu](mailto:milan-sonka@uiowa.edu)

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#### Comparison of Requirements

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

	Conference Record (CR)	Transactions on Nuclear Science (TNS)
Page layout	Same as TNS, but without running headers and footers	Standard IEEE Transactions and Journal format
Copyright form	Required, electronic submission	Required, electronic submission
Deadline	Nov. 13, 2010	None
Peer reviewed	No	Yes
Use of color	Free and encouraged	Free for online version; at author's expense for print version
Page Limit	8 (suggested)	8 (suggested)
Availability	Online immediately, CD out before end of 2010 to all attendees	Published throughout the year

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 imaging technology. All courses are one or two days in length. Coffee and pastries will be available for participants of the short courses at 08:00, before the first lecture which will begin at 08:30. Lunch, refreshments, lecture notes, and a certification of completion are also provided as part of the short course registration fee.



Stephen E. Derenzo

NSS Short Course Program Chair



Jennifer Huber

MIC Short Course Program Chair

### Short Course Fee Schedule

For all courses except #2

\$275 each (early registration by Oct. 15)

\$325 each (after Oct. 15)

Course #2

\$475 each (early registration by Oct. 15)

\$525 each (after Oct. 15)

IEEE Members receive a \$25 discount.

### Short Course Schedule and Location

Course Name	Date	Location
1. Integrated Circuit Front-Ends for Nuclear Pulse Processing	Sat. Oct. 30	301E
2. Radiation Detection and Measurement	Sat-Sun. Oct. 30-31	301C
3. Advanced Photodetectors	Sun. Oct. 31	301A
4. Image Quality in Adaptive and Multimodality Imaging	Sun. Oct. 31	301E
5. Medical Image Reconstruction	Mon. Nov. 1	301D
6. Molecular Imaging	Mon. Nov. 1	301E

### SC1: Integrated Circuit Front-Ends for Nuclear Pulse Processing

Saturday, October 30, 08:30 – 17:00, Room 301E

Organizer: Paul O'Connor, *Brookhaven National Lab, USA*

Instructors:

Paul O'Connor, *Brookhaven National Lab, USA*

John Oliver, *Harvard University, USA*

Veljko Radeka, *Brookhaven National Lab, USA*

#### Course Description:

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

- Pulse Processing Fundamentals
  - Signal formation in detectors
  - Noise and gain mechanisms
  - Pulse processing for amplitude and timing extraction
- 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
- 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)
- Packaging and Interconnect
- Application examples

#### Instructors:

PAUL O'CONNOR is associate Head of the Instrumentation Division at Brookhaven National Laboratory. After receiving the Ph.D. degree in solid-state physics from Brown University he 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 70 publications and has been an IEEE member since 1980.

JOHN OLIVER, has been supervisor of the "Detector Electronics Facility" at Harvard University's "Laboratory for Particle Physics and Cosmology" since 1980. He has a Ph.D. in elementary particle physics from Boston University and worked in industry designing commercial

electronics before joining Harvard. At Harvard, his primary interests are in signal formation in particle detectors and front end electronics, both discrete and ASIC, but has also designed data acquisition and triggering systems. In the past decade, he has worked on electronic readout systems for the MINOS and NOvA neutrino detectors, the ATLAS Muon Spectrometer, and is currently Camera Electronics Project Manager for the Large Synoptic Survey Telescope. He has been a member of IEEE since 1985.

VELJKO RADEKA is a 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, a Fellow of APS, and recipient of the 2009 Howard Wheeler Award from the IEEE.

### SC2: Radiation Detection and Measurement

**Saturday October 30 & Sunday October 31, 08:30 – 17:00, Room 301C**

Organizer: Glenn Knoll, *University of Michigan, USA*

Instructors:

Giuseppe Bertuccio, *Politecnico di Milano, Italy*  
Stephen Derenzo, *Lawrence Berkeley National Laboratory, USA*  
Eugene Haller, *UC Berkeley and Lawrence Berkeley National Laboratory, USA*  
Glenn Knoll, *University of Michigan, USA*  
Graham Smith, *Brookhaven National Laboratory, USA*

#### Course Description:

This 2-day course provides an overall review of the basic principles that underlie the operation of the major types of instruments used in the detection and spectroscopy of charged particles, gamma rays, and other forms of ionizing radiation. Examples of both established applications and recent developments are drawn from areas including particle physics, nuclear medicine, homeland security, and general radiation spectroscopy. Emphasis is on understanding the fundamental processes that govern the operation of radiation detectors, rather than on operational details that are unique to specific commercial instruments. This course does not cover radiation dosimetry or health physics instrumentation. The level of presentation is best suited to those with some prior background in radiation measurements, but can also serve to introduce topics that may be outside their experience base. A copy of the new 4th edition of the textbook "Radiation Detection and Measurement", by G. Knoll, and a set of course notes are provided to registrants.

Outline:

1. Gas-Filled Detectors
2. Scintillation Counters
3. Semiconductor Detectors
4. Front-end Electronics for Radiation Detectors
5. Recent Detector Developments and Summary

**Instructors:**

GIUSEPPE BERTUCCIO is Professor of Electronics at Politecnico di Milano and member of the National Institute of Nuclear Physics. He

received the Laurea in Nuclear Engineering from Politecnico and since 1987 he joined the research group of Professor Emilio Gatti, contributing to the pioneering development of integrated electronics for Silicon Drift Detectors. In 1991 he was invited at Brookhaven National Laboratory and in 1993 at Canberra Industries to collaborate to R&D's on low noise preamplifiers. His current research activities are in the design of CMOS and BiCMOS integrated circuits for radiation detectors signal processing and in GaAs and SiC X-ray detectors, collaborating with Alcatel Alenia Space, ESA, LPE and Selex. He is author or co-author of over 100 scientific and technical publications and 11 invited talks at international conferences.

STEPHEN E. DERENZO is a Senior Scientist at the Lawrence Berkeley National Laboratory, Head of the Radiotracer Development and Imaging Technology Department in the Life Sciences Division, and Professor-in-Residence in the Electrical Engineering and Computer Science Department at UC Berkeley. He and his colleagues constructed two pioneering positron emission tomographs (PET) and developed advanced scintillation detectors for PET that provide high spatial resolution, depth-of-interaction information, and compact integrated circuit readout. For the past 22 years he has lead a search for new heavy scintillators and currently heads a project for the discovery of scintillation detector materials that uses automation to increase the rate of synthesis and characterization. He has authored or co-authored over 200 technical publications, seven patents, and one textbook. He has received two awards from the IEEE Nuclear and Plasma Sciences Society: the Merit Award in 1992 and the Radiation Instrumentation Outstanding Achievement Award in 2001. He became an IEEE Fellow in 2000.

EUGENE E. HALLER is Professor of Materials Science at UC Berkeley and holds the Liao-Cho Innovation Endowed Chair and a joint appointment at the Lawrence Berkeley National Laboratory where he heads the Electronic Materials Program. He received his Ph.D. degree in nuclear and applied physics from the University of Basel, Switzerland for surface studies of large volume p-i-n germanium diodes used as gamma-ray detectors. His research interests cover a wide spectrum of semiconductor topics including basic semiconductor physics, thin film and bulk crystal growth and advanced detectors for electromagnetic radiation ranging from the far-infrared to gamma rays. He has authored and co-authored over 800 scientific/technical publications. He is a fellow of the American Physical Society and AAAS, has won the James McGroddy Prize for New Materials of the APS, the Turnbull Lectureship Award of the MRS. He held visiting professorships at institutes in England, Germany and Japan.

GLENN F. 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. 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 35 industrial and governmental organizations in technical areas related to radiation measurements. He is a Life Fellow of IEEE, was selected for the 1996 IEEE/NPSS Merit Award and the 2007 IEEE/NPSS Radiation Instrumentation Outstanding Achievement Award, and in 2000 was a recipient of the Third Millennium Medal of the Society.

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.

### JOINT NSS-MIC COURSE

#### SC3: Advanced Photodetectors

Sunday, October 31, 08:30 – 17:00, Room 301A

Organizer: Kanai Shah, *Radiation Monitoring Devices, Inc., USA*

Instructors:

Daniel Ferenc, *University of California, Davis, USA*

Fredrick Olschner, *Cremat, Newton, MA, USA*

Kanai Shah, *Radiation Monitoring Devices, Inc., USA*

Craig Woody, *Brookhaven National Laboratory, USA*

#### Course Description:

This 1-day course will discuss the photodetector technology that is used in the readout of scintillation crystals for nuclear radiation detection. The main photodetector used in scintillation spectroscopy at present is the photomultiplier tube (PMT) and its current status and on-going advances will be covered. The course will also present recent advances in silicon-based photodetectors such as unity gain silicon PIN diodes, drift detectors, high gain avalanche photodiodes (APDs), and the new silicon photomultipliers. The potentials of wider-gap semiconductor-based photodetectors will be included. Front-end electronic readout designs for these different types of photodetectors will also be covered. Examples of detector configurations that employ various types of photodetectors in applications such as medical imaging and physics research will be given. Presentation materials will be provided as handouts. Some prior background in scintillation spectroscopy would be desirable but not essential.

#### Instructors:

DANIEL FERENC is a Professor in the Physics Department at the University of California, Davis. He received his Ph.D. from Zagreb University and CERN, Geneva, in 1992. His research interests include relativistic universe, high-energy astrophysics, gamma-ray astronomy and next-generation underground lab for proton decay and neutrino physics. He has been actively involved in the development of photomultiplier tubes for use in his research interests. He was awarded the Alexander von Humboldt Fellowship, 1993-94.

FRED OLSCHNER founded Cremat, Inc. (Watertown MA), which is a business providing amplifier components used in nuclear instrumentation. He has been its president since its start in 2000, and has designed its products. Previous to that he was a senior scientist at Radiation

Monitoring Devices, Inc. in Watertown, MA, developing various new semiconductor radiation detection materials, as well as new designs of silicon photodiodes. He received M.S. in Physics 1984 from University of New Hampshire.

KANAI SHAH is an R&D Vice President at the Radiation Monitoring Devices in Watertown, MA. He received his M.S. degree from the University of Massachusetts, Lowell in 1987. His research interests include detector materials for detection and imaging of gamma-rays, charged particles and neutrons as well as optical readout technologies used in conjunction with scintillation crystals. He has been investigating semiconductor and scintillation crystals as well as photodetection technologies (such as PMTs, APDs and SiPMs).

CRAIG WOODY is a Senior Physicist at the Brookhaven National Laboratory. He received his Ph.D. from the Johns Hopkins University in 1978. His research interests are primarily in the area of particle detectors and instrumentation for high energy and nuclear physics and medical imaging. These include various types of scintillating crystals and other types of scintillation detectors, optical readout devices and their associated electronics, laser systems, and gas detectors for particle tracking and imaging applications. Other primary research interests are in relativistic heavy ion physics with the PHENIX Experiment at the Relativistic Heavy Ion Collider at Brookhaven.

### MIC COURSES

#### SC4: Image Quality in Adaptive and Multimodality Imaging

Sunday, October 31, 08:30 – 17:00, Room 301E

Organizer: Matthew Kupinski, *University of Arizona, USA*

Instructors:

Harrison Barrett, *University of Arizona, USA*

Lars Furenlid, *University of Arizona, USA*

Matthew Kupinski, *University of Arizona, USA*

#### Course Description:

Multimodality imaging systems are used increasingly in clinical medicine in an attempt to get better diagnostic or scientific information by acquiring images depicting different aspects of the object, such as physiological and functional characteristics. A newly emerging methodology with similar goals is adaptive imaging in which an initial image of a particular subject is acquired and then used to modify the data-acquisition hardware or protocol for obtaining a second image from the same or a different modality. In this case the imaging process is necessarily nonlinear because the characteristics of the second system depend on the object being imaged.

Because the goal of both adaptive and multimodality imaging is to obtain better information about a patient, the proper measure of image quality assesses how well this information can be extracted from the whole set of image data by a relevant observer. This approach, known as objective or task-based assessment of image quality, is well developed for single modalities and for linear, object-independent systems, but little has been done on applying it to adaptive and multimodality systems.

This course will review the basic principles of task-based assessment of image quality and discuss how they can be applied to adaptive and multimodality systems. It will cover the basic theory, hardware implementations, computational requirements and clinical applications. A tentative sequence of lectures is:

- Overview of multimodality imaging systems
- Introduction to adaptive imaging
- Principles of task-based assessment of image quality
- Task-based analysis of adaptive and multimodality systems
- Hardware considerations
- Data-analysis methods and computational requirements
- Applications

#### Instructors:

HARRISON BARRETT was educated at Virginia Polytechnic Institute, MIT and Harvard. He is currently a Regents Professor at the University of Arizona, with appointments in the College of Optical Sciences, the Department of Radiology, the Arizona Cancer Center and the graduate programs in Applied Mathematics and Biomedical Engineering. He is director of the Center for Gamma-Ray Imaging and a fellow of the IEEE. In collaboration with Kyle J. Myers, he has written a book entitled Foundations of Image Science, which in 2006 was awarded the First Biennial J. W. Goodman Book Writing Award from OSA and SPIE.

LARS FURENLID received a B.S. at the University of Arizona in 1983 and a Ph.D. at the Georgia Institute of Technology in 1988. He was a staff scientist at the National Synchrotron Light Source at Brookhaven National Laboratory 1988-1998. He returned to the University of Arizona in 1998 to help found the Center for Gamma-ray Imaging (CGRI). He is currently a Professor at the University of Arizona with joint appointments in the Department of Radiology and the College of Optical Sciences, and serves as associate director of CGRI. He is also a member of the University of Arizona Graduate Interdisciplinary Degree Program in Biomedical Engineering and the Arizona Cancer Center. His major research area is the development and application of detectors, electronics, and systems for biomedical imaging, with an emphasis on nuclear medicine and computed tomography.

MATTHEW KUPINSKI is an Associate Professor in the College of Optical Sciences at The University of Arizona in Tucson, Arizona. He performs theoretical research in the field of imaging science. His recent research emphasis is on quantifying the quality of multimodality medical imaging systems using objective, task-based measures of image quality. He has a BS in physics from Trinity University in San Antonio, Texas, and received his PhD in 2000 from the University of Chicago. He is the recipient of the 2007 Mark Tetalman Award given out by the Society of Nuclear Medicine and is a member of the OSA and SPIE. Contact him at College of Optical Sciences, The University of Arizona, 1630 E. University Blvd., Tucson, Arizona 85721; mkupinski@optics.arizona.edu.

### SC5: Medical Image Reconstruction

Monday, November 1, 08:30 – 17:00, Room 301D

Organizer: Paul Kinahan, *University of Washington, USA*

#### Instructors:

Adam Alessio, *University of Washington, USA*  
 Michel Defrise, *VUB University Hospital in Brussels, Belgium*  
 Paul Kinahan, *University of Washington, USA*  
 Frederic Noo, *University of Utah, USA*

#### Course Description:

The advances in CT, SPECT, and PET imaging have come with increased options in terms of image reconstruction, including a large number of statistical reconstruction algorithms and fully 3D reconstruction methods. This course will provide an overview of image reconstruction methods. Rather than advocating any particular method, this course will emphasize the fundamental issues that one must consider when choosing between different reconstruction approaches. The intended audience is anyone who would like to reconstruct “better” images from photon-limited and/or non-stationary measurements, and who wants to make informed choices between the various methods. Both emission tomography and transmission tomography algorithms will be discussed.

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

#### Program:

Basic analytical methods 1  
 Basic analytical methods 2  
 Coffee break  
 Basic iterative methods 1  
 Basic iterative methods 2  
 Lunch  
 Advanced analytical methods 1  
 Advanced analytical methods 2  
 Coffee break  
 Advanced iterative methods 1  
 Advanced iterative methods 2

#### Instructors:

ADAM ALESSIO is a Research Assistant Professor in the Department of Radiology at the University of Washington, Seattle WA. He received his PhD in electrical engineering from the university of Notre Dame in 2003 on the subject of Statistical Reconstruction from Correlated PET Data. His research focuses on tomographic image reconstruction development and protocol optimization for PET and CT systems. He is involved in translational research projects for topics including motion compensation, cardiac perfusion imaging, accurate PET system modeling, and statistical estimation of parametric images.

MICHEL DEFRISE received the Ph.D. degree in theoretical physics from the University of Brussels in 1981, and was a visiting professor in the Department of Radiology of the University of Geneva in 1992-1993. He is currently research professor in the Department of Nuclear Medicine at the VUB University Hospital in Brussels. He has participated actively in the advancement of 3-D PET and CT methodology. Several



of his algorithms are implemented in clinical imaging systems and/or are considered essential building blocks for other methods. His current research interests include 3-D image reconstruction in nuclear medicine (PET and SPECT) and in CT.

PAUL KINAHAN (Course Organizer) is a Professor of Radiology, adjunct in Bioengineering and Electrical Engineering, in the Department of Radiology at the University of Washington in Seattle. He received his PhD in Bioengineering in 1994 on the subject of fully-3D image reconstruction for PET. In 1998 he was part of the group under Dr David Townsend that built the first PET/CT scanner. His current research interests include respiratory motion compensation, dual-kVp CT scanning, clinical protocol optimization, and quantitation in PET/CT imaging.

FREDERIC NOO is an Associate Professor of Radiology at the University of Utah. He holds adjunct appointments at the same level in Bioengineering, and also in Electrical and Computer Engineering. He is an IEEE member and an Associate Editor for IEEE Transactions on Medical Imaging. He has co-authored 46 peer-reviewed papers, and 67 conference records. His research is focused on image reconstruction techniques for medical imaging using x-ray computed tomography (CT). His projects include the development of such techniques for helical CT, for cardiac CT imaging of the whole heart using cone-beam data collection within a single heartbeat, and for cone-beam imaging with flat panel detectors in interventional radiology. One fundamental problem with cone-beam tomography is the handling of truncation in the projections. Significant progress has been made on this problem over the last few years, but many problems remain. This issue is integral to his research projects.

### SC6: Molecular Imaging

Monday, November 1, 08:30 – 17:00, Room 301E

Organizer: Maurizio Conti, *Siemens Healthcare Molecular Imaging, Knoxville, USA*

Instructors:

Richard E. Carson, *Yale University, USA*

Michael Casey, *Siemens Healthcare Molecular Imaging, Knoxville, USA*

Maurizio Conti, *Siemens Healthcare Molecular Imaging, Knoxville, USA*

Sridhar Nimmagadda, *Johns Hopkins University, USA*

A. Hans Vija, *Siemens Healthcare Molecular Imaging, Hoffman Estates, USA*

#### Course Description:

This course will introduce the attendees to the fundamentals of molecular imaging: biological mechanisms and molecular probes, imaging technologies and their applications, with focus on SPECT and PET. The course is aimed to physicists and engineers new to the field of molecular imaging and its technologies. It does not require previous knowledge of molecular biology and medical imaging techniques, but basic understanding of biological mechanisms and physics of radiation interaction is assumed.

The course will be organized in 2 parts: basics and advanced topics.

Basics: This part will cover the basics of molecular imaging and molecular probe mechanisms, including an overview of the imaging techniques available, the principles and basic technology of SPECT and PET, and an introduction to their main clinical applications.

- 1) Introduction to molecular imaging and modalities, optical imaging, marks of cancer, molecular probes
- 2) Single-photon imaging technology and applications
- 3) PET physics and reconstruction

Advanced topics: This part will touch on more recent developments and interesting main topics of research in terms of biomarkers science and technology, imaging instrumentation and clinical applications.

- 4) Advances in molecular imaging: targeted imaging probes and the role of PET and SPECT imaging, probes targeting proliferation, angiogenesis, reporter genes and metastasis.
- 5) Advances in imaging technology
- 6) Advances in clinical applications

#### Instructors:

RICHARD E. CARSON is Professor of Biomedical Engineering and Diagnostic Radiology at Yale University. He is Director of the Yale PET Center and is Director of Graduate Studies in Biomedical Engineering. His research focus is on the development and application of mathematical techniques for the study of human beings and non-human primates with PET. Dr. Carson has published over 150 papers in peer-reviewed journals, given over 60 invited lectures.

MICHAEL E. CASEY is the Director of Physics for Siemens Molecular Imaging in Knoxville Tennessee. Starting in 1982 at EG&G Ortec and then at CTI and finally at Siemens, Dr. Casey has been involved in all aspects of PET tomograph design including detectors, electronics, corrections and image reconstruction. Dr. Casey holds 20 patents in PET and has authored or co-authored over a hundred papers. His current focus is on improving PET image quality, and developing new applications for PET.

MAURIZIO CONTI is a Senior Staff Scientist at Siemens Healthcare Molecular Imaging in Knoxville, Tennessee. In the last 10 years at Siemens (previously CTI) he has been working on PET physics, detectors, and reconstruction. His current focus is on TOF PET detectors, reconstruction and clinical applications. Before joining CTI in 2000, he was Researcher at the Department of Physics of the Federico II University, in Napoli, Italy.

SRIDHAR NIMMAGADDA is an Assistant Professor of Radiology, Oncology and Medicine at Johns Hopkins University School of Medicine. He received a Ph.D. in Cancer Biology from Wayne State University in 2005 with the primary focus on proliferation imaging. His research interests are in the development of molecular imaging probes (PET, SPECT, optical) for metastatic disease.

A. HANS VIJA is the manager of the Physics and Reconstruction research team of Siemens Molecular Imaging in Hoffman Estates, Illinois. Starting in 2001 at Siemens, Dr. Vija has been involved in the system design of a SPECT/CT system and worked on improving reconstruction and compensation methods for SPECT and SPECT/CT systems. His current focus is on improving multimodality SPECT imaging.



## INDUSTRIAL PROGRAM

The IEEE NSS/MIC Industrial Program provides our conference attendees with ample opportunities to meet the different exhibitors, beginning Tuesday November 2nd at noon and closing Thursday November 4th at 18:00. The opening hours will follow the hours of the conference. Companies from 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 relevant areas. The exhibition area is located on the first floor of the Convention Center in Exhibit Hall B, which will also be the location of the Conference posters. During the exhibition, all coffee breaks will be held in the exhibits area. The three-day exhibition is complemented by the Exhibitor Technical Sessions, with up to 16 seminars, to allow an in-depth exchange of information between attendees and exhibitors on existing products and future developments. The Exhibitor Technical Sessions will be held in room 200E. The detailed schedule will be posted at the entrance to the exhibits area and on the conference website. The exhibiting companies invite you to attend the Exhibitors' Reception on Tuesday evening from 19:00 to 21:00.



Jean-François Pratte

The Exhibition opening hours are as follows:

Tuesday, November 2	noon to 21:00 Reception starting at 19:00
Wednesday, November 3	9:00 to 18:00
Thursday, November 4	9:00 to 18:00

Please visit the website: <http://www.nss-mic.org/2010> for up-to-date information and a current exhibitor list. An Exhibitor Program brochure will be available at the meeting with full details of the exhibitors and the seminar program.

Companies interested in participating should contact Jean-François Pratte, Exhibits Chairman, at [Jean-Francois.Pratte@USherbrooke.ca](mailto:Jean-Francois.Pratte@USherbrooke.ca).

## Industrial Presentation Schedule

Location: Room 200E

Tuesday, November 2, 2010		
13:30	Digital Colour Imaging for X-rays	KROMEK
14:30	Recent Developments in Neutron Detection	Berthold Technologies GmbH & Co KG
16:00	High dose rate and high energy resolution CdTe photon counting X-ray detector	ANSeeN Inc./ Research Institute of Electronics, Shizuoka University
Wednesday, November 3, 2010		
10:30	Technical Advances in Radiation Detection Instruments and HPGe Detectors	ORTEC
11:30	FMF and X-ray imaging Europe XIE: Medipix2 Pixeldetector	Freiburg Material Research Center FMF
13:30	Developments in Neutron Detection Solutions	Saint Gobain
14:30	Silicon photomultipliers	SensL Technologies
16:00	TBD	CAEN
17:00	Reworkable and reliable packaging of CZT detector	Creative Electron
Thursday, November 4, 2010		
10:30	Characterization of the NanoPET™/CT, a high resolution in-vivo small animal PET/CT scanner	Mediso Inc.

## List of Exhibitors

(as of August 4, 2010)

Acrorad Co., Ltd.  
Adit Electron Tubes  
Advansid  
Agile Engineering Inc.  
Alpha Spectra, Inc.  
AMPTEK Inc.  
ANSeeN / Shizuoka University  
ANTE Innovative Technologies Ltd.  
Berkeley Nucleonics  
Berthold Technologies  
CAEN Technologies Inc.  
Canberra  
Centronic Ltd  
Chemetall GmbH  
CMCAMAC  
CRC Press-Taylor & Francis Group LLC  
Creative Electron, Inc.  
Diamond Detectors Ltd.  
E I Detection & Imaging Systems  
Eljen Technology  
Freiburg Material Research Center FMF  
Furukawa Co., Ltd.  
Gamma Medica - Ideas(Norway) AS  
GE Energy  
Hamamatsu Corporation  
Hilger Crystals  
ICx Radiation  
Kromek  
Mediso Ltd  
Micron Semiconductor  
ORTEC  
Philips Digital Photon Counting  
Quik-Pak  
Saint-Gobain Crystals  
ScintiTech/Amcryst  
Scionix Holland BV  
SensL Technologies Ltd.  
Shanghai SICCAS Crystal  
Siemens Medical  
SINTEF  
Sparrow Corp.  
Struck Innovative Systeme GmbH  
Tokuyama Corporation  
Vertilon Corporation  
VTT Technical Research Centre of Finland  
Wiener, Plein & Baus, Grp..  
XIA LLC

## SPECIAL FOCUS WORKSHOPS

### Workshop on Material Development for the Homogeneous Hadronic Calorimeter Detector Concept

**Sunday, October 31, 10:00 - 18:00**

Location: Room 200E

Organizing Committee:

Paul Lecoq, *CERN, Switzerland*

Stephen E. Derenzo, *Lawrence Berkeley National Laboratory, USA*

Marvin J. Weber, *Lawrence Berkeley National Laboratory, USA*

This 3rd workshop dedicated to the Material development for the Homogeneous Hadronic Calorimeter (HHCAL) detector concept follows a first workshop held in Shanghai, on February 19, 2008 and a second one held in Beijing on May 9, 2010.

Homogeneous electromagnetic calorimetry has made important contributions to physics discoveries and precision measurements in high energy physics. Materials used for homogeneous electromagnetic calorimetry have ranged from crystals, noble liquids to various glasses. The new energy range explored first by the Tevatron and more and more by the LHC is expected to have a high discovery potential for new particles and physics channels, which will have to be studied in detail at a new generation of linear colliders, CLIC/ILC. High precision jet calorimetry will be a key of this physics. The HHCAL detector concept was proposed to improve the hadronic energy resolution by using homogeneous medium with total absorption nature for hadrons, and by using the dual readout approach measuring both Cherenkov and scintillation light to correct on an event to event basis the invisible energy lost in hadronic cascades.

The 3rd HHCAL workshop will have a one-day program covering both detector performance and material development.

#### International organization committee:

Marcel Demarteau, Steve Derenzo, Etienne Auffray, Jun Fang, Alexander Gektin, Paul Lecoq, Michele Livan, William Moses, Adam Para, Yifang Wang, Marvin Weber, Tianchi Zhao and Ren-yuan Zhu

### Special Focus Workshop on PET-MR

**Monday, November 1, 14:00 - 21:00**

Location: Room 200D/E

Co-Chairs:

Paul Marsden, *King's College London, UK*

Stefaan Vandenberghe, *University of Ghent (IBBT), Belgium*

The aim of this workshop meeting is to present and discuss the latest developments in hardware and data processing for combined PET-MR systems. The emphasis will be on scientific/technical developments in the following areas:

- Image reconstruction and data processing techniques
- Attenuation correction
- Motion correction

- New detectors
- Novel system configurations
- Electronics
- MR design
- Compatibility challenges and solutions

Further information will be posted on the workshop website: [sthpetcentre.org.uk/PETMRworkshop](http://sthpetcentre.org.uk/PETMRworkshop).

Scientists working on the technical aspects of PET-MR are encouraged to participate in the workshop and to submit an abstract (see website for details)

#### Scientific Committee:

Hans Herzog, Forschungszentrum Jülich GmbH  
 Simon Cherry, UC Davis,  
 Georges El Fakhri, Harvard Medical School  
 Martin Judenhofer, Tübingen University  
 Volkmar Schulz, Philips Research Aachen  
 Paul Vaska, Brookhaven National Laboratory  
 Charles Watson, Siemens Healthcare  
 Sibylle Ziegler, Technische Universität München

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#### Workshop on $^3\text{He}$ Alternatives for Neutron Detection

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**Friday, November 5, 2010, 8:30 – 15:30**

Location Ballroom A

Organizing Committee:

Ralf Engels, *Forschungszentrum Jülich GmbH, Germany*  
 Richard Kouzes, *Pacific Northwest National Laboratory, USA*  
 Bruno Guerard, *Institut Laue-Langevin (ILL), France*

This Workshop will focus on neutron detection methods and technologies for science and applications in the age of a diminishing supply of  $^3\text{He}$ . One of the main uses for  $^3\text{He}$  is in gas proportional counters for neutron detection, which is applied to homeland security, non-proliferation, neutron scattering science, commercial instruments, and well-logging detectors. It is also used in dilution refrigerators, targets or target cooling in condensed matter physics with no available alternative. Due to the large increase in the applications named above, the  $^3\text{He}$  supply is dwindling and can no longer meet the demand. The objective of this workshop is to provide a forum of discussion for  $^3\text{He}$ -free neutron detectors to solve the immediate problem, i.e., on a time schedule less than two years and the issues surrounding the current shortage of  $^3\text{He}$ .

The workshop will cover the progress achieved in the areas described by the following keywords:

- Proportional counters
- Studies on known scintillating crystals (LSO, BGO, PWO ...)
- New crystal candidates
- Heavy scintillating glasses
- Crystal and glass mass production technologies
- Photodetection and methods to quantify the scintillation and Cherenkov signals

Program:

- 8:30 Welcome by the Chairs Engels/Kouzes/Guerard
- 8:35 Overview of supply issues; Richard Kouzes (PNNL)
- 9:00 Status report of the  $^3\text{He}$  Alternative group; Karl Zeitelhack (TUM)
- 9:20  $^3\text{He}$  Neutron Detection Alternatives for National Security; Mitch Woodring (PNNL)
- 9:40  $^3\text{He}$  Usage in the Oil Well Logging Industry; Brad Roscoe (Schlumberger-Doll)
- 10:30 Inorganic scintillators for thermal-neutron detection; Carel van Eijk (Delft Univ of Technology)
- 10:50 Thermal Neutron Imaging Using Ce Doped  $\text{LiCaAlF}_6$  Single Crystal and Sealed; Noriaki Kawaguchi (Tokuyama Corp)
- 11:10 Neutron Imaging Camera; Stanley Hunter (NASA)
- 11:30 Performance Test of  $\text{BF}_3$  as Replacement for  $^3\text{He}$  in LPDs; Thomas Wilpert HZB
- 13:00 Preliminary results with a large area  $\text{BF}_3$  2D detector for neutron scattering; Martin Platz (ILL)
- 13:20 High-Pressure  $^4\text{He}$  Scintillation Detector Systems; Rico Chandra (Arktis Radiation Detectors Ltd)
- 13:40 Development of Novel Neutron Detectors with Thin Conversion Layers; Reinhard Kampmann (GKSS)
- 14:00 Development of  $^3\text{He}$  Filled Neutron Detectors and Plan for  $^3\text{He}$  Production in Korea; Myungkook Moon (Korea Atomic Energy Research Institute)
- 14:20 Boron-Coated Straw Detectors: a Novel Approach for  $^3\text{He}$  Neutron Detector Replacement; Audrey Sivasothy (Proportional Technologies, Inc)
- 14:40 Semiconducting BC: an Attractive Alternative to  $^3\text{He}$  Neutron Detectors; Nina Hong (Physics and Astronomy, University of Nebraska-Lincoln)
- 15:00 Summarize and open discussion

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#### Special Workshop on the Management and Dissemination of Intellectual Property in Fundamental Research

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**Thursday, 4 November 2010, 10:30 – 12:30**

Location: Room 200A

Co-Chairs:

Bernard Denis, *CERN Knowledge & Technology Transfer, Switzerland*  
 Hartmut Hillemanns, *CERN Knowledge & Technology Transfer, Switzerland*

Intellectual Property (IP) in public research is not limited to patents; it also includes know-how in many different forms and expertise. IP has an important role in particular in collaborative research projects involving multiple parties where proper IP management is crucial for successful dissemination and exploitation of results and is thus considered by funding agencies as a pre-requisite for financing.

IP generated in public research is considered as an important asset of public research organizations and is central to the dissemination of knowledge. However, IP today is often being generated within large

collaborative efforts among many different institutions. The value of IP as an asset and its dissemination potential thus strongly depends on a common understanding of its usage, on the way it is managed among the involved public research organizations and how it is best packaged to common technology offers and promoted to third parties for further exploitation.

Open to scientists and researchers involved in scientific programs aiming at developing new technologies, the objective of this workshop is

1. to raise awareness on the importance of proper IP management in cross-institutional R&D projects and collaborations,
2. to review best practices of IP management in particular in collaborative R&D between public research organizations with or without industry involvement,
3. to present cross organizational approaches in the management, the dissemination and the promotion of jointly generated IP.

The workshop will comprise a series of presentations from experts that will address the before mentioned topics on the basis of practical cases and will be followed by discussions with the speakers.

## SPECIAL EVENTS

### Special Women in Engineering (WIE) Session: Contribution of Women Scientists to Nuclear Science and Medical Imaging

Thursday, November 4, 18:00 - 20:00

Location: Room 200B

Co-Chairs:

Barbara Obryk, *Institute of Nuclear Physics, Kraków, Poland*  
Sara A. Pozzi, *University of Michigan, Ann Arbor, MI, USA*

We are pleased to welcome you to the Women in Engineering (WIE) Session (Thursday, 4 November 2010, 18:00 - 20:00) in room 200B, a special session to provide an opportunity for participants to exchange ideas and experiences in an informal setting. The special session will address the theme of women's contributions to nuclear science and medical imaging by presenting encouraging examples from the IEEE NSS and MIC. The session will address the following points:

- how to prepare high school girls to make an unprejudiced choice regarding their study and careers in science and engineering as well as give them good background for making that choice;
- how to improve the academic progression of women in order to minimize the movement of women out of these fields;
- how to overcome barriers for the advancement of women already working in science and engineering;
- how to combine a career with family life.

Several speakers with outstanding careers in the national laboratories, industry, and government have been invited to give brief summaries on what they have done to get where they are today, including:

- Britta Fuenfstueck, CEO Siemens Healthcare
- Jennifer Huber, Scientist, Lawrence Berkeley National Laboratory
- Elizabeth Bartosz, Scientist, Defense Threat Reduction Agency, Department of Defense
- Nerine Cherepy, Scientist, Lawrence Livermore National Laboratory

These women are role models for generations to come. There will be keynote presentations, followed by a panel discussion on the session issues, which are of importance not only to the society of women in science and engineering but to the general public as well. Students who are beginning their careers in these areas will be invited to participate in the panel discussion. We hope that the WIE Session will help foster efforts to counter a worrisome trend that has been recently noticed in European countries: the more developed the country is and the richer



Barbara Obryk



Sara Pozzi

the society is, the fewer women there are in S&E. We cannot afford to lose women's talents in S&E. We encourage all members of the IEEE NSS & MIC community to attend.

Details about the WIE Session can be found on the website: <http://www.nss-mic.org/2010/> under Special Focus Workshops.

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### Reception for IEEE GOLD Members

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**Thursday, November 4, 18:00 - 20:00**

Location: Room 301C

Chair: Christoph Ilgner

The IEEE Nuclear and Plasma Sciences Society (NPSS) promotes activities in the IEEE GOLD program for Graduates of the Last Decade. At the Nuclear Science Symposium and Medical Imaging Conference, a special reception for these members of NPSS will be held. Attendance is free, but restricted to IEEE NPSS GOLD members, i.e., those among our members whose latest professional degree was granted less than ten years ago.

The reception will take place on Thursday, November 4, from 18:00 to 20:00. in room 301C. Refreshments will be served.

Given the large success of the relaxed GOLD reception at NSS-MIC 2009 in Orlando, Florida, IEEE GOLD members are highly encouraged to attend this year's event. Several speakers with outstanding careers in both academia and industry, including IEEE fellows, have been invited to give brief summaries on what they have done to get where they are today. Their presentations will be very short, since emphasis will be on peer group discussions and network building among GOLD members and the leading professionals invited. In this sense, "individual career advice in a casual atmosphere" is the motto of the reception.

All IEEE GOLD members attending the Nuclear Science Symposium and Medical Imaging Conference are most welcome to drop by and profit from this event. If you happen to have obtained your latest professional degree less than ten years ago, but the only missing bit is the membership in IEEE and NPSS to make you a GOLD member, you should take a moment to pass by the membership table at the conference and become a member. This way, you will profit from both your new membership in IEEE and the Nuclear and Plasma Sciences Society with all its benefits (see [www.ieee.org](http://www.ieee.org)) and you can attend the GOLD reception right away!

Looking forward to seeing you on Thursday,

Christoph Ilgner, *CERN, Switzerland*  
GOLD Committee Chair

## NUCLEAR SCIENCE SYMPOSIUM (NSS)

Welcome to Knoxville and the 2010 IEEE Nuclear Science Symposium!

As we hope you will see throughout the week, a very strong program has been assembled. In addition to a solid set of submissions, our Topic Convenors (acknowledged by name on page 230) worked extremely hard to get quality reviews and put together the oral and poster sessions. We are extremely thankful to our predecessors (particularly the originator – Patrick Le Du) for developing the Topic Convener concept and process. Without it the job of putting together the NSS program would be absolutely daunting.

The NSS Program was drawn from 740 submissions. When one includes the 157 submissions to the Workshop on Room-Temperature Semiconductor Detectors (RTSD), Knoxville the total number of submissions exceeds the numbers from Orlando.

This year we went the extra mile (or kilometer) to make sure that similar submissions were reviewed, and subsequently included in the program, in the same Topic Area. One of our guiding principles for this process was placing submissions that were primarily about detector development in the appropriate detector Topic Area and those that were primarily about a specific application in the appropriate application Topic Area. As part of this exercise, we also moved all submissions to the NSS related to (wide band-gap) room-temperature semiconductors to the RTSD and they in turn transferred a number of submissions to the NSS. In addition, with the increased focus on neutron detector development in light of the He-3 shortage, we attempted to place short-term solutions in the related workshop and longer-term solutions in the general NSS Program. While there was a fair amount of effort required by the Program Committee, we believe it was worthwhile in that you will hopefully see fewer instances where similar papers are presented in different Topic Area sessions.

We'd like to call your attention to several aspects of the NSS program that are new and/or different from previous years:

1. Poster sessions
2. Refresher courses

**POSTER SESSION:** To avoid the crowds in the poster sessions which have been characteristic of the last several NSSs, we are conducting an experiment that we hope will allow the attendees to have more productive experience. As opposed to two large poster sessions in series with the parallel oral sessions, we are treating posters just like oral presentations – making them parallel to the oral sessions. Each Topic Area has been

allotted a single poster session that appears in the program just like one of its oral sessions. Beginning late Monday afternoon and going through the early afternoon session on Wednesday, there will be between one and three poster sessions integrated with the parallel oral sessions. We hope that this will provide the attendees with more one-on-one time with the poster presenters and eliminate the sometimes overwhelming crowds. We look forward to hearing from you how you feel our experiment worked.

We are also experimenting with Refresher Courses. At noon, Tuesday-Thursday, we will have a free refresher course. These courses are designed for someone new to field and/or someone who has been away from a particular topic for several years and is trying to re-enter it. There will be box lunches available for purchase near the classroom. More details on the topics for these refresher courses are available in your registration packet, as well as on the web site.

Sincerely,

John Valentine  
NSS Program Chair

Timothy DeVol  
Deputy NSS Program Chair



John Valentine  
NSS Program Chair



Timothy DeVol  
NSS Deputy Program Chair

## NSS PLENARY TALKS

### NP1-2: Oak Ridge National Laboratory: Scientific Discovery and Innovation for Clean Energy and Global Security

Thomas E. Mason

Director, Oak Ridge National Laboratory, USA

Monday, November 1, 09:15 – 10:00 Ballroom B&C

#### Biography

Thomas Mason is a native of Dartmouth, Nova Scotia, in Canada. He graduated from Dalhousie University in Halifax, Nova Scotia, with a Bachelor of Science degree in physics and completed his postgraduate study at McMaster University in Hamilton, Ontario, Canada, receiving a Doctor of Philosophy degree in experimental condensed matter physics.



After completing his Ph.D., he held a postdoctoral fellowship at AT&T Bell Laboratories in Murray Hill, New Jersey, and then became a Senior Scientist at Risø National Laboratory in Denmark. In 1993 he joined the faculty of the Department of Physics at the University of Toronto.

Thom joined Oak Ridge National Laboratory (ORNL) in 1998 as Scientific Director for the Department of Energy's Spallation Neutron Source (SNS) project. In April 2001 he was named Associate Laboratory Director for SNS and Vice President of UT-Battelle, LLC, which manages ORNL for the Department. In 2006 he became Associate Laboratory Director for Neutron Sciences, leading a new organization charged with delivering safe and productive scientific facilities for studying of structure and dynamics of materials. In May 2007, Thom was named Director of Oak Ridge National Laboratory.

Thom's research background is in the application of neutron scattering techniques to novel magnetic materials and superconductors using a variety of facilities in North America and Europe. He is coauthor of more than 100 refereed publications and an Associate of the Quantum Materials Program of the Canadian Institute for Advanced Research. In 1997, he was awarded an Alfred P. Sloan Foundation Research Fellowship. Thom was named a Fellow of the American Association for the Advancement of Science in 2001, a Fellow of the American Physical Society in 2007, and a Fellow of the Neutron Scattering Society of America in 2010. He received the Distinguished Alumni Award for the Sciences from McMaster University in 2008.

Thom and his wife, Jennifer MacGillivray, also a native of Nova Scotia, live in Oak Ridge with their two sons, William and Simon.

#### Abstract

From its origins as a cornerstone of the Manhattan Project, Oak Ridge National Laboratory (ORNL) has grown into the U.S. Department of



Energy's largest science and energy laboratory, with an exceptionally broad set of capabilities. These capabilities enable ORNL not only to attack fundamental scientific challenges, but also to carry out the translational research and development required to accelerate the delivery of solutions to pressing national and global problems. Historically, many of these solutions have drawn on the Laboratory's signature strengths in nuclear science and technology, resulting in advances in nuclear science, radiation detection, software engineering and data acquisition, and medical imaging applications. Plans for continuing the translation of ORNL's leadership positions into transformational outcomes in scientific discovery and innovation, clean energy, and global security.

### NP2-1: New Views of the High-Energy Universe with the Fermi Gamma-ray Space Telescope

Peter F. Michelson

W. W. Hansen Experimental Physics Laboratory, Kavli Institute of Particle Astrophysics and Cosmology and Department of Physics, Stanford University, USA

Monday, November 1, 10:30 – 11:15 Ballroom B&C

#### Biography

Peter Michelson is Professor of Physics at Stanford University where he is also the director of the Hansen Experimental Physics Laboratory. The focus of his research for the past decade has been on the development of a new orbiting observatory for observing high-energy gamma radiation generated by cosmic sources that include supermassive black holes and neutron stars. He is the Principal Investigator of and Spokesperson for the Large Area Telescope investigation on the Fermi Gamma-ray Space Telescope. His other research interests include gravitational wave detection.



#### Abstract

The Fermi Gamma-ray Space Telescope was launched by NASA on June 11, 2008. The Large Area Telescope (LAT) instrument measures cosmic gamma-ray radiation in the energy range 20 MeV to >300 GeV, with supporting measurements by the GLAST Burst Monitor (GBM) for gamma-ray bursts from 10 keV to 25 MeV. The LAT, with a factor of 40 or more improvement in sensitivity, large field-of-view, and much finer angular resolution compared to previous high-energy telescopes, is providing an important window on a wide variety of high-energy phenomena, including black holes and active galactic nuclei; gamma-ray bursts; the origin of cosmic rays and supernova remnants; and searches for hypothetical new phenomena such as supersymmetric dark-matter annihilations and exotic relics from the Big Bang. This talk will describe the design of the Fermi observatory, particularly the LAT and provide an overview of the results obtained to date.

### NP2-2: CMS Early Results

Guido Emilio Tonelli

University of Pisa, Italy and CERN, Switzerland

Monday, November 1, 11:15 – 12:00 Ballroom B&C

#### Biography

Born in Italy, on November 8, 1950, he is Professor of General Physics at the University of Pisa and Associate Researcher of INFN. Since October 2006 he is on leave of absence from the University to work in the central management of the CMS experiment at CERN, Geneva, Switzerland. In March 2009 he was elected Spokesperson of the CMS Collaboration.

He works in the field of High Energy Physics since 1978, participating in experiments at CERN (Switzerland) and Fermilab (Chicago, USA).

Among his contributions there are the first precision measurements of the lifetime of charmed mesons, the determination of the number of light neutrino families, precision measurements of the Standard Model and searches for new physics at the TeV scale.

He was among the first pioneers developing semiconductor devices for High Energy Physics and he is considered the "father" of the All Silicon Tracker that is now the heart of CMS. He is author of 345 scientific papers in international journals.

#### Abstract

After a successful commissioning period, the CMS detector is collecting data at the Large Hadron Collider (LHC) of CERN. Collisions of protons at a center-of-mass energy of 7 TeV are being used to establish detector performance and to produce the first measurements in the new, so far un-explored energy regime. The current status of the apparatus will be presented together with a detailed description of the performance of the major detector components and highlights of the first physics results.



## NSS LUNCHEON SPEAKER

### Nuclear Forensics

Michael R. Carter

Lawrence Livermore National Laboratory, USA,  
Program Director for Counterterrorism,  
Global Security Principal Directorate

Monday, November 1, 12:00 – 14:00 Ballroom F&G

#### Biography

Ph.D., Engineering and Applied Science, University of California at Davis (1987)  
M.S., Engineering and Applied Science, University of California at Davis (1983)

B.S., Physics, Indiana University (1981)

LLNL: Currently, Program Director for Counterterrorism, 2006–2009: Deputy Principal Associate Director for Programs, Global Security Principal Directorate; responsible for organizations that provide expertise, analysis, and systems solutions to preclude the spread or use of weapons of mass destruction (WMD). Major areas of program emphasis include nonproliferation and global nuclear materials management, radiological, nuclear, chemical, and biological countermeasures, infrastructure and force protection, energy security, and international assessments. 2003 to 2006; Department of Homeland Security (DHS), including Deputy Director in the Domestic Nuclear Detection Office (DNDO) and Chief Scientist in the Office of Plans, Programs and Budget within the DHS Science and Technology Directorate. August 2002 to March 2003; Technical Advisor to the White House's Transition Planning Office for the establishment of the Department of Homeland Security. 1998–2003; Associate Division Leader for Proliferation Detection Systems at LLNL. Developed innovative remote sensing technologies, including standoff chemical sensors and persistent surveillance systems for the intelligence community and the warfighter. National Intelligence Meritorious Unit Citation from the National Imagery and Mapping Agency for technical support in response to the World Trade Center attack. National Reconnaissance Office Bronze Medal for Meritorious Service and a National Reconnaissance Office Team Award.

#### Research Interests

The development of innovative technologies and approaches to prevent terrorism, protect U.S. interests, and enable effective response to Chemical, Biological, Radiological, Nuclear, and Explosive (CBRNE) events.

#### Abstract

The National expectations for Nuclear Forensics are high. Popularized in the Tom Clancy novel, "The Sum of All Fears", the science of nuclear forensics is commonly thought of in the post nuclear detona-

tion environment. The science of nuclear forensics is also important for the characterization of nuclear materials in pre-detonation national security applications. The analytic sciences used in the forensics analysis processes are key to identification of key attributes of materials that are potentially important information in the attribution process. The science basis, with select case studies, for nuclear forensics for both interdicted nuclear materials and post-detonation debris will be discussed. The maturing science of nuclear forensics is expected to play a key role in global nuclear accountability.



## MEDICAL IMAGING CONFERENCE (MIC)

It is our great pleasure to welcome you to the 2010 IEEE Medical Imaging Conference in Knoxville, Tennessee. The Knoxville Convention Center (KCC) is a wonderful venue for the meeting and Knoxville has long been associated with both Nuclear Science and Medical Imaging through its proximity to Oak Ridge National Laboratory, ORTEC, CTI, Inc, and Siemens Healthcare.

The success of these meetings is a direct consequence of the many people who volunteer their time and effort. In particular, those of you who accepted to review the large number of submitted abstracts in a timely manner were invaluable to the selection process and we thank you sincerely for your efforts. We would also like to thank the General Chair, Ron Keyser and Treasurer, Ralf Engels who guided us through the whole process. Bo Yu, who managed the conference website and provided the necessary software tools, also deserves special mention for his rapid response to fix any problems that arose. We also acknowledge the generous support from the sponsors listed in this program book for the training grants that allows younger researchers to attend the meeting each year.

This year, we received a total of 604 abstracts and we accepted 540 of them after a rigorous review process. Of the 540 accepted abstracts, 88 have been assigned to MIC oral sessions and the remainder to either the joint sessions or to the MIC poster sessions. In order to accommodate the large number of high quality submissions, we have organized a total of 13 oral sessions that will include 4 parallel sessions where we have attempted to minimize the overlap between the subject matter in order to avoid conflicts. For the first time this year, we have increased the number of poster sessions to 5 accommodating a total of 442 posters in an effort to reduce the number of posters per session that attendees have to view. The physical space assigned to the poster sessions is one of the most extensive ever thanks to the superb facilities of the KCC. The joint sessions between NSS, RTSD, and MIC will again be held on Tuesday.

There will be two MIC plenary sessions held on Wednesday. The first session will feature two renowned speakers, Prof Greg Sorenson from Massachusetts General Hospital who will speak on “Mechanistic Imaging and MR-PET” and Prof Anthony Campbell from the University of Cardiff who will speak on “Life that Sparkles.” The second plenary session will feature presentations from this year’s winners of the Hoffman and Hasegawa Awards. There will be one workshop, on MR-PET, that will be held on Monday afternoon, and we have reintro-

duced the refresher courses to be held before the start of the main scientific sessions each morning and covering the basics of MR, CT, and detectors.

There will also be the usual social events at the meeting, including the MIC dinner that will feature a local bluegrass band and an after-dinner talk from Prof Campbell entitled “Charles Darwin: an inspiration for the 21st century.”

Based on the venue and the high scientific quality of the submissions, we anticipate an exciting and stimulating meeting. It is our pleasure to welcome you to the 2010 IEEE Medical Imaging Conference in Knoxville, Tennessee.



David Townsend  
MIC Program Chair



Charles Watson  
MIC Deputy Program Chair

**M01-1: Mechanistic Imaging and MR-PET**

Gregory A. Sorensen

Massachusetts General Hospital, USA

Wednesday, November 3, 08:40 – 09:20, Ballroom B&amp;C

**Biography**

Dr. Sorensen is a neuroradiologist at Massachusetts General Hospital and the Co-Director of the A. A. Martinos Center for Biomedical Imaging. His research interests focus on the application of novel advanced neuroimaging techniques to disease processes, and he has investigated such techniques in human ischemic stroke and glioblastoma. He serves as a Professor of Radiology and Health Sciences and Technology at Harvard Medical School and in the Division of Health Sciences and Technology at Harvard/MIT.

**Abstract**

Medical imaging has been described as anatomic, molecular, functional, physiological, and more. In this talk I will discuss the idea of “mechanistic neuroimaging,” meaning imaging focused on understanding disease pathways and providing insights into therapeutic interventions. In this paradigm, the technique is less important than the context in which it is used: understanding the questions to be asked and the key disease mechanisms under interrogation. Examples of this approach will be given, and how the new technology of simultaneous MR-PET is particularly relevant will be discussed, including examples from human patient data.

**M01-2: Life That Sparkles**

Anthony K. Campbell

Cardiff University and Scientific Director of the Darwin Centre, Pembrokeshire, UK

Wednesday, November 3, 09:20 – 10:00 Ballroom B&amp;C

**Biography**

Anthony is Professor in Medical Biochemistry at Cardiff University and an international expert in bioluminescence, the science of lactose and food intolerance, and Darwin. Anthony was born in Bangor, North Wales, but grew up in London. He obtained a first-class degree and PhD in Natural Sciences at Pembroke College, Cambridge, coming to Cardiff in 1970. He has pioneered genetically engineered bioluminescent proteins to measure  $\text{Ca}^{2+}$  and



other signals in live cells. He has published over 200 scientific papers, 8 books, including *Intracellular calcium*, *Chemiluminescence*, and a recipe book for people suffering from lactose intolerance (see [www.welstonpress.com](http://www.welstonpress.com)), and has several patents being exploited world wide. His chemiluminescence technology is now used in several 100 million clinical tests per year. This technology received the Queen's Anniversary Prize in 1998, and was selected in 2006 by Universities UK in their Eureka project as one of the 100 most important discoveries and inventions from UK Universities in the past 50 years. He is passionate about communicating cutting edge science to young people and the public, founding the Darwin Centre in 1994, and the highly acclaimed Pembrokeshire Darwin Science Festival in 2000. Last year he gave 35 Darwin lectures as part of Darwin200.

**Abstract**

Bioluminescence is the emission of visible light from living organisms. It occurs in 18 phyla, and has invaded all the major habitats on our planet. It is the communication system in the deep sea. This inspiring phenomenon has had a major impact on biomedical research and clinical practice. Imaging components of bioluminescent systems has also revolutionised cell biology and drug discovery. The flash of a luminous jelly fish led us to develop a replacement for radioactivity in clinical diagnosis, now used in several hundred million clinical tests per year, world-wide. All bioluminescence is the result of chemical reaction, the luciferin reacting with oxygen, catalysed by a luciferase. In some jelly fish, these are bound together in one complex to form a photoprotein. Several systems also require cofactors such as NAD(P)H, FMN,  $\text{Ca}^{2+}$  and ATP. By coupling these to the appropriate bioluminescent system, they can be measured and imaged in live cells and intact organs. DNA coding for a particular luciferase can be linked to a response element allowing gene expression to be imaged in single cells and whole organisms. The  $\text{Ca}^{2+}$ -activated photoproteins aequorin and obelin have been widely used to measure and image free  $\text{Ca}^{2+}$  in live mammalian cells, whole organs and intact plants. They can be engineered to target to organelles. These photoproteins are currently the only way to measure free  $\text{Ca}^{2+}$  in live bacteria, showing how *E. coli* regulates its internal  $\text{Ca}^{2+}$ , and how this regulates 90 genes, and controls growth via ATP. This is a mechanism for our 'bacterial toxin' hypothesis, explaining lactose and food intolerance, irritable bowel syndrome, type 2 diabetes, and some cancers. A rainbow of colours is available from bioluminescent organisms. By mimicking this, bioluminescent proteins have been genetically engineered that can measure, in live cells, ATP and  $\text{Ca}^{2+}$  simultaneously, covalent modification of proteins, and protein-protein interactions. Bioluminescent indicators have the advantage that no exciting light source is required, so no photobleaching. Bioluminescence has the wow factor that makes young people sparkle. The Darwin Centre has been set up in Wales using this to excite young people about cutting edge science ([www.darwincentre.com](http://www.darwincentre.com)). The sparkle of a jelly fish has led to a new hypothesis to explain a key feature in the evolution of life – the origin of an enzyme.

**Charles Darwin**  
**An inspiration for the 21st century**

**Anthony K. Campbell**

Cardiff University and Scientific Director of the Darwin Centre,  
 Pembrokeshire, UK

Friday, November 5, 19:00 – 22:30, The Foundry

**Abstract**

Charles Darwin is the Newton of Biology. He was born in the English town of Shrewsbury on the 12th February 1809, but showed little of his later genius as a schoolboy. Five years on HMS Beagle changed all that, establishing him as a brilliant geologist, naturalist and biologist. His principle of Natural Selection transformed biology and medicine, becoming the unifying concept in biology, as relevant today as it was when he first made it public in 1858 with Alfred Russel Wallace, born in South Wales. The magnificent landscape and natural history of Wales inspired Darwin. I will use this Welsh legacy to show how Darwin's life evolved, and how he accumulated the evidence for his BIG idea of evolution by Natural Selection. I also aim to show why Darwin's work is vital for 21st century research and teaching in the University and school sectors, and in health care, emphasising the importance of the skills of a naturalist, and the need to incorporate these and Darwin's principles into 21st medicine. I will reveal Darwin's 50 year illness, and how this provides a mechanism for many other illnesses. Hopefully this will not spoil your dinner! I will also show that there is no problem for those with religious beliefs in retaining their faith, and believing in all the laws of science, including evolution by Natural Selection. Darwin left an incredible legacy of books, scientific papers, notes, and correspondence, as well as preserved animals and plants, and fossils, still used by scientists today. I aim to provide a new image of Charles Darwin, and why he truly is an inspiration for the 21st century

It is our great pleasure to welcome you to the 17th International Workshop on Room-Temperature Semiconductor X-Ray and Gamma-Ray Detectors. This conference represents the principal forum for scientists and engineers working to develop new solid-state radiation detectors and imaging arrays.

For those of you who have attended the past workshops, welcome back! As Chairs of the workshop, we are particularly delighted to make the acquaintance of new contributors, as there are many challenges that lie ahead, some of which will be solved by those who are relatively new to the subject area.

It is our sincere hope that this conference will facilitate cross-fertilization of research and spawn creative ideas, and that these ideas will be incorporated into knowledge, leading to new directions and thrusts. We urge you to take time at this meeting to build on the commonality of your work with colleagues within the RTSD, NSS and MIC conferences, and to share your data, energy and experience, and explore ways to enhance cooperation and collaboration with others.

We have chosen to hold this meeting in conjunction with the IEEE NSS and MIC meetings for the purpose of encouraging information exchange between a much larger body of scientists and engineers who have an in-depth knowledge of detectors, instrumentation, nuclear science and technology, and medical imaging. Joint sessions with NSS and MIC are scheduled to help bring people together with common interests and offer the right environment for the creation of new and fruitful associations. These joint sessions are clearly identified in the program booklet, and we request everyone's participation.

A RTSD luncheon will be held again this year. You are encouraged to purchase your ticket(s) when you pre-register as seating will be limited.

We would like to thank the speakers and attendees for their contributions, the workshop sponsors for their kind support, and express our gratitude to the session chairs and members of the RTSD Steering Committee, who have offered their time to enlist the involvement of most researchers in the field.



Ralph James  
 RTSD Program Co-Chair



Michael Fiederle  
 RTSD Program Co-Chair







Mon. Nov. 1	07:30	08:00	08:30	09:00	09:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30
Ballroom A														N01: Scintillators and Scintillation Detectors: Novel detectors				N05: Nuclear Measurements and Monitoring Techniques: Nonproliferation									
Ballroom B				NSS Plenary 1										N02: Astrophysics and Space Instrumentation I				N07: Neutron Detectors and Instrumentation I									
Ballroom C					NSS Plenary 2									N03: Instrumentation for Homeland and National Security I				N08: Analog and Digital Circuits I									
Ballroom E														N04: Scientific Computation and Computation: Simulation R&D				N09: Monte Carlo Modeling									
Ballroom F																											
Ballroom G																											
Room 301A																											
Room 301B																											
Room 301D														SC5: Medical Image Reconstruction				SC5: Medical Image Reconstruction									
Room 301E														SC6: Molecular Imaging				SC6: Molecular Imaging									

NSS Luncheon

R02: Defects in CdZnTe

R01: CdZnTe Detectors

SC5: Medical Image Reconstruction

SC5: Medical Image Reconstruction

SC6: Molecular Imaging

SC6: Molecular Imaging

Mon. Nov. 1	07:30	08:00	08:30	09:00	09:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30
Lecture Hall																											
Room 200A																											
Room 200B																											
Room 200C																											
Room 200D																											
Room 200E																											
Exhibit Hall B																											

Workshop: PET-MR

Workshop: PET-MR

N10: Scintillators and Scintillation Detectors

## NSS Oral Presentations

## NP1: NSS Plenary I

Monday, Nov. 1 08:15-09:30 Ballroom B&amp;C

Session Chairs: John D. Valentine, *SAIC, USA*  
 Timothy A. DeVol, *Clemson University, Environmental Engineering and Earth Sciences Department, USA*

## NP1-1 Opening Remarks

J. Valentine, *Science Applications International Corporation, USA*; T. Devol, *Clemson University, USA*

## NP1-2 (invited) Oak Ridge National Laboratory: Scientific Discovery and Innovation for Clean Energy and Global Security

T. E. Mason, *Oak Ridge National Laboratory, USA*

## NP2: NSS Plenary II

Monday, Nov. 1 10:00-11:30 Ballroom B&amp;C

Session Chairs: John D. Valentine, *SAIC, USA*  
 Timothy A. DeVol, *Clemson University, Environmental Engineering and Earth Sciences Department, USA*

## NP2-1 (invited) New Views of the High-Energy Universe with the Fermi Gamma-ray Space Telescope

P. F. Michelson, *Stanford University, USA*

## NP2-2 (invited) CMS early results

G. E. Tonelli, *INFN, Italy*

## N01: Scintillators and Scintillation Detectors: Novel detectors

Monday, Nov. 1 13:30-15:30 Ballroom A

Session Chairs: Sara Pozzi, *University of Michigan, USA*  
 Kanai S. Shah, *RMD, USA*

## N01-1 Read Out Test of Inorganic-Organic Hybrid Scintillator; Pr: LuAG Single Crystal Covered with Plastic Scintillator

K. Kamada<sup>1</sup>, T. Yanagida<sup>2</sup>, T. Endo<sup>1</sup>, Y. Fujimoto<sup>2</sup>, Y. Usuki<sup>1</sup>, A. Yoshikawa<sup>2</sup>  
<sup>1</sup>*Furukawa Co., Ltd., Japan*; <sup>2</sup>*Tohoku University, Japan*

## N01-2 Continuous Phoswich Detector for Molecular Imaging

Y. V. Nagarkar, V. Gaysinskiy, V. Gelfandbein, S. Miller, S. Cool, H. Kudrolli, *RMD, Inc., USA*; B. Barber, *Center for Gamma Ray Imaging (CGRI), University of Arizona, USA*

## N01-3 Liquid-Based Scintillators for Particle Physics

J. Marchant, B. Baumbaugh, B. Dolezal, M. McKenna, R. Ruchti, A. Williams, *University of Notre Dame, USA*; C. Hurlbut, *Eljen Technology, USA*

## N01-4 Application of Scintillation in Helium Mixed with Xenon to a Position-Sensitive Detector

K. Saito, S. Sasaki, H. Tawara, *High Energy Accelerator Research Organization, Japan*; E. Shibamura, *Saitama Prefectural University, Japan*

## N01-5 A Model of the Secondary Scintillation Pulse Shape for Dual-Phase Noble Element Detectors

K. Kazkaz, *LLNL, USA*; T. Joshi, *UC Berkeley, USA*

## N01-6 Design And First Results From PIXeY - A Two-Phase Liquid Xenon Time Projection Chamber

E. P. Bernard, D. N. McKinsey, S. B. Cahn, A. Curioni, N. A. Larsen, A. Lyashenko, J. A. Nikkel, Y. Shin, A. H. Young, *Yale University, USA*; N. E. Destefano, W. R. Zimmerman, M. Gai, *University of Connecticut, USA*

## N01-7 Development of a fourth generation industrial tomography using CsI(Tl) crystal coupled to PIN Si photodiodes for multiphase dynamic process analysis

C. H. Mesquita, F. E. Costa, D. V. Sousa Carvalho, M. M. Hamada  
*Instituto de Pesquisas Energeticas e Nucleares - IPEN/CNEN-SP, BRAZIL*

## N02: Astrophysics and Space Instrumentation I

Monday, Nov. 1 13:30-15:30 Ballroom B

Session Chair: William Craig, *UC Berkeley, USA*

## N02-1 CCD Detector Development for the EROSITA Space Telescope

N. Meidinger, *Max-Planck-Institut fuer extraterrestrische Physik, Germany*  
 On behalf of the eROSITA group

N02-2 A Thermal-Neutron Detector with a Phoswich System of LiCaAlF<sub>6</sub> and BGO Crystal Scintillators Onboard PoGOLite

H. Takahashi, M. Yonetani, M. Matsuoka, T. Mizuno, Y. Fukazawa, *Hiroshima University, Japan*; T. Yanagida, Y. Yokota, A. Yoshikawa, *Tohoku University, Japan*; N. Kawaguchi, S. Ishizu, K. Fukuda, T. Suyama, *Tokuyama Corporation, Japan*; K. Watanabe, *Nagoya University, Japan*

## N02-3 Development and Characterization of New 256 x 256 Pixel DEPFET Detectors for X-Ray Astronomy

A. Meuris<sup>1,2</sup>, J. Treis<sup>2,3</sup>, P. Lechner<sup>2,4</sup>, S. Herrmann<sup>1,2</sup>, T. Lauf<sup>1,2</sup>, F. Aschauer<sup>1,2</sup>, D. Miessner<sup>1,2</sup>, A. Stefanescu<sup>1,2</sup>, P. Majewski<sup>2,4</sup>  
<sup>1</sup>*Max-Planck-Institut fuer extraterrestrische Physik, Germany*; <sup>2</sup>*MPI Halbleiterlabor, Germany*; <sup>3</sup>*Max-Planck-Institut fuer Sonnensystemforschung, Germany*; <sup>4</sup>*PNSensor, Germany*

## N02-4 Development of X-Ray Imaging Spectroscopy Sensor with SOI CMOS Technology

S. G. Ryu, T. G. Tsuru, S. Nakashima, *Kyoto University, Japan*; Y. Arai, T. Miyoshi, R. Ichimiya, Y. Ikemoto, *High Energy Accelerator Research Org., KEK, Japan*; A. Takeda, *Graduate University for Advanced Studies (SOKENDAI), Japan*; R. Takashima, *Kyoto-University of Education, Japan*; T. Imamura, T. Ohmoto, A. Iwata, *A-R-Tec Corp., Japan*

## N02-5 Light Sensors Selection for the Cerenkov Telescope Array: PMT and SiPM

M. Kurz<sup>1</sup>, M. Shayduk<sup>1</sup>, R. Mirzoyan<sup>1</sup>, J. Hose<sup>1</sup>, J. Bolmont<sup>2</sup>, E. Lorenz<sup>1</sup>, T. Schweizer<sup>1</sup>, J.-P. Tavernet<sup>2</sup>, M. Teshima<sup>1</sup>, P. Vincent<sup>2</sup>  
<sup>1</sup>*Max-Planck-Institut fuer Physik, Germany*; <sup>2</sup>*Universite Pierre et Marie Curie, France*

## N02-6 Fast Readout of Multi-Channel Detectors by Using a CCD/CMOS Camera

M. Shayduk<sup>1</sup>, R. Mirzoyan<sup>1</sup>, A. Polyakova<sup>2</sup>, T. Schweizer<sup>1</sup>, E. Lorenz<sup>1</sup>, M. Teshima<sup>1</sup>  
<sup>1</sup>*Max-Planck-Institute fuer Physik, Germany*; <sup>2</sup>*MEPhI, Russia*

### N02-7 A Demonstrator Prototype of Multi-Linear Silicon Drift Detector as Scatter Detector for Compton Imaging

A. Castoldi<sup>1</sup>, C. Guazzoni<sup>1</sup>, R. Hartmann<sup>2,3</sup>, M. Robbiati<sup>1</sup>, L. Strueder<sup>4,5</sup>

<sup>1</sup>Politecnico di Milano and INFN, Italy; <sup>2</sup>PNSensor GmbH, Germany; <sup>3</sup>Max-Planck-Institut, Germany; <sup>4</sup>Max-Planck-Institut fuer extraterrestrische Physik, Germany; <sup>5</sup>Universitat Siegen, Germany

### N03: Instrumentation for Homeland and National Security I

Monday, Nov. 1 13:30-15:30 Ballroom C

Session Chairs: Simon E. Labov, *Lawrence Livermore National Laboratory, USA*

Richard Vojtech, *Department of Homeland Security,*

#### N03-1 A New Modular Aerial Radiation Detection, Identification, and Mapping System

A. E. Proctor<sup>1</sup>, T. Hendricks<sup>2</sup>, F. W. Garber<sup>1</sup>, J. Manges<sup>1</sup>, S. Pauly<sup>1</sup>

<sup>1</sup>Nucsafe, Inc., USA; <sup>2</sup>NSTec, USA

#### N03-2 Evaluation of Spectrometric Personal Radiation Detectors (SPRDs)

R. Artl, *IAEA ret., Austria*; T. Brunclik, *Georadis, Czech Republic*; E. Bystrov, *Atomtex, Belarus*; A. Gueorguiev, *ICx Radiation, USA*; M. Neuer, *ICx Radiation, Germany*; F. Schulcz, *MGP Mirion, France*

#### N03-3 Source Estimation Using a System of Heterogeneous Radiation Detectors

B. Deb, F. Ross, M. J. Hartman

*General Electric Global Research Center, USA*

#### N03-4 High Count Rate Low Dead Time Digital Pulse Processing Utilising Real Time Pileup Recovery

P. A. B. Scoullar, C. C. McLean, *Southern Innovation,*

*Australia*; R. J. Evans, *The University of Melbourne, Australia*

#### N03-5 X-Ray Inspection System Based on Cerenkov Detector

S. Li, Y. Wang, K. Kang, Y. Li, J. Li

*Engineering Physics Department, Tsinghua University, China*

#### N03-6 A Range Muon Tomography Performance Study for the Detection of Explosives

L. Cuellar, K. N. Borozdin, A. J. Green, N. W. Hengartner, C. Morris, L. J. Schultz, K. Chung, N. P. Reimus, J. D. Bacon, W. Vogan-McNeil

*Los Alamos National Laboratory, USA*

#### N03-7 Non-Invasive Stationary Method for Determining the Three-Dimensional Density Distribution in an Inspected Object, Employing Modulation of Compton-Scattered Gammas

C. Jupiter, N. Kondic, *JUPITER Corporation, USA*

### N04: Scientific Computation and Computation: Simulation R&D

Monday, Nov. 1 13:30-15:30 Ballroom E

Session Chairs: Giovanna Lehmann Miotto, *CERN, Switzerland*

Douglas Wright, *Lawrence Livermore National Laboratory, USA*

#### N04-1 Implementation of Homeland Security Features in MCNP

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

*University of California at Berkeley, USA*; B. Sims, *Purdue University, USA*

#### N04-2 Inelastic Cross-Sections of Low-Energy Electrons in Silicon for the Simulation of Heavy Ion Tracks with the GEANT4-DNA Package.

A. Valentin, M. Raine, J.-E. Sauvestre, *CEA, France*

#### N04-3 Ionisation Models for Nano-Scale Simulation

M. G. Pia<sup>1</sup>, H. Seo<sup>2</sup>, C. H. Kim<sup>2</sup>, P. Saracco<sup>1</sup>

<sup>1</sup>INFN Genova, Italy; <sup>2</sup>Hanyang Univ., Korea

#### N04-4 Monte Carlo Simulation of Radiation Detector Energy Resolution Based on Electron Energy Loss and Optical Data

R. D. Narayan, P. Rez, *Arizona State University, US*

#### N04-5 Atomic Parameters for Monte Carlo Transport Simulation: Survey, Validation and Induced Systematic Effects

M. G. Pia<sup>1</sup>, H. Seo<sup>2</sup>, C. H. Kim<sup>2</sup>, L. Quintieri<sup>3</sup>, P. Saracco<sup>1</sup>

<sup>1</sup>INFN Genova, Italy; <sup>2</sup>Hanyang Univ., Korea; <sup>3</sup>INFN LNF, Italy

#### N04-6 Modern Nuclear Database Format and API for Monte Carlo Transport

B. R. Beck, D. M. Wright, *Lawrence Livermore National Laboratory, USA*; T. Koi, D. H. Wright, *SLAC National Accelerator Laboratory, 94025*

#### N04-7 Physics Data Management Tools for Monte Carlo Transport: Computational Evolutions and Benchmarks

M. G. Pia, *INFN Genova, Italy*; M. Han, C. H. Kim, H. Seo, *Hanyang Univ., Korea*; L. Moneta, *CERN, Switzerland*

### N05: Nuclear Measurements and Monitoring Techniques: Nonproliferation

Monday, Nov. 1 16:00-18:00 Ballroom A

Session Chairs: Peter E. Vanier, *Brookhaven National Laboratory, USA*  
Dean D. Mitchell, *Sandia National Laboratories, USA*

#### N05-1 Above Ground Antineutrino Detector for Reactor Safeguards

G. Keefer, A. Bernstein, N. Bowden, S. Dazeley, *Lawrence Livermore National Laboratory (LLNL), USA*; D. Reyna, J. Lund, B. Cabrera-Palmer, S. Kiff, *Sandia National Laboratory (SNL), USA*

#### N05-2 The Hunt for Coherent Neutrino-Nucleus Scattering with Ionization Argon Detectors

S. Sangiorgio<sup>1</sup>, A. Bernstein<sup>1</sup>, M. Foxe<sup>2</sup>, C. Hagemann<sup>1</sup>, T. Joshi<sup>3</sup>, I. Jovanovic<sup>2</sup>, K. Kazkaz<sup>1</sup>

<sup>1</sup>Lawrence Livermore National Laboratory, USA; <sup>2</sup>Purdue University, USA; <sup>3</sup>University of California - Berkeley, USA

#### N05-3 Measuring the Nuclear Quenching Factor in a Dual-Phase Argon Detector

M. Foxe<sup>1,2</sup>, A. Bernstein<sup>2</sup>, C. Hagemann<sup>2</sup>, T. Joshi<sup>3,2</sup>, I. Jovanovic<sup>1</sup>, K. Kazkaz<sup>2</sup>, S. Sangiorgio<sup>2</sup>

<sup>1</sup>Purdue University, USA; <sup>2</sup>Lawrence Livermore National Laboratory, USA; <sup>3</sup>University of California: Berkeley, USA

#### N05-4 Experimental Optimization of Low-Background Proportional Counter Measurements of Ar-37 for On-Site Inspection under the Comprehensive Nuclear-Test-Ban Treaty

A. Seifert, J. L. Orrell, C. E. Aalseth, A. R. Day, D. A. Haas, E. W. Hoppe, B. J. Hyronimus, M. E. Keillor, E. K. Mace, V. T. Woods

*Pacific Northwest National Laboratory, USA*

### N05-5 Operational Experience of CTBTO Radionuclide Monitoring Stations

R. Werzi, M. Auer, *CTBTO, Austria*

### N05-6 The Gamma-Ray Microcalorimeter as a Tool for Nuclear Safeguards Applications

N. Hoteling, A. S. Hoover, P. J. Karpus, D. T. Vo, M. W. Rabin, M. K. Bacrania, M. P. Croce, D. W. Lee, *Los Alamos National Lab, USA*; J. N. Ullom, D. A. Bennet, W. B. Doriese, R. D. Horansky, V. Kotsubo, *National Institute of Standards and Technology, USA*

### N05-7 Ultra-High Resolution Alpha Particle Spectrometry with Superconducting Transition-Edge Sensor Microcalorimeters

M. P. Croce, *Los Alamos National Laboratory, USA*

On behalf of the LANL/NIST/Star Cryoelectronics Microcalorimeter Collaboration

## N07: Neutron Detectors and Instrumentation I

Monday, Nov. 1 16:00-18:00 Ballroom B

Session Chairs: Graham C. Smith, *Brookhaven National Laboratory, USA*

Laurence F. Miller, *The University of Tennessee, USA*

### N07-1 Time-of-Flight Measurement Technique for Energy-Dependent Intrinsic Neutron Detection Efficiency

C. C. Lawrence, M. M. Flaska, S. D. Clarke, S. Pozzi, F. Becchetti, M. Ojaruega  
*University of Michigan, 48109*

### N07-2 Neutron Detector Optimization Through Characterization and Modeling

M. R. Williamson<sup>1,2</sup>, I. Sen<sup>2</sup>, A. D. Green<sup>2</sup>, D. Penumadu<sup>2</sup>, G. K. Schweitzer<sup>2</sup>, L. F. Miller<sup>2</sup>  
<sup>1</sup>*Y12 National Security Complex, United States*; <sup>2</sup>*University of Tennessee, United States*

### N07-3 Characterization of Cadmium Capture-Gated Detector for Nuclear Nonproliferation Applications

M. Flaska, S. D. Clarke, C. C. Lawrence, S. A. Pozzi, *University of Michigan, USA*; J. B. Czirr, L. B. Rees, *Brigham Young University, USA*

### N07-4 The Estimation of Neutron Energy Spectra of Nuclear Materials by Passive Measurements for Nuclear Nonproliferation Applications

J. L. Dolan, E. C. Miller, A. Enqvist, M. Flaska, S. A. Pozzi, *University of Michigan, United States*; P. Peerani, *European Commission EC-JRC-IPSC, Italy*

### N07-5 Design and Testing of a Lithium Doped Zinc Oxide Scintillator, a <sup>3</sup>He Tube Replacement

E. A. Burgett<sup>1</sup>, N. E. Hertel<sup>2</sup>, J. Nause<sup>3</sup>, C. J. Summers<sup>2</sup>, I. Ferguson<sup>4</sup>  
<sup>1</sup>*Idaho State University, USA*; <sup>2</sup>*Georgia Institute of Technology, USA*; <sup>3</sup>*Cermet Inc., USA*; <sup>4</sup>*University of North Carolina Charlotte, USA*

### N07-6 Evaluation of a Composite Stilbene for the Fast Neutron Detection

Y.-K. Kim, B.-H. Kang, S. K. Lee, *Hanyang University, south Korea*; N. Z. Galunov, *Institute for Scintillation Materials of National Academy of Science of Ukraine, Ukraine*; G. D. Kim, *Korea Institute of Geoscience and Mineral Resources, south Korea*

## N08: Analog and Digital Circuits I

Monday, Nov. 1 16:00-18:00 Ballroom C

Session Chairs: Gianluigi De Geronimo, *Brookhaven National Laboratory, USA*

Lorenzo Fabris, *Oak Ridge National Laboratory, USA*

### N08-1 A new readout method based on source-current readout for DEPFET-based imagers

L. Bombelli<sup>1,2</sup>, C. Fiorini<sup>1,2</sup>, A. Marone<sup>1,2</sup>, M. Laurenza<sup>1</sup>, M. Porro<sup>3,4</sup>, J. Treis<sup>4,5</sup>, S. Herrmann<sup>3,4</sup>, A. Wassatsch<sup>3,6</sup>  
<sup>1</sup>*Politecnico di Milano, Italy*; <sup>2</sup>*INFN, Italy*; <sup>3</sup>*Max-Planck-Institut für extraterrestrische Physik, Germany*; <sup>4</sup>*MPI Halbleiterlabor, Germany*; <sup>5</sup>*Max-Planck-Institute, Germany*; <sup>6</sup>*Max-Planck-Institut für Physik für Solar System Research, Germany*

### N08-2 Low-Noise CMOS Charge Pre-amplifier for X-Ray Spectroscopy Detectors

L. Bombelli<sup>1,2</sup>, C. Fiorini<sup>1,2</sup>, T. Frizzi<sup>3</sup>, R. Nava<sup>3</sup>, A. Greppi<sup>1</sup>  
<sup>1</sup>*Politecnico di Milano, Italy*; <sup>2</sup>*INFN, Italy*; <sup>3</sup>*XGLab s.r.l., Italy*

### N08-3 Charge Sensitive Pre-amplifier with a Wide Dynamic Range

M. Kurokawa<sup>1</sup>, H. Baba<sup>1</sup>, T. Morobayashi<sup>1</sup>, H. Murakami<sup>1</sup>, A. Taketani<sup>1</sup>, M. Tanaka<sup>2</sup>, Y. Togano<sup>1</sup>, K.-I. Yoneda<sup>1</sup>  
<sup>1</sup>*RIKEN, Nishina Center, Japan*; <sup>2</sup>*High Energy Accelerator Organization Institute of Particle and Nuclear Studies, Japan*

### N08-4 A New Concept of Analogue to Digital Converter with 16 Channels, 10 Bits Accuracy, 800 MHz Virtual Clock Frequency and Auto-Triggering Capability

F. Guilloux, E. Delagnes, F. Louis, E. Monmarthe, *CEA, France*; S. Russo, *Universita di Napoli Federico II, Italy*

### N08-5 A 5MHz Low-Noise 130nm CMOS Analog Front-End Electronics for the Readout of Non-Linear DEPFET Sensor with Signal Compression for the European XFEL

G. De Vita<sup>1,2</sup>, L. Bombelli<sup>3,4</sup>, M. Porro<sup>1,2</sup>, S. Facchinetti<sup>3</sup>, C. Fiorini<sup>3,4</sup>, S. Herrmann<sup>1,2</sup>, A. Wassatsch<sup>2,5</sup>, F. Erdinger<sup>6</sup>  
<sup>1</sup>*Max Planck Institut fuer extraterrestrische Physik, Germany*; <sup>2</sup>*MPI Halbleiterlabor, Germany*; <sup>3</sup>*Politecnico di Milano, Italy*; <sup>4</sup>*Istituto Nazionale di Fisica Nucleare, Italy*; <sup>5</sup>*Max Planck Institut fuer Physik, Germany*; <sup>6</sup>*Universitaet Heidelberg, Germany*

### N08-6 Data Acquisition System for Nearby Supernova Bursts at Super-Kamiokande

T. Yokozawa<sup>1</sup>, Y. Hayato<sup>1</sup>, M. Ikeno<sup>2</sup>, M. Nakahata<sup>1</sup>, S. Nakayama<sup>1</sup>, Y. Obayashi<sup>1</sup>, M. Shiozawa<sup>1</sup>, T. Uchida<sup>2</sup>, S. Yamada<sup>1</sup>  
<sup>1</sup>*Institute for Cosmic Ray Research, University of Tokyo, Japan*; <sup>2</sup>*KEK, High Energy Accelerator Research Organization., Japan*

### N08-7 Configurable Digital Multi-Channel Processing for Emulation and Elaboration of Radiation Events

A. Abba, A. Geraci, *Politecnico di Milano, Italy*

## N09: Scientific Simulation and Computation: Monte Carlo Modeling

Monday, Nov. 1 16:00-18:00 Ballroom E

Session Chairs: Marcia Begalli, *State University of Rio de Janeiro, Brazil*

Amber Boehnlein, *Fermilab, USA*

### N09-1 (invited) MCNPX Bug Award Program: How Much Quality Does \$946 Buy?

M. R. James, J. S. Hendricks  
*Los Alamos National Laboratory, USA*

**N09-2 Quantifying the Unknown**

M. G. Pia<sup>1</sup>, M. Begalli<sup>2</sup>, A. Lechner<sup>3</sup>, L. Quintieri<sup>4</sup>, P. Saracco<sup>1</sup>  
<sup>1</sup>INFN Genova, Italy; <sup>2</sup>UERJ, Brazil; <sup>3</sup>Technical Univ. Vienna, Austria;  
<sup>4</sup>INFN LNF, Italy

**N09-3 Validation of Geant4 Physics Models with LHC Collision Data**

S. Banerjee, FNAL, USA  
 On behalf of the CMS Collaboration

**N09-4 Data Quality and Production Verification for the Gauss Simulation Application of the LHCb Experiment**

M. Clemencic<sup>1</sup>, G. Corti<sup>1</sup>, H. Degaudenzi<sup>2</sup>, S. Easo<sup>3</sup>, G. Graziani<sup>4</sup>, K. Kruzelecki<sup>1</sup>, S. Miglioranza<sup>1</sup>, M. Needham<sup>2</sup>, P. Robbe<sup>5</sup>, V. Romanovsky<sup>6</sup>  
<sup>1</sup>CERN, Switzerland; <sup>2</sup>Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland; <sup>3</sup>STFC Rutherford Appleton Laboratory, United Kingdom; <sup>4</sup>INFN di Firenze, Italy; <sup>5</sup>LAL, Université Paris-Sud, CNRS/IN2P3, France; <sup>6</sup>Institute for High Energy Physics(IHEP), Russia

**N09-5 (invited) Validation of PTSIM for clinical usage**

T. Aso, Toyama National College of Technology, Japan; T. Yamashita, T. Akagi, Hyogo Ion Beam Medical Center, Japan; S. Kameoka, T. Nishio, National Cancer Center, Japan; K. Murakami, C. Omachi, T. Sasaki, K. Amako, High Energy Accelerator Research Organization, Japan; A. Kimura, Ashikaga Institute of Technology, Japan; H. Yoshida, Shikoku University, Japan; H. Kurashige, Kobe University, Japan; M. Kaburaki, Tokyo University, Japan

**N09-6 Developments in Quantitative MC Generator Tuning and Systematics**

A. Buckley, University of Edinburgh, UK  
 On behalf of the Rivet and Professor Collaborations

**N09-7 ATLAS Monte-Carlo Tunes to LHC Data**

C. Atlas, ATLAS collaboration, Switzerland  
 On behalf of the ATLAS Collaboration

**N10: Scintillators and Scintillation Detectors: posters**

Monday, Nov. 1 16:00-18:00 Exhibit Hall B  
 See listings in the NSS Poster section.

**RTSD Oral Presentations****R01: CdZnTe Detectors**

Monday, Nov. 1 13:30-15:15 301A & 301B  
 Session Chair: Michael Fiederle, Freiburger Materialforschungszentrum, Germany

**R01-1 (13:30, invited) The First Polaris CdZnTe Imaging Spectrometer Array System**

Z. He, F. Zhang, W. Kaye, Y. A. Boucher, Y. Zhu, C. Wahl  
 The University of Michigan, USA

**R01-2 (13:50, invited) Electron Transport and Charge Induction in CdZnTe Detectors with Space Charge Build up under X-Ray Irradiation**

D. S. Bale, C. Szeles  
 Endicott Interconnect Detection and Imaging Systems, USA

**R01-3 (14:10) Organic Single Crystals for Direct Detection of X-Rays, Neutrons and Alpha Particles**

B. Fraboni, L. Pasquini, A. Cavallini, University of Bologna, Italy; A. Fraleoni-Morgera, Sincrotrone ScpA, Italy

**R01-4 (14:25) A Floating Temperature Semiconductor Radiation Detector**

G. Bertuccio<sup>1,2</sup>, D. Puglisi<sup>1,2</sup>, D. Macera<sup>1,2</sup>, S. Caccia<sup>1,2</sup>  
<sup>1</sup>Politecnico di Milano - Polo regionale di Como, Italy; <sup>2</sup>INFN-sez. Milano, Italy

**R01-5 (14:40) Growth of Cd(Te,Se) Detectorgrade Material**

M. Fiederle, A. Fauler, A. Zwerger, Freiburger Materialforschungszentrum, Germany; M. Sowinska, P. Siffert, Eurorad, France

**R01-6 (14:55, invited) Performance of CZT Wafers Grown by Vapour Phase Transport**

P. J. Sellin, G. Prekas, A. Lohstroh, M. E. Ozsan, P. Veeramani, University of Surrey, UK; P. Seller, M. Veale, STFC Rutherford Appleton Laboratory, UK; A. Choubey, A. W. Brinkman, University of Durham, UK; A. T. G. Pym, J. T. Mullins, I. Radley, Kromek, UK

**R02: Defects in CdZnTe**

Monday, Nov. 1 16:00-17:30 301A & 301B  
 Session Chair: Anna Cavallini, Department of Physics University of Bologna, Italy

**R02-1 (16:00) Study of the Internal E-Field in Planar and Pixellated CdZnTe Detectors**

G. S. Camarda<sup>1</sup>, A. E. Bolotnikov<sup>1</sup>, Y. Cui<sup>1</sup>, R. Gul<sup>1</sup>, A. Hossain<sup>1</sup>, K. Kim<sup>1</sup>, L. Marchini<sup>2</sup>, L. Xu<sup>3</sup>, G. Yang<sup>1</sup>, R. B. James<sup>1</sup>  
<sup>1</sup>Brookhaven National Lab, USA; <sup>2</sup>IMEM-CNR, Italy; <sup>3</sup>Northwestern Polytechnic University, China

**R02-2 (16:15) An Analysis of Zinc Distribution During the EDG Growth of Cadmium Zinc Telluride**

J. J. Derby, N. Zhang, A. Yeckel  
 University of Minnesota, U.S.A.

**R02-3 (16:30) Low-Signature CZT Defect Inspection by IR, Ultrasound, Etch Pit Density, and X-Ray Topography**

K. Andreini, J. E. Tkaczyk, T. Zhang, Y. Z. Williams, C. Nafis, G. Abramovich, K. Harding, P. J. Bednarczyk, General Electric Research, USA; H. Chen, G. Bindley, J. McKenzie, Redlen



*Technologies, Canada; B. Ragothomachar, M. Dudley, Stony Brook University, USA*

**R02-4 (16:45) Fluctuations in Induced Charge Introduced by Te Inclusions Within CdZnTe Radiation Detectors**

D. S. Bale

*Endicott Interconnect Detection and Imaging Systems, USA*

**R02-5 (17:00) Crystal Defects and Charge Collection in CZT X-Ray and Gamma Detectors**

L. Marchini<sup>1,2</sup>, A. Zappettini<sup>1</sup>, M. Zha<sup>1</sup>, N. Zambelli<sup>1</sup>,

A. E. Bolotnikov<sup>2</sup>, G. Camarda<sup>2</sup>, R. B. James<sup>2</sup>

<sup>1</sup>IMEM - CNR, Italy; <sup>2</sup>Brookhaven National Laboratory, USA

**R02-6 (17:15) Polarization Study of Defect Structure of CdTe Radiation Detectors**

R. Grill, E. Belas, J. Franc, M. Bugar, S. Uxa, P. Moravec, P. Hoschl

*Charles University, Institute of Physics, Czech Republic*

**NSS Poster Presentations**

**N10: Scintillators and Scintillation Detectors: posters**

Monday, Nov. 1 16:00-18:00 Exhibit Hall B

Session Chairs: Edgar V. Van Loef, *Radiation Monitoring Devices, Inc., USA*

Gregory A. Bizarri, *LBNL - Berkeley, USA*

**N10-1 Synthesis and Characterization of Scintillating Gd<sub>2</sub>SiO<sub>5</sub>:Ce Nanoparticles**

J. Choi, T.-K. Tseng, M. Davidson, P. H. Holloway

*University of Florida, USA*

**N10-4 Systematic Measurements of the Photon Detection Efficiency for Geiger-Mode Avalanche Photodiodes (G-APD)**

S. Gentile, F. Meddi, *University of Rome, Italy*; E. Kutznetsova,

*DESY, Germany*

**N10-7 Probabilistic Characterization of Solid State Photomultipliers Based on Transit Time Histograms**

S. Vinogradov<sup>1,2</sup>, T. Vinogradova<sup>1</sup>, V. Shubin<sup>1,2</sup>, D. Shushakov<sup>1,2</sup>,

C. Sitarsky<sup>1,2</sup>

<sup>1</sup>Amplification Technologies, USA; <sup>2</sup>Lebedev Physical Institute of the Russian Academy of Sciences, Russia

**N10-10 Comparative Study on Scintillation Properties of LuGG, YGG and GGG**

A. Yamaji, T. Yanagida, Y. Yokota, Y. Fujimoto, M. Sugiyama,

A. Yoshikawa

*Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, JAPAN*

**N10-13 Evaluations of Scintillation Properties of LiSrAlF<sub>6</sub> Scintillator for Thermal Neutron Detection**

T. Yanagida<sup>1</sup>, N. Kawaguchi<sup>2</sup>, Y. Fujimoto<sup>1</sup>, Y. Yokota<sup>1</sup>, A. Yamazaki<sup>3</sup>, K. Watanabe<sup>3</sup>, K. Kamada<sup>1</sup>, A. Yoshikawa<sup>1</sup>

<sup>1</sup>Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan; <sup>2</sup>Tokuyama Cooperation, Japan; <sup>3</sup>Nagoya University, Japan

**N10-16 Development of Pulsed X-Ray Tube Equipped Streak Camera System to Study Scintillation Phenomenon**

T. Yanagida<sup>1</sup>, Y. Fujimoto<sup>1</sup>, Y. Yokota<sup>1</sup>, N. Kawaguchi<sup>2</sup>, K. Kamada<sup>1</sup>,

J. Pejchal<sup>1,3</sup>, V. Chani<sup>1</sup>, K. Fukuda<sup>2</sup>, D. Totsuka<sup>4</sup>, K. Uchiyama<sup>5</sup>,

K. Mori<sup>5</sup>, K. Kitano<sup>6</sup>, M. Nikl<sup>7</sup>, A. Yoshikawa<sup>1,3</sup>

<sup>1</sup>Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan; <sup>2</sup>Tokuyama Corporation, Japan; <sup>3</sup>Institute of Physics, Czech Republic; <sup>4</sup>Nihon Kessho Kogaku, Japan; <sup>5</sup>Hamamatsu Photonics Cooperation, Japan; <sup>6</sup>Vacuum and Optical Instruments, Japan; <sup>7</sup>Tohoku University, Japan

**N10-19 Evaluations of ZnO Based Alpha-Ray Imager**

T. Yanagida<sup>1</sup>, N. Kawaguchi<sup>1</sup>, Y. Fujimoto<sup>1</sup>, Y. Yokota<sup>1</sup>,

M. Miyamoto<sup>2</sup>, H. Sekiwa<sup>2</sup>, J. Kobayashi<sup>2</sup>, T. Tokutake<sup>2</sup>,

A. Yoshikawa<sup>1,3</sup>

<sup>1</sup>Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan; <sup>2</sup>Mitsubishi Gas Chemical, Japan; <sup>3</sup>Tohoku University, Japan

**N10-22 Scintillation Properties of Ce<sup>3+</sup>-doped, Pr<sup>3+</sup>-doped Calcium Orthoborate**

Y. Fujimoto<sup>1,2</sup>, T. Yanagida<sup>1</sup>, Y. Yokota<sup>1</sup>, N. Kawaguchi<sup>3</sup>, K. Fukuda<sup>1,3</sup>,

D. Totsuka<sup>4</sup>, K. Watanabe<sup>5</sup>, A. Yamazaki<sup>5</sup>, A. Yoshikawa<sup>1,6</sup>



<sup>1</sup>IMRAM, Tohoku University, Japan; <sup>2</sup>JSPS, Japan; <sup>3</sup>TOKUYAMA Corp, Japan; <sup>4</sup>NIHON KESSHO KOGAKU CO.,LTD, Japan; <sup>5</sup>Nagoya University, Japan; <sup>6</sup>NICHe, Tohoku University, Japan

#### **N10-25 Optical and Scintillation Properties of Lutetium Vanadate single crystal**

Y. Fujimoto<sup>1,2</sup>, T. Yanagida<sup>1</sup>, Y. Yokota<sup>1</sup>, V. V. Kochurikhin<sup>3</sup>, A. Yoshikawa<sup>1,4</sup>

<sup>1</sup>IMRAM, Tohoku University, Japan; <sup>2</sup>JSPS, Japan; <sup>3</sup>General Physics Institute, Russian; <sup>4</sup>NICHe, Tohoku University, Japan

#### **N10-28 Position Sensitivity in 3 x 3 LaBr3:Ce scintillators**

F. Camera<sup>1,2</sup>, F. Birocchi<sup>1,2</sup>

<sup>1</sup>University of Milano, Italy; <sup>2</sup>Istituto Nazionale di Fisica Nucleare, Italy

#### **N10-31 In Beam Test of Large Volume LaBr3:Ce Scintillators with 15.1 MeV Gamma-Rays**

F. Camera<sup>1,2</sup>, A. Camplani<sup>1,2</sup>

<sup>1</sup>University of Milano and INFN, Italy; <sup>2</sup>Istituto Nazionale di Fisica Nucleare, Italy

#### **N10-34 Crystal Growth and Scintillation Properties of Nd-Doped Lu<sub>3</sub>Al<sub>5</sub>O<sub>12</sub> Single Crystals**

M. Sugiyama<sup>1</sup>, Y. Fujimoto<sup>1</sup>, T. Yanagida<sup>1</sup>, Y. Yokota<sup>1</sup>, A. Yoshikawa<sup>1,2</sup>

<sup>1</sup>Tohoku university, Japan; <sup>2</sup>New Industry Creation Hatchery Center, Japan

#### **N10-37 Single Electron Response and Gain Calibration of Photomultiplier Tubes**

J. T. M. de Haas, P. Dorenbos

Delft University of Technology, The Netherlands

#### **N10-40 Micro-Raman Mapping of SrI3- Anion in SrI2:Eu Scintillator Crystals**

Y. Cui, E. Tupitsyn, R. Hawrami, P. Bhattacharya, M. Groza, V. Buliga, I. Nieves, A. Burger, Fisk University, USA; N. J. Cherepy, S. A. Payne, Lawrence Livermore National Laboratory, USA

#### **N10-43 Temperature and Bias Voltage Dependence of the MPPC Detectors**

N. Dinu, C. Bazin, V. Chaumat, C. Cheikali, V. Puill, C. Sylvia, J.-F. Vagnucci

LAL/IN2P3/CNRS, France

#### **N10-46 Thin Film Combinatorial Exploration of Scintillation Materials**

J. D. Peak<sup>1,2</sup>, C. L. Melcher<sup>1,2</sup>, P. D. Rack<sup>1,2</sup>

<sup>1</sup>University of Tennessee, USA; <sup>2</sup>Scintillation Materials Research Center, USA

#### **N10-49 A Cryogenic Pulse Height Spectrometer for Non-Proportionality Studies in BGO and Ce:YAG**

S. Lam, R. M. Gaume, R. S. Feigelson, Stanford University, USA; W. Setyawan, S. Curtarolo, Duke University, USA

#### **N10-52 Crystal Growth and Scintillation Properties of Ce Doped KLu<sub>2</sub>F<sub>7</sub> Single Crystal**

H. Tanaka, Y. Furuya, Y. Yokota, T. Yanagida, A. Yoshikawa, Y. Kawazoe

Tohoku University, Japan

#### **N10-55 Re-Emission Studies of NOvA Experiment Detector Scintillator**

P. J. Mason, University of Tennessee, USA

On behalf of the University of Tennessee

#### **N10-58 Evaluation of the Response Properties of the NOvA Liquid Scintillator Using a Compton Spectrometer**

E. L. Flumerfelt, The University of Tennessee, USA

#### **N10-61 Study of Non-Linearity of Double Chooz Liquid Scintillator Response**

A. R. Osborn, The University of Tennessee, United States

#### **N10-64 Light Emission by Relativistic Particles in Pure Mineral Oil.**

Y. Efremenko, A. Hatzikoutelis, Y. Kamyshkov, University of Tennessee Knoxville, usa; I. Stancu, University of Alabama, usa

#### **N10-67 Effects of Charge Compensation by Na<sup>+</sup> Co-Doping for Ce<sup>3+</sup> Doped LiCaAlF<sub>6</sub> Single Crystals**

Y. Yokota<sup>1</sup>, T. Yanagida<sup>1</sup>, N. Kawaguchi<sup>1,2</sup>, K. Fukuda<sup>1,2</sup>, A. Yoshikawa<sup>1,3</sup>, M. Nikl<sup>4</sup>

<sup>1</sup>Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan; <sup>2</sup>Tokuyama, Japan; <sup>3</sup>Corporation New Industry Creation Hatchery Center (NICHe), Tohoku University, Japan; <sup>4</sup>Institute of Physics, the Academy of Sciences of the Czech Republic, Czech Republic

#### **N10-70 Co-Precipitation Synthesis of Nanocrystalline Gd<sub>2</sub>O<sub>3</sub>(Eu) Scintillators and Their Imaging Characterization for Indirect X-Ray Imaging Detector Applications**

B. K. Cha<sup>1</sup>, J. Y. Kim<sup>2</sup>, G. Cho<sup>2</sup>, S. Jeon<sup>1</sup>, Y. Huh<sup>1</sup>

<sup>1</sup>KERI(Korea Electrotechnology Research Institute), South Korea;

<sup>2</sup>KAIST(Korea Advanced Institute of Science and Technology), South Korea

#### **N10-73 Crystal Growth and Scintillation Properties of Ce Doped Lithium Potassium Yttrium Complex Fluoride**

Y. Furuya<sup>1</sup>, H. Tanaka<sup>1</sup>, Y. Fujimoto<sup>1</sup>, N. Kawaguchi<sup>1,2</sup>, Y. Yokota<sup>1</sup>, T. Yanagida<sup>1</sup>, A. Yamazaki<sup>3</sup>, K. Watanabe<sup>3</sup>, A. Yoshikawa<sup>1,4</sup>

<sup>1</sup>Tohoku University, Japan; <sup>2</sup>Tokuyama Co. Ltd., Japan; <sup>3</sup>Nagoya University, Japan; <sup>4</sup>New Industry Creation Hatchery Center, Japan

#### **N10-76 Dopant Segregation in Transparent Optical Ceramics**

A. Yoshikawa<sup>1,2</sup>, V. I. Chani<sup>1</sup>, T. Yanagida<sup>1</sup>, Y. Yokota<sup>1</sup>, G. Boulon<sup>1,3</sup>

<sup>1</sup>IMRAM, Tohoku University, Japan; <sup>2</sup>NICHe, Tohoku University, Japan;

<sup>3</sup>LPCML, CB Lyon 1 University, France

#### **N10-79 Emission Properties of Lu<sub>2</sub>xGd<sub>2</sub>(1-x)SiO<sub>5</sub> (LGSO, X=0.9) with Pr and Ce Activators**

Y. Kurata, T. Usui, S. Shimizu, N. Shimura, H. Ishibashi Hitachi Chemical Co., Ltd. Yamazaki Works(Katsuta), Japan

#### **N10-82 Characterization of a Small Probe Scintillator Gamma-Detection System Using Silicon Photomultipliers**

P. Avella<sup>1</sup>, A. De Santo<sup>2</sup>, A. Lohstroh<sup>1</sup>, P. J. Sellin<sup>1</sup>

<sup>1</sup>University of Surrey, UK; <sup>2</sup>University of Sussex, UK

#### **N10-85 CaF<sub>2</sub>(Eu): an "Old" Scintillator Revisited**

C. Plettner, G. Pausch, F. Scherwinski, C. Herbach, R. Lentering, Y. Kong, K. Roemer, J. Stein, ICx Technologies GmbH,

Germany; T. Szczesniak, M. Grodzicka, J. Iwanowska, M. Moszynski, Soltan Institute for Nuclear Studies, Poland

#### **N10-88 Application Oriented Development of Multi-Pixel Photon Counter (MPPC)**

K. Sato, K. Yamamoto, K. Yamamura, S. Kamakura, S. Ohsuka Hamamatsu Photonics K.K., Japan

#### **N10-91 A Novel Timing Model for SiPM-Based Scintillation Detectors: Theory and Experimental Validation**

S. Seifert<sup>1</sup>, H. T. van Dam<sup>1</sup>, R. Vinke<sup>2</sup>, H. Loehner<sup>2</sup>, P. Dendooven<sup>2</sup>, F. J. Beekman<sup>1,3</sup>, D. R. Schaart<sup>1</sup>

<sup>1</sup>Delft University of Technology, The Netherlands; <sup>2</sup>Kernfysisch Versneller Instituut (KVI), The Netherlands; <sup>3</sup>University Medical Centre Utrecht, The Netherlands

**N10-94 The Characterization of Eu<sup>2+</sup>-Doped Mixed Alkaline-Earth Iodide Scintillator Crystals**

J. S. Neal<sup>1</sup>, L. A. Boatner<sup>1</sup>, J. O. Ramey<sup>1</sup>, D. Wisniewski<sup>2</sup>, J. A. Kolopus<sup>1</sup>, N. J. Cherepy<sup>3</sup>, S. A. Payne<sup>3</sup>  
<sup>1</sup>Oak Ridge National Laboratory, USA; <sup>2</sup>Nicolaus Copernicus University, Poland; <sup>3</sup>Lawrence Livermore National Laboratory, USA

**N10-97 Quantum Dot Organic Polymer Composite Materials for X-Ray Detection and Imaging**

W. G. Lawrence, S. Thacker, S. Palamakumbura, V. V. Nagarkar  
 Radiation Monitoring Devices, USA

**N10-100 Site Selective Energy Trapping in the Lu<sub>2</sub>O<sub>3</sub>:Tb,Hf Storage Phosphor**

D. M. Kulesza, E. Zych, University of Wrocław, Poland

**N10-103 TCAD Simulation of Avalanche Breakdown Voltage in GM-APDs**

N. Serra, G. Giacomini, M. Melchiorri, C. Piemonte, A. Tarolli, A. Piazza, N. Zorzi  
 FBK-IRST, Italy

**N10-106 Novel Silicon Photomultiplier (SiPM) Detector Arrays**

T. Gandhi, N. E. Hartsough, J. S. Iwanczyk, W. C. Barber  
 DxrRay, Inc., USA

**N10-109 Temperature Response and Thermoluminescence of SrI<sub>2</sub>:Eu<sup>2+</sup> Single Crystals**

K. Yang<sup>1</sup>, M. Zhuravleva<sup>1</sup>, P. Szupryczynski<sup>1,2</sup>, C. L. Melcher<sup>1</sup>  
<sup>1</sup>University of Tennessee, USA; <sup>2</sup>Siemens Medical Solutions, USA

**N10-112 Evaluation of Some Essential Silicon Photomultiplier Parameters**

M. Shayduk<sup>1</sup>, M. Kurz<sup>1</sup>, R. Mirzoyan<sup>1</sup>, H. Miyamoto<sup>1</sup>, B. Dolgoshein<sup>2</sup>, R. Kosyra<sup>1</sup>, T. Schweizer<sup>1</sup>, M. Teshima<sup>1</sup>  
<sup>1</sup>Max-Planck-Institute fuer Physik, Germany; <sup>2</sup>MEPhI, Russia

**N10-115 Pulse Shape Results of LaBr<sub>3</sub> and BaF<sub>2</sub> Scintillator Obtained with a 16 Ch. Fast Analog Stretcher Module**

C. Boiano<sup>1</sup>, F. Camera<sup>1,2</sup>, S. Riboldi<sup>1,2</sup>, A. Giaz<sup>1,2</sup>  
<sup>1</sup>INFN, Italy; <sup>2</sup>University of Milano, Italy

**N10-118 Gamma Detection with (Gd,Y)<sub>3</sub>(Ga,Al)<sub>5</sub>O<sub>12</sub>:Ce Ceramic Scintillator**

J. Glodo<sup>1</sup>, R. Farrell<sup>1</sup>, U. Shirwadkar<sup>1</sup>, Y. Wang<sup>1</sup>, S. A. Payne<sup>2</sup>, N. J. Cherepy<sup>2</sup>, K. S. Shah<sup>1</sup>  
<sup>1</sup>Radiation Monitoring Devices, Inc., USA; <sup>2</sup>Lawrence Livermore National Laboratory, USA

**N10-121 Spectroscopy of Alkaline Earth Halides**

J. Glodo, E. V. D. van Loef, R. Hawrami, K. S. Shah  
 Radiation Monitoring Devices, Inc., USA

**N10-124 Structural and Spectroscopic Investigation of Ti-Doped La<sub>2</sub>Hf<sub>2</sub>O<sub>7</sub>**

J. Trojan-Piegza, E. Zych, A. Pastusiak  
 Wrocław University, Poland

**N10-127 A Theoretical Study of the Relative Importance of Chemical and Geometric Effects for Ce-Based Scintillation in La and Y Aluminum Perovskites**

R. Boutchko, A. Canning, A. Chaudhry, S. E. Derenzo  
 Lawrence Berkeley National Lab, USA

**N10-130 Performance Specifications for Large-Area CMOS SSPM Devices**

C. J. Stapels, X. J. Chen, E. B. Johnson, J. F. Christian  
 Radiation Monitoring Devices, USA

**N10-133 Large-Scale Study of Band Gaps from Diffuse Reflectivity Measurements**

O. Firouz, E. D. Bourret-Courchesne, S. E. Derenzo, G. A. Bizarri  
 Lawrence Berkeley National Laboratory, USA

**N10-136 Radiation Hardness Test of Pr:LuAG and BSO Scintillators.**

K. Miyabayashi, T. Iwashita, Nara Women's University, Japan

**N10-139 Scintillation Characterization of LGBO:Ce Neutron Detection Crystals**

G. Ren, F. Yang, D. Ding, S. Pan  
 Shanghai Institute of Ceramics, China

**N10-142 Time-of-Flight measurements with Cherenkov Photons Produced by 511 keV Photons in PbF<sub>2</sub> Crystal**

R. Dolenc<sup>1</sup>, S. Korpar<sup>1,2</sup>, P. Krizan<sup>1,3</sup>, R. Pestotnik<sup>1,3</sup>, A. Stanovnik<sup>1,3</sup>, R. Verheyden<sup>1</sup>  
<sup>1</sup>J. Stefan Institute, Slovenia; <sup>2</sup>University of Maribor, Slovenia; <sup>3</sup>University of Ljubljana, Slovenia

**N10-145 Changes in the Material Properties of Exotic Triboluminescent Materials Caused by Proton and Gamma Irradiation**

W. A. Hollerman, S. M. Goedeke, R. S. Fontenot  
 University of Louisiana at Lafayette, USA

**N10-148 Excitation of Ce<sup>3+</sup> and Pr<sup>3+</sup> Activator Centers at Recombination Processes in Yttrium-Aluminum Garnet Crystals**

A. K. Islamov, E. M. Ibragimova, I. Nuritdinov, B. S. Fayzullaev, Z. U. Esanov, O. Y. Polyak  
 Institute of Nuclear Physics Academy of Sciences of Uzbekistan, Uzbekistan

**N10-151 Characterisation of CsI(Tl) Crystals with Double LAAPD for the R3B Calorimeter Barrel**

M. Gascon, H. Alvarez-Pol, J. Benlliure, D. Gonzalez, D. Cortina, I. Duran  
 University of Santiago de Compostela, Spain

**N10-154 Non-Proportionality of Electron Response and Energy Resolution of Compton Electrons in Scintillators**

L. Swiderski, M. Moszynski, W. Czarnacki, M. Szawlowski, T. Szczesniak, R. Marcinkowski, A. Syntfeld-Kazuch, Soltan Institute for Nuclear Studies, Poland; G. Pausch, C. Plettner, K. Roemer, ICx Technologies, Germany

Tue. Nov. 2	07:30	08:00	08:30	09:00	09:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30
Ballroom A			N11: Radiation Imaging Detectors I					N15: Laser Processing of Silicon Detectors						N20: Scintillation: Fundamental mechanisms						N24: Nuclear Measurements and Monitoring Techniques: Neutron Detection							
Ballroom B			NM1: NSS+MIC I - Silicon-Based Photodetectors					NM2: NSS+MIC II - Particle Beam Therapy						NM3: NSS+MIC III - New Technologies & Medical Devices						NMR: NSS+MIC-RTSD - Semiconductor-Based Imaging Systems							
Ballroom C																											
Ballroom E			N12: Software Developments					N16: Analog and Digital Circuits II						N21: Radiation Damage Effects: Semiconductor Devices						N25: Scientific Simulation and Computation: HEP Simulation							
Ballroom F			N13: Synchrotron Radiation and FEL Instrumentation					N17: HEP & NP: RICH and TOF Detectors						N22: Trigger and Front-End Systems I						N26: Astrophysics and Space Instrumentation II							
Ballroom G																											
Room 301A								R04: CoZnTe: Detectors and Applications																			
Room 301B							R03: Characterization of CZT I																				
Room 301D																											
Room 301E																											

Tue. Nov. 2	07:30	08:00	08:30	09:00	09:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30
Lecture Hall																											
Room 200A																											
Room 200B																											
Room 200C																											
Room 200D																											
Room 200E																											
Exhibit Hall B			N14: Astrophysics and Space Instrumentation					N18: Nuclear Measurements and Monitoring Techniques						R05: RTSD Poster I							N27: Synchrotron Radiation and FEL Instrumentation						
							N19: Instrumentation for Homeland and National Security														N28: Trigger and Front-End Systems						
																					N29: HEP & NP Instrumentation						
Off-Site Events																										Exhibit Reception	

## NSS Oral Presentations

## N11: Radiation Imaging Detectors I

Tuesday, Nov. 2 08:00-10:00 Ballroom A

Session Chairs: Paul A. Hausladen, *Oak Ridge National Laboratory, USA*Peter E. Vanier, *Brookhaven National Laboratory, USA***N11-1 Performance and Further Development of the Neutron Time Projection Chamber**G. P. Carosi, N. S. Bowden, M. Heffner, D. Carter, *Lawrence Livermore National Laboratory, USA*; P. O'Malley, *Rutgers University, USA*; M. Foxe, J. Mintz, I. Jovanovic, *Purdue University, USA***N11-2 Performance of a Neutron Imaging Detector Based on the  $\mu$ PIC Micro-Pixel Gaseous Chamber**J. D. Parker<sup>1</sup>, K. Hattori<sup>1</sup>, S. Iwaki<sup>1</sup>, S. Kabuki<sup>1</sup>, Y. Kishimoto<sup>1</sup>, H. Kubo<sup>1</sup>, S. Kurosawa<sup>1</sup>, K. Miuchi<sup>1</sup>, H. Nishimura<sup>1</sup>, T. Oku<sup>2</sup>, T. Sawano<sup>1</sup>, J.-I. Suzuki<sup>2</sup>, T. Tanimori<sup>1</sup>, K. Ueno<sup>1</sup>  
<sup>1</sup>Kyoto University, Japan; <sup>2</sup>Japan Atomic Energy Agency, Japan**N11-3 Neutron Imaging Camera**S. D. Hunter, G. A. DeNolfo, M. P. Dion, S. Son, *NASA/Goddard Space Flight Center, USA*; N. A. Guardala, *NSWC/Carderock, USA***N11-4 Fast Neutron Tracker Based on 3D Position Sensitive Semiconductor Voxel Detector**J. Jakubek<sup>1</sup>, J. Uher<sup>2</sup>, P. Soukup<sup>1</sup>  
<sup>1</sup>Institute of Experimental and Applied Physics of the Czech Technical University, Czech Republic; <sup>2</sup>CSIRO Process Science and Engineering, Australia**N11-5 The MIMOTERA: a Monolithic Pixel Detector for Real Time Beam Imaging and Proflometry**M. L. Caccia, *Universita' dell'Insubria, Italy*; M. Jastrzab, *AGH - University of Science and Technology, Poland*; A. Bulgheroni, *JRC - Joint Research center of the EC commission, Italy*; G. Deptuch, *FermiLAB, USA*; W. Dulinski, *IPHC/CNRS, France***N11-6 Imaging Mass Spectroscopy with Fast Silicon Pixel Detectors**A. Nomerotski, *University of Oxford, United Kingdom*

On behalf of the PImMS collaboration

## NM1: NSS/MIC Joint Session I - Silicon-Based Photodetectors

Tuesday, Nov. 2 08:00-10:00 Ballroom B&amp;C

Session Chairs: Jose M. Perez, *CIEMAT, Spain*Roger Lecomte, *Université de Sherbrooke, Canada***NM1-1 Development of a Si-PM Based High Resolution DOI-PET System for Small Animals**S. Yamamoto, *Kobe City College of Technology, Japan*; M. Imaizumi, T. Watabe, H. Watabe, Y. Kanai, E. Shimosegawa, J. Hatazawa, *Osaka University Graduate School of Medicine, Japan***NM1-2 Energy Resolution of Scintillation Detectors with SiPM Light Readout**M. Grodzicka<sup>1</sup>, M. Moszynski<sup>1</sup>, T. Szczesniak<sup>1</sup>, M. Kapusta<sup>2</sup>, M. Szawlowski<sup>1</sup>, D. Wolski<sup>1</sup><sup>1</sup>Soltan Institute for Nuclear Studies, Poland; <sup>2</sup>ICx Technologies GmbH, Germany**NM1-3 A 4D-PET Block Detector Based on Silicon****Photomultipliers**S. Marcatili<sup>1,2</sup>, N. Belcari<sup>1</sup>, M. G. Bisogni<sup>1,2</sup>, G. Collazuol<sup>2</sup>, G. Sportelli<sup>3</sup>, A. Santos<sup>3</sup>, E. Pedreschi<sup>2</sup>, F. Spinella<sup>2</sup>, A. Del Guerra<sup>1,2</sup>  
<sup>1</sup>University of Pisa, Italy; <sup>2</sup>INFN, Italy; <sup>3</sup>BIT, Spain**NM1-4 Arrays of Digital Silicon Photomultipliers - Intrinsic Performance and Application to Scintillator Readout**T. Frach, C. Deegenhardt, B. Zwaans, R. de Gruyter, A. Schmitz, R. Ballizany  
*Philips Digital Photon Counting, Germany***NM1-5 Design and Initial Evaluations of a round Compact Hand-Held Gamma Imager Based on SiPM Technology**S. Majewski<sup>1</sup>, J. Proffitt<sup>2</sup>, J. McKisson<sup>3</sup>, B. Kross<sup>3</sup>, P. Martone<sup>1</sup>, A. Stolin<sup>1</sup>, A. Weisenberger<sup>3</sup>, P. Judy<sup>4</sup>, Z. Gong<sup>4</sup>, K. Popovic<sup>4</sup>, M. Williams<sup>4</sup>  
<sup>1</sup>West Virginia University, USA; <sup>2</sup>Adaptive I/O Technologies, USA; <sup>3</sup>Thomas Jefferson National Accelerator Facility, USA; <sup>4</sup>University of Virginia, USA**NM1-6 The HICAM Gamma Camera**R. Peloso<sup>1,2</sup>, P. Busca<sup>1,2</sup>, C. Fiorini<sup>1,2</sup>, A. Abba<sup>1,2</sup>, A. Geraci<sup>1,2</sup>, A. Manenti<sup>1,2</sup>, C. Bianchi<sup>3</sup>, G. L. Poli<sup>3</sup>, B. F. Hutton<sup>4</sup>, K. Erlandsson<sup>4</sup>, P. Lechner<sup>5</sup>, H. Soltan<sup>5</sup>, L. Strueder<sup>6</sup>, A. Pedretti<sup>7</sup>, P. Van Mullekom<sup>8</sup>  
<sup>1</sup>Politecnico di Milano, Italy; <sup>2</sup>INFN, Italy; <sup>3</sup>Ospedali Riuniti di Bergamo, Italy; <sup>4</sup>University College London, UK; <sup>5</sup>pnSensor GmbH, Germany; <sup>6</sup>Max Planck Institut, Germany; <sup>7</sup>Laccessorio Nucleare S.R.L. LACN, Italy; <sup>8</sup>Nuclear Fields Holland, Netherlands**NM1-7 SiPM on the Way of Becoming an Ideal Light Sensor**R. Mirzoyan<sup>1</sup>, P. Buzhan<sup>2</sup>, B. Dolgoshin<sup>2</sup>, V. Kaplin<sup>2</sup>, E. Popova<sup>2</sup>, M. Teshima<sup>1</sup>  
<sup>1</sup>Max-Planck-Institute for Physics, Germany; <sup>2</sup>Moscow Engineering and Physics Institute, Russia

## N12: Scientific Simulation and Computation: Software Developments

Tuesday, Nov. 2 08:00-10:00 Ballroom E

Session Chairs: Gloria Corti, *CERN*,Sunanda Banerjee, *FNAL, USA***N12-1 Design and Testing of the Geant4 Interface to a New Nuclear Database Format and API**T. Koi, D. H. Wright, *SLAC National Accelerator Laboratory, USA*; B. Beck, D. M. Wright, *Lawrence Livermore National Laboratory, USA***N12-2 New Physics Data Libraries for Monte Carlo Transport**M. G. Pia<sup>1</sup>, L. Quintieri<sup>2</sup>, M. Augelli<sup>3</sup>, S. Hauf<sup>4</sup>, M. Kuster<sup>5</sup>, M. Han<sup>6</sup>, C. H. Kim<sup>6</sup>, H. Seo<sup>6</sup>, P. Saracco<sup>1</sup>  
<sup>1</sup>INFN Genova, Italy; <sup>2</sup>INFN LNF, Italy; <sup>3</sup>CNES, France; <sup>4</sup>Tech. Univ. Darmstadt, Germany; <sup>5</sup>XFEL GmbH, Germany; <sup>6</sup>Hanyang Univ., Korea**N12-3 Fast Computation of Alignment and Calibration Constants in the CMS Experiment**A. Mussgiller, *DESY, Germany*  
On behalf of the CMS Collaboration**N12-4 The ATLAS Fast Track Simulation Project (FATRAS)**E. Lancon, *CEA-Saclay/IRFU, France*  
On behalf of the ATLAS Collaboration

**N12-5 CMS Fast Simulation : a Tool for Physics Searches at the LHC**S. Jain, *University of Delhi, India*

On behalf of the CMS Collaboration

**N12-6 Fast Simulation of the SuperB Detector**R. Andreassen<sup>1</sup>, N. Arnaud<sup>2</sup>, D. Brown<sup>3</sup>, L. Burmistrov<sup>2</sup>, J. Carlson<sup>3</sup>, C.-H. Cheng<sup>4</sup>, I. Gaponenko<sup>3</sup>, E. Manoni<sup>5</sup>, A. Perez<sup>2</sup>, M. Rama<sup>6</sup>, D. Roberts<sup>7</sup>, M. Rotondo<sup>8</sup>, G. Simi<sup>8</sup>, M. Sokoloff<sup>9</sup>, A. Suzuki<sup>3</sup>, J. Walsh<sup>9</sup>, A. Di Simone<sup>10</sup><sup>1</sup>University of Cincinnati, USA; <sup>2</sup>Laboratoire de l'Accelérateur Lineaire, France; <sup>3</sup>Lawrence Berkeley National Lab, USA; <sup>4</sup>California Institute of Technology, USA; <sup>5</sup>INFN Sezione di Perugia, Italy; <sup>6</sup>INFN Laboratori Nazionali di Frascati, Italy; <sup>7</sup>University of Maryland, USA; <sup>8</sup>INFN Sezione di Padova, Italy; <sup>9</sup>INFN Sezione di Pisa, Italy; <sup>10</sup>INFN sezione di Roma Tor Vergata and Università di Roma Tor Vergata, Italy**N12-7 Automation Tools in the Software Development of the TOTEM Detector Control System**I. Atanassov, F. Lucas Rodriguez, P. Palazzi, F. Ravotti, V. Tulimaki *CERN, Switzerland***N13: Synchrotron Radiation and FEL Instrumentation**

Tuesday, Nov. 2 08:00-10:00 Ballroom F

Session Chair: Peter Grudberg, *X-ray Instrumentation Associates*,**N13-1 (invited) First X-Ray Imaging Measurements at the New SLAC Free Electron Laser (LCLS)**L. W. J. Strueder, *MPI für extraterrestrische Physik, Germany*

On behalf of the Max-Planck Advanced Study Group at CFEL and PnSensor

**N13-2 Development of Color Laue Method Using the Counting-Type Pixel Detector PILATUS**H. Toyokawa, K. Kajiwara, M. Sato, M. Kawase, T. Honma *Japan Synchrotron Radiation Research Institute, Japan***N13-3 Pixel Readout ASIC with per Pixel Digitization and Digital Storage for the DSSC Detector at XFEL**P. Fischer<sup>1</sup>, M. Bach<sup>2</sup>, L. Bombelli<sup>3</sup>, F. Erdinger<sup>1</sup>, S. Facchinatti<sup>3</sup>, C. Fiorini<sup>3</sup>, K. Hansen<sup>2</sup>, P. Kalavakuru<sup>2</sup>, M. Manghisoni<sup>4</sup>, M. Porro<sup>5</sup>, C. Reckleben<sup>2</sup>, G. De Vita<sup>5</sup><sup>1</sup>Heidelberg University, Germany; <sup>2</sup>Deutsches Elektronen-Synchrotron, Germany; <sup>3</sup>Politecnico Di Milano, Italy; <sup>4</sup>Università di Bergamo, Italy; <sup>5</sup>Max Planck Institute, Germany**N13-4 Development Status of X-Ray 2D Detectors for SPring-8 XFEL**T. Kameshima<sup>1</sup>, T. Hatsui<sup>1</sup>, T. Kudo<sup>1</sup>, T. Horigome<sup>2</sup>, A. Holland<sup>3</sup>, K. Holland<sup>3</sup>, H. Osawa<sup>4</sup>, M. Yabashi<sup>1</sup>, N. Yoshinori<sup>1</sup>, T. Ishikawa<sup>1</sup><sup>1</sup>RIKEN XFEL Project Head Office, Japan; <sup>2</sup>Institute for Molecular Science, Japan; <sup>3</sup>Xcam Ltd, United Kingdom; <sup>4</sup>Japan Synchrotron Research Institute, Japan**N13-5 High-Resolution Superconducting Tunnel Junction Soft X-Ray Spectrometers**S. Friedrich<sup>1</sup>, M. H. Carpenter<sup>2</sup>, O. B. Drury<sup>1</sup>, J. T. Harris<sup>3</sup>, W. K. Warburton<sup>3</sup>, R. Cantor<sup>4</sup><sup>1</sup>Lawrence Livermore National Laboratory, USA; <sup>2</sup>University of California, USA; <sup>3</sup>XIA LLC, USA; <sup>4</sup>Star Cyroelectronics, USA**N13-6 MCPs as Grazing-Incidence Photocathodes for X-Rays**B. W. Adams<sup>1</sup>, K. Attenkofer<sup>1</sup>, M. Choller<sup>1</sup>, H. J. Frisch<sup>1,2</sup>, Z. Insepov<sup>1</sup><sup>1</sup>Argonne National Laboratory, U.S.; <sup>2</sup>University of Chicago, U.S.**N14: Astrophysics and Space Instrumentation: posters**

Tuesday, Nov. 2 08:00-10:00 Exhibit Hall B

See listings in the NSS Poster section.

**N15: Semiconductor Detectors: Laser Processing of Silicon Detectors**

Tuesday, Nov. 2 10:30-12:00 Ballroom A

Session Chairs: Vitaliy A. Fadeyev, *UCSC, USA*Gian-Franco Dalla Betta, *University of Trento and INFN, Italy***N15-1 Performance of Silicon Sensors after Laser Scribing and Cleaving**V. A. Fadeyev, J. Wright, N. Ptak, C. Betancourt, H. F. F-W. Sadrozinski, *UCSC, USA*; M. Christophersen, B. F. Philips, *U.S. Naval Research Laboratory, USA***N15-2 Laser-Micromachining for 3D Silicon Detectors**M. Christophersen, B. F. Philips *U.S. Naval Research Laboratory, USA***N15-3 Development of Modified 3D Detectors at FBK**G.-F. Dalla Betta<sup>1,2</sup>, A. Bagolini<sup>3</sup>, M. Boscardin<sup>3</sup>, L. Bosisio<sup>4,5</sup>, P. Gabos<sup>1,2</sup>, G. Giacomini<sup>3</sup>, C. Piemonte<sup>3</sup>, M. Povoli<sup>1,2</sup>, E. Vianello<sup>3</sup>, N. Zorzi<sup>3</sup><sup>1</sup>University of Trento, Italy; <sup>2</sup>INFN Trento, Italy; <sup>3</sup>Fondazione Bruno Kessler, Italy; <sup>4</sup>University of Trieste, Italy; <sup>5</sup>INFN Trieste, Italy**N15-4 Punch-Through Effect and Collapse of the Electric Field in Silicon Strip Detectors**C. Betancourt, J. Wright, N. Ptak, V. Fadeyev, H. F-W. Sadrozinski *University of California Santa Cruz, USA***N15-5 Laser-Induced Diffusion for Radiation Detector Development**M. Christophersen, B. F. Philips *U.S. Naval Research Laboratory, USA***NM2: NSS/MIC Joint Session II - Particle Beam Therapy**

Tuesday, Nov. 2 10:30-12:00 Ballroom B&amp;C

Session Chairs: Maria Grazia Pia, *INFN Genova, Italy*Anatoly B. Rosenfeld, *University of Wollongong, Australia***NM2-1 Evaluation of SOI-Microstrip Detector for High Spatial Resolution Dosimetry in Synchrotron Microbeam Radiation Therapy**J. J. Kalliopuska<sup>1</sup>, A. Cullen<sup>2</sup>, M. Lerch<sup>2</sup>, M. Petasecca<sup>2</sup>, M. Santala<sup>3</sup>, A. Rozenfeld<sup>2</sup><sup>1</sup>VTT, Finland; <sup>2</sup>University of Wollongong, Australia; <sup>3</sup>Aalto University, Finland**NM2-2 Development of a Monte Carlo Code for Proton Therapy Using Pencil Beam Scanning**S. Dowdell<sup>1,2</sup>, B. Clasiac<sup>2</sup>, J. Flanz<sup>2</sup>, A. Rosenfeld<sup>1</sup>, H. Paganetti<sup>2</sup>



<sup>1</sup>University of Wollongong, Australia; <sup>2</sup>Massachusetts General Hospital and Harvard Medical School, USA

### NM2-3 PENELOPE Monte Carlo Engine for Treatment Planning in Radiation Therapy with Very High Energy Electrons (VHEE) of 150-250 MeV

V. Moskvina<sup>1</sup>, F. Salvat<sup>2</sup>, K. Stewart<sup>3</sup>, C. DesRosiers<sup>1</sup>

<sup>1</sup>Indiana University, USA; <sup>2</sup>Universitat de Barcelona, Spain; <sup>3</sup>Purdue University, USA

### NM2-4 Improving the Safety of Ion Beam Therapy by Flat-Panel Imaging

M. Martiskova<sup>1</sup>, B. Hartmann<sup>1</sup>, S. Brons<sup>2</sup>, B. Hesse<sup>1</sup>, O. Jaekel<sup>1,2</sup>

<sup>1</sup>German Cancer Research Center, Germany; <sup>2</sup>Heidelberger Ionenstrahl-Therapiezentrum, Germany

### NM2-5 Detection and Track Visualization of Primary and Secondary Radiation in Hadron Therapy Beams with the Pixel Detector Timepix

J. Jakubek<sup>1</sup>, C. Granja<sup>1</sup>, O. Jäkel<sup>2</sup>, M. Martiskova<sup>3</sup>, S. Pospisil<sup>1</sup>

<sup>1</sup>Institute of Experimental and Applied Physics, Czech Technical University in Prague (IEAP CTU), Czech Republic; <sup>2</sup>Heidelberger Ionenstrahl-Therapiezentrum (HIT), Germany; <sup>3</sup>Department of Medical Physics in Radiation Oncology (DKFZ), Germany

## N16: Analog and Digital Circuits II

Tuesday, Nov. 2 10:30-12:00 Ballroom E

Session Chairs: Hiroyuki Takahashi, *Department of Nuclear Engineering and Management, The University of Tokyo, Japan*  
Ryan McLean, *California Institute of Technology, USA*

### N16-1 The GET4 ASIC - an Event-Driven High Rate TDC

H. Deppe, H. Flemming

GSI Helmholtzzentrum für Schwerionenforschung GmbH, Germany

### N16-2 20ps Resolution FPGA TDC with on-Chip Real Time Correction

J. Qi, Z. Deng, Y. Liu, *Tsinghua University, China*

### N16-3 A Leading Edge Based Digital Timing Method Compensating for Time-Walk

S. Cho, R. Grazioso, N. Zhang, P. Szupryczynski, M. Aykac, D. Henseler, M. Loope, M. Schmand  
*Siemens Medical Solutions, USA*

### N16-4 Experimental Results from a Pixel Front-End for the NA62 Experiment with on Pixel Constant Fraction Discriminator and 100 Ps Time to Digital Converter

A. Rivetti<sup>1</sup>, A. Ceccucci<sup>2</sup>, A. Cotta Ramusino<sup>3</sup>, S. Chiozzi<sup>3</sup>, G. Dellacasa<sup>1</sup>, M. Fiorini<sup>2</sup>, S. Garbolino<sup>1</sup>, P. Jarron<sup>2</sup>, J. Kaplon<sup>2</sup>, A. Kluge<sup>2</sup>, F. Marchetto<sup>1</sup>, E. Martin Albarran<sup>4</sup>, S. Martou<sup>1</sup>, G. Mazza<sup>1</sup>, M. Noy<sup>2</sup>, P. Riedler<sup>2</sup>, R. Wheadon<sup>1</sup>

<sup>1</sup>INFN - Sezione di Torino, Italy; <sup>2</sup>CERN, Switzerland; <sup>3</sup>INFN-Sezione di Ferrara, Italy; <sup>4</sup>Universit Catholique de Louvain, Belgium

### N16-5 STiC - ASIC for Silicon-Photomultiplier Fast Timing Discrimination

W. Shen, T. Harion, H.-C. Schultz-Coulon  
*University of Heidelberg, Germany*

## N17: High Energy and Nuclear Physics Instrumentation: RICH and TOF Detectors

Tuesday, Nov. 2 10:30-12:00 Ballroom F

Session Chairs: Madhu Dixit, *TRUMF & Carlton University*,  
Jean Pierre Martin, *University of Montreal, Canada*

### N17-1 The NA62 Rich Detector

R. Fantechi, *INFN - Sezione di Pisa, Italy*

### N17-2 Studies of a Proximity Focusing RICH with Aerogel Radiator for Belle II Experiment

K. Hara<sup>1</sup>, I. Adachi<sup>2</sup>, R. Dolenc<sup>3</sup>, T. Iijima<sup>1</sup>, M. Imamura<sup>1</sup>, S. Iwata<sup>4</sup>, H. Kawai<sup>5</sup>, S. Korpar<sup>6,3</sup>, P. Krizan<sup>7,3</sup>, T. Kumita<sup>4</sup>, E. Kuroda<sup>4</sup>, S. Nishida<sup>2</sup>, S. Ogawa<sup>8</sup>, R. Pestotnik<sup>3</sup>, S. Shiizuka<sup>1</sup>, T. Sumiyoshi<sup>4</sup>, M. Tabata<sup>9,5</sup>, S. Tagai<sup>8</sup>, R. Verheyden<sup>3</sup>

<sup>1</sup>Nagoya University, Japan; <sup>2</sup>High Energy Accelerator Research Organization (KEK), Japan; <sup>3</sup>J. Stefan Institute, Slovenia; <sup>4</sup>Tokyo Metropolitan University, Japan; <sup>5</sup>Chiba University, Japan; <sup>6</sup>University of Maribor, Slovenia; <sup>7</sup>University of Ljubljana, Slovenia; <sup>8</sup>Toho University, Japan; <sup>9</sup>Japan Aerospace Exploration Agency (JAXA), Japan

### N17-3 The Barrel DIRC of the PANDA Experiment at FAIR

J. Schwiening, *GSI Helmholtzzentrum fuer Schwerionenforschung GmbH, Germany*

On behalf of the PANDA Cherenkov Group

### N17-4 Development of Large Area Fast Microchannel Plate Photodetectors

R. G. Wagner, *Argonne National Laboratory, United States*

On behalf of the Large Area Picosecond Photodetector Development Collaboration

### N17-5 Performance Test of TOP Counter Prototype

T. Mori, *Nagoya University, Japan*

On behalf of the Belle-II PID Group

## N18: Nuclear Measurements and Monitoring Techniques: posters

Tuesday, Nov. 2 10:30-12:00 Exhibit Hall B

See listings in the NSS Poster section.

## N19: Instrumentation for Homeland and National Security: posters

Tuesday, Nov. 2 10:30-12:00 Exhibit Hall B

See listings in the NSS Poster section.

## N20: Scintillation: Fundamental mechanisms

Tuesday, Nov. 2 13:30-15:30 Ballroom A

Session Chairs: Stephen A. Payne, *LLNL, USA*  
Marek Moszynski, *Soltan Institute for Nuclear Studies, Poland*

### N20-1 Non-Proportional Response of Inorganic Scintillators to Synchrotron X-Ray Irradiation

I. V. Khodyuk, J. T. M. de Haas, L. de Vries, M. S. Alekhin, P. Dorenbos  
*Delft University of Technology, the Netherlands*

### N20-2 On the Development of Scintillation Materials Operating at High Temperature

M. Korjik, V. Mechini, A. Borisevich, *RINP, Belarus*

### N20-3 Survey of Electron Response and Electron-Excited Energy Resolution of Inorganic Scintillators

G. A. Bizari, W.-S. Choong, W. W. Moses, *Lawrence Berkeley National Laboratory, USA*; L. Ahle, N. Cherepy, S. A. Payne, S. Sheets, B. W. Sturm, *Lawrence Livermore National Laboratory, USA*

### N20-4 Light Side of Defects: Scintillation and Energy Storage in Exemplary Oxide Phosphors

E. Zych  
*University of Wrocław, Faculty of Chemistry, Poland*

### N20-5 NaI:Eu Scintillators Efficiency and Its Limit

A. Gektin, N. Shiran, Y. Boyarintseva, S. Vasyukov, S. Tkachenko  
*Institute for Scintillation Materials, Ukraine*

### N20-6 Further Study of Undoped NaI Scintillators with Different Purity.

P. Słobczyński, M. Moszynski, W. Czarnacki, A. Syntfeld-Kazuch,  
*Soltan Institute for Nuclear Studies, Poland*; P. Schotanus, *SCIONIX, The Netherlands*

### N20-7 Energy Resolution and Nonlinearity of NaI(Tl), CaF<sub>2</sub>(Eu), and Plastic Scintillators Measured with the Wide-Angle Compton-Coincidence Technique

K. Roemer, G. Pausch, C.-M. Herbach, M. Kapusta, Y. Kong, R. Lentering, C. Plettner, J. Stein, *ICx Technologies GmbH, Germany*; M. Moszyński, L. Swiderski, T. Szczęśniak, *Soltan Institute for Nuclear Studies, Poland*

## NM3: NSS/MIC Joint Session III - New Technologies & Medical Devices

Tuesday, Nov. 2 13:30-15:30 Ballroom B&C

Session Chairs: Paul R. Lecoq, *CERN, Switzerland*  
William W. Moses, *Lawrence Berkeley National Laboratory, USA*

### NM3-1 Progress on Photonic Crystals

P. R. Lecoq, E. Auffray, A. Knapitsch, *CERN, Switzerland*; L. Xavier, S. Christian, L. Jean-Louis, *Nanotechnology Institute, France*

### NM3-2 Evaluation of Medipix3 with Synchrotron Radiation

E. N. Gimenez<sup>1</sup>, R. Ballabriga<sup>2</sup>, M. Campbell<sup>2</sup>, I. Horswell<sup>1</sup>, X. Llopert<sup>2</sup>, J. Marchal<sup>1</sup>, K. J. S. Sawhney<sup>1</sup>, N. Tartoni<sup>1</sup>  
<sup>1</sup>*Diamond Light Source, UK*; <sup>2</sup>*CERN, Switzerland*

### NM3-3 Thick Monolithic Scintillation Crystals for TOF-PET with Depth-of-Interaction Measurement

R. Vinke<sup>1</sup>, H. T. van Dam<sup>2</sup>, S. Seifert<sup>2</sup>, F. J. Beekman<sup>2,3</sup>, H. Loehner<sup>1</sup>, D. R. Schaart<sup>2</sup>, P. Dendooven<sup>1</sup>  
<sup>1</sup>*KVI - University of Groningen, The Netherlands*; <sup>2</sup>*Delft University of Technology, The Netherlands*; <sup>3</sup>*University Medical Centre Utrecht, The Netherlands*

### NM3-4 Transparent (Gd, Lu)<sub>3</sub>(Al, Ga)<sub>5</sub>O<sub>12</sub>:Ce Ceramic Scintillator for Medical Imaging

Y. Wang<sup>1</sup>, G. Baldoni<sup>1</sup>, J. Glodo<sup>1</sup>, U. Shirwadkar<sup>1</sup>, W. H. Rhodes<sup>2</sup>, C. Brecher<sup>2</sup>, E. V. Loeff<sup>2</sup>, S. Miller<sup>2</sup>, K. S. Shah<sup>1</sup>  
<sup>1</sup>*Radiation Monitoring Devices, Inc., USA*; <sup>2</sup>*ALEM Associates, USA*

### NM3-5 Depth-of-Interaction Compensation Using a Focused-Cut Scintillator for a Pinhole Gamma Camera

F. Alhassen<sup>1</sup>, H. Kudrolli<sup>2</sup>, B. Singh<sup>2</sup>, S. Kim<sup>1</sup>, R. G. Gould<sup>1</sup>, Y. Seo<sup>1</sup>, V. V. Nagarkar<sup>2</sup>

<sup>1</sup>*University of California, San Francisco, USA*; <sup>2</sup>*Radiation Monitoring Devices, Inc., USA*

### NM3-6 CsI(Tl)/PIN Solid State Detectors for Combined High Resolution SPECT and CT Imaging

J. Kindem, C. Bai, R. Conwell, *Digirad, USA*

### NM3-7 Signal Analysis for Improved Timing Resolution with Scintillation Detectors for TOF PET Imaging

R. L. Wiener, M. Kaul, S. Surti, J. S. Karp  
*University of Pennsylvania, USA*

## N21: Radiation Damage Effects: Semiconductor Devices

Tuesday, Nov. 2 13:30-15:30 Ballroom E

Session Chairs: Lodovico Ratti, *University of Pavia, Italy*  
Ren-yuan Zhu, *California Institute of Technology, USA*

### N21-1 Radiation Hardness Evaluation of a 130nm SiGe BICMOS Technology for the ATLAS Electronics Upgrade

M. Ullan<sup>1</sup>, S. Diez<sup>1</sup>, A. A. Grillo<sup>2</sup>, J. Kierstead<sup>3</sup>, W. Kononenko<sup>4</sup>, F. Martinez-McKinney<sup>2</sup>, F. M. Newcomer<sup>4</sup>, S. Rescia<sup>3</sup>, M. Ruat<sup>1</sup>, H. W. Sadrozinski<sup>2</sup>, A. Seiden<sup>2</sup>, E. Spencer<sup>2</sup>, H. Spieler<sup>5</sup>, M. Wilder<sup>2</sup>  
<sup>1</sup>*Centro Nacional de Microelectronica (IMB-CNM, CSIC), Spain*; <sup>2</sup>*Santa Cruz Institute for Particle Physics (SCIPP, UCSC), USA*; <sup>3</sup>*Brookhaven National Laboratory, USA*; <sup>4</sup>*University of Pennsylvania, USA*; <sup>5</sup>*Lawrence Berkeley National Laboratory, USA*

### N21-2 Evaluation of the radiation tolerance of 65 nm CMOS devices for high-density front-end electronics

L. Gaioni<sup>1</sup>, M. Manghisoni<sup>2,1</sup>, L. Ratti<sup>3,1</sup>, V. Re<sup>2,1</sup>, G. Traversi<sup>2,1</sup>  
<sup>1</sup>*INFN, Italy*; <sup>2</sup>*Universita' di Bergamo, Italy*; <sup>3</sup>*Universita' di Pavia, Italy*

### N21-3 Neutron Induced Nuclear Counter Effect in Hamamatsu Silicon PIN and APD

R. Mao, L. Zhang, R.-Y. Zhu  
*California Institute of Technology, USA*

### N21-4 Radiation-Hard Asics for Optical Data Transmission in the First Phase of the LHC Upgrade

K. K. Gan, *The Ohio State University, USA*

### N21-5 Annealing Effects on Depletion Voltage and Capacitance of Float Zone and Magnetic Czochralski Silicon Diodes after 800 MeV Proton Exposure

J. E. Metcalfe, M. Hoferkamp, I. Gorelov, S. Seidel, R. Wang  
*University of New Mexico, USA*

### N21-6 Simulation of Charge Multiplication and Trap-Assisted Tunneling in Irradiated Planar Pixel Sensors

M. Benoit, A. Lounis, N. Dinu, *LAL, France*

### N21-7 Annealing in N and P-Side Readout of Silicon Microstrip Detectors after Irradiation to LHC and sLHC Doses

G. Casse, A. Affolder, P. P. Allport, V. Chmill, I. Tsurin, T. Huse, C. Wgglesworth  
*University of Liverpool, UK*

## N22: Trigger and Front-End Systems I

Tuesday, Nov. 2 13:30-15:30 Ballroom F

Session Chairs: Martin L. Purschke, *Brookhaven National Lab, USA*  
Christian Bohm, *University of Stockholm, Department of physics, Sweden*

**N22-1 Commissioning of the ATLAS Muon Trigger with Beam Collisions at the LHC**

A. Oh, *Manchester University, UK*  
On behalf of the ATLAS Collaboration

**N22-2 A Readout Driver for the ATLAS LAr Calorimeter at Super-LHC**

G. F. Tartarelli, *INFN - Sezione di Milano, Milano (Italy)*,  
*Italy*; L. Hervas, *CERN, Switzerland*; S. Menke, *MPI, germany*

**N22-3 Development of Low Mass Optical Readout for High Data Bandwidth Systems**

P. M. De Lurgio, G. Drake, D. Lopez, B. Salvachua-Ferrando,  
R. Stanek, D. Underwood  
*Argonne National Laboratory, USA*

**N22-4 A Probability-Optimized Fast Timing Trigger for the Belle II Time of Propagation Detector**

L. Macchiarulo, X. Gao, G. S. V  
*University of Hawaii at Manoa, U.S.A.*

**N22-5 Picosecond Timing with a 20 GS/s Sampler ASIC in a 130nm CMOS Technology**

H. Grabas<sup>1</sup>, E. Oberla<sup>1</sup>, M. Bogdan<sup>1</sup>, H. Frisch<sup>1</sup>, J.-F. C. Genat<sup>1</sup>,  
M. K. Heintz<sup>1</sup>, C.-M. Kao<sup>2</sup>, H. Kim<sup>2</sup>, E. May<sup>3</sup>, S. Meehan<sup>1</sup>,  
L. L. Ruckman<sup>4</sup>, F. Tang<sup>1</sup>, G. S. Varner<sup>4</sup>  
<sup>1</sup>*University of Chicago, USA*; <sup>2</sup>*Hospital of Chicago, USA*; <sup>3</sup>*Argonne National Laboratory, USA*; <sup>4</sup>*University of Hawaii, USA*

**N22-6 The Gigafitter: an Online Track Fitting Processor for CDF Experiment and Beyond**

S. Amerio<sup>1</sup>, A. Annovi<sup>2</sup>, M. Bettini<sup>1</sup>, M. Bucciantonio<sup>3</sup>, P. Catastini<sup>4</sup>,  
M. Dell'Orso<sup>3</sup>, B. Di Ruzza<sup>4</sup>, P. Giannetti<sup>5</sup>, D. Lucchesi<sup>6</sup>,  
M. Nicoletto<sup>1</sup>, M. Piendibene<sup>3</sup>, G. Volpi<sup>3</sup>, F. Crescioli<sup>3</sup>  
<sup>1</sup>*INFN Padova, Italy*; <sup>2</sup>*INFN LNF, Italy*; <sup>3</sup>*University of Pisa & INFN, Italy*; <sup>4</sup>*Fermilab, USA*; <sup>5</sup>*INFN Pisa, Italy*; <sup>6</sup>*University of Padova & INFN, Italy*

**N22-7 A Serializer ASIC for High Speed Data Transmission in Cryogenic and HiRel Environment**

G. F. Tartarelli, *INFN - Sezione di Milano, Milano (Italy)*,  
*Italy*; L. Hervas, *CERN, Switzerland*; S. Menke, *MPI, germany*

**N23: Semiconductor Detectors: posters**

Tuesday, Nov. 2 13:30-15:30 Exhibit Hall B  
See listings in the NSS Poster section.

**N24: Nuclear Measurements and Monitoring Techniques: Neutron Detection**

Tuesday, Nov. 2 16:00-18:00 Ballroom A  
Session Chairs: Robert Runkle, *DOE NA-22, USA*  
Nathaniel Bowden, *Lawrence Livermore National Laboratory, USA*

**N24-1 Gamma and Neutron Detector Performance in a MOX Fuel Fabrication Plant Environment**

A. Lavietes, C. Liguori, M. Pickrell, R. Plenteda, *IAEA, Austria*; M. Sweet, *Los Alamos Nat. Lab., USA*; M. Shigeyama, *Japan Safeguards Office, Japan*; T. Asano, T. Nagatani, *Japan Atomic Energy Agency, Japan*

**N24-2 Neutron and Gamma Ray Cross-Correlation Measurements of MOX Fuel Using Liquid Scintillators**

E. C. Miller, J. L. Dolan, S. A. Pozzi, M. Flaska, L. Huang,  
S. D. Clarke, *University of Michigan, USA*; P. Peerani, *European Commission EC-JRC-IPSC, Italy*

**N24-3 A Portable Fast Neutron Detector for Dose Monitoring**

A. S. Howard<sup>1</sup>, R. Chandra<sup>2</sup>, G. Davatz<sup>1</sup>  
<sup>1</sup>*IPP, Switzerland*; <sup>2</sup>*Arktis, Switzerland*

**N24-4 Applying the Neutron Scatter Camera for Treaty Verification and Warhead Monitoring**

J. Brennan, R. Cooper, M. Gerling, N. Mascarenhas, P. Marleau,  
S. Mrowka  
*Sandia National Laboratories, USA*

**N24-5 Measurements from New Gamma-Ray and Neutron Dosimeters with Comparison of Readout Systems**

C. J. Stapels, C. M. Whitney, E. B. Johnson, X. J. Chen,  
J. F. Christian  
*Radiation Monitoring Devices, USA*

**N24-6 Special Nuclear Detection with a Gadolinium-Loaded Water Cerenkov Detector**

M. Sweany<sup>1</sup>, A. Bernstein<sup>2</sup>, N. Bowden<sup>2</sup>, S. Dazeley<sup>2</sup>, S. Ouedraogo<sup>2</sup>,  
R. Svoboda<sup>1</sup>, M. Tripathi<sup>1</sup>  
<sup>1</sup>*University of California, Davis, USA*; <sup>2</sup>*Livermore National Laboratory, USA*

**N24-7 Field Deployable System for Unexploded Ordinance Detection using the Associated Particle neutron Time-Of-Flight Technique**

Y. Shinde<sup>1,2</sup>, S. Mitra<sup>1</sup>, S. Junnarkar<sup>1</sup>  
<sup>1</sup>*Brookhaven National Laboratory, USA*; <sup>2</sup>*University of New Haven, USA*

**NMR: NSS/MIC/RTSD Joint Session - Semiconductor-Based Imaging Systems**

Tuesday, Nov. 2 16:00-18:00 Ballroom B&C  
Session Chairs: Ralph James, *Brookhaven National Laboratory, USA*  
Brad E. Patt, *Photon Imaging, Inc., USA*

**NMR-1 (invited) Global Optimization of Cd(Zn)Te Based SPECT Systems: Detectors, Electronics and Information Processing**

G. Montemont, S. Lux, F. Mathy, O. Monnet, V. Rebuffel,  
C. Robert, L. Verger  
*CEA, LETI, MINATEC, France*

**NMR-2 (invited) Clinical Usefulness of Semi-Conductor Based Imaging Systems for Nuclear Cardiology**

C. Scheiber, *Hospices Civils de Lyon, France*

**NMR-3 3D Spatial Resolution of 350µm Pitched Pixelated CdZnTe Detectors for PET Imaging Application**

Y. Yin<sup>1,2</sup>, H. Wu<sup>1</sup>, S. Komarov<sup>1</sup>, A. Garson<sup>3</sup>, Q. Guo<sup>3</sup>,  
H. Krawczynski<sup>3</sup>, L.-J. Meng<sup>3</sup>, Y.-C. Tai<sup>1</sup>  
<sup>1</sup>*Mallinckrodt Institute of Radiology, Washington University in St. Louis, USA*; <sup>2</sup>*School of Nuclear Science and Technology, Lanzhou University, China*; <sup>3</sup>*Washington University in St. Louis, USA*; <sup>4</sup>*University of Illinois at Urbana-Champaign, USA*

**NMR-4 ChromAIX: Fast Energy Resolved Photon-Counting Readout Electronics for Future Human Computed Tomography**

C. Herrmann, R. Steadman, O. Muelhens

*Philips Research Aachen, Germany*

### **NMR-5 Development of Edge-on Type CdTe Detector Module for Gamma Camera**

I. Takahashi<sup>1</sup>, T. Ishitsu<sup>2</sup>, H. Kawauchi<sup>1</sup>, J. Yu<sup>1</sup>, T. Seino<sup>3</sup>, I. Fukasaku<sup>1</sup>, Y. Sunaga<sup>1</sup>, S. Inoue<sup>1</sup>, N. Yamada<sup>1</sup>

<sup>1</sup>*Hitachi Cable, Ltd., Japan*; <sup>2</sup>*Hitachi, Ltd., Japan*

### **NMR-6 Counting rate performance measurement of newly developed Si/CdTe Compton camera for biological and medical study**

M. Yamaguchi<sup>1</sup>, T. Kamiya<sup>1</sup>, N. Kawachi<sup>1</sup>, N. Suzui<sup>1</sup>, S. Fujimaki<sup>1</sup>, H. Odaka<sup>2,3</sup>, S.-N. Ishikawa<sup>2,3</sup>, M. Kokubun<sup>2</sup>, S. Watanabe<sup>2,3</sup>, T. Takahashi<sup>2,3</sup>, H. Shimada<sup>4</sup>, K. Arakawa<sup>1,4</sup>, Y. Suzuki<sup>4</sup>, K. Torikai<sup>4</sup>, Y. Yoshida<sup>4</sup>, T. Nakano<sup>4</sup>

<sup>1</sup>*Japan Atomic Energy Agency, JAPAN*; <sup>2</sup>*Japan Aerospace Exploration Agency, JAPAN*; <sup>3</sup>*University of Tokyo, Japan*; <sup>4</sup>*Gunma University, JAPAN*

## **N25: Scientific Simulation and Computation: HEP Simulation**

Tuesday, Nov. 2 16:00-18:00 Ballroom E

Session Chairs: Maria Grazia Pia, *INFN Genova, Italy*  
Eleonora Luppi, *Universita' di Ferrara, Dipartimento di Fisica and INFN - Ferrara - Italy, Italy*

### **N25-1 (invited) Scientific Computing and Cyber-Infrastructure Issues in High Energy Physics Simulations**

A. Boehnlein, *Fermilab, USA*

### **N25-2 The Simulation for the ATLAS Experiment at LHC**

A. Buckley, *Universita' di Pavia & INFN, Italy*

On behalf of the ATLAS Collaboration

### **N25-3 The LHCb Simulation Application, Gauss: Design, Evolution and Experience**

M. Clemencic<sup>1</sup>, G. Corti<sup>1</sup>, S. Easo<sup>2</sup>, C. Jones<sup>3</sup>, S. Miglioranza<sup>1</sup>, M. Pappagallo<sup>4</sup>, P. Robbe<sup>5</sup>

<sup>1</sup>*CERN, Switzerland*; <sup>2</sup>*Rutherford Appleton Laboratory, United Kingdom*; <sup>3</sup>*University of Cambridge, United Kingdom*; <sup>4</sup>*Universita' e INFN Bari, Italy*; <sup>5</sup>*LAL, Universite' Paris-Sud, CNRS/IN2P3 France, France*

### **N25-4 Validation and Tuning of the CMS Simulation Software**

S. Banerjee, *FNAL, USA*

On behalf of the CMS Collaboration

### **N25-5 Simulation of Machine Background in the LHCb Experiment: Methodology and Implementation**

R. B. Appleby, H. Burkhardt, G. Corti, Y. Inntjore Levinsen, *CERN, Switzerland*; M. H. Lieng, *Technische Universitat Dortmund, Germany*; V. Talanov, *Institute for High Energy Physics(IHEP), Russia*

### **N25-6 The Butterfly Effect: Correlations Between Modeling in Nuclear-Particle Physics and Socioeconomic Factors**

M. G. Pia, *INFN Genova, Italy*; T. Basaglia, *CERN, Switzerland*; Z. W. Bell, *ORNL, USA*; P. V. Dressendorfer, *IEEE, USA*

## **N26: Astrophysics and Space Instrumentation II**

Tuesday, Nov. 2 16:00-18:00 Ballroom F

Session Chair: Markus Kuster, *XFEL GmbH, Germany*

### **N26-1 Latest Results from the PAMELA Satellite Mission**

M. Pearce, *The Royal Institute of Technology, KTH, Sweden*

On behalf of the PAMELA Collaboration

### **N26-2 Active Neutron Gamma Ray Techniques for Planetary Science Applications**

A. M. Parsons<sup>1</sup>, J. G. Bodnarik<sup>1</sup>, L. Evans<sup>1,2</sup>, S. Floyd<sup>1</sup>, L. Lim<sup>1</sup>, T. McClanahan<sup>1</sup>, M. Namkung<sup>1</sup>, S. Nowicki<sup>1,3</sup>, J. Schweitzer<sup>4</sup>, R. Starr<sup>1,5</sup>, J. Trombka<sup>1,6</sup>

<sup>1</sup>*NASA/ Goddard Space Flight Center, USA*; <sup>2</sup>*Computer Sciences Corporation, USA*; <sup>3</sup>*University of Michigan, USA*; <sup>4</sup>*University of Connecticut, USA*; <sup>5</sup>*Catholic University of America, USA*; <sup>6</sup>*University of Maryland, USA*

### **N26-3 A radiation transport code benchmarking study for the EJSM mission**

G. Santin<sup>1,2</sup>, S. S. Kang<sup>3</sup>, I. Jun<sup>3</sup>, P. Nieminen<sup>1</sup>, C. Erd<sup>1</sup>, A. Wielders<sup>1</sup>

<sup>1</sup>*ESA - ESTEC, The Netherlands*; <sup>2</sup>*RHEA System SA, Belgium*; <sup>3</sup>*Jet Propulsion Laboratory, California Institute of Technology, United States*

### **N26-4 A Fast Embedded System for Radio Detection of Cosmic Rays**

H. E. H. Gemmeke<sup>1</sup>, M. Scherer<sup>1</sup>, M. Balzer<sup>1</sup>, A. Menshikov<sup>1</sup>, K.-H. Kampert<sup>2</sup>, A. Haungs<sup>1</sup>

<sup>1</sup>*Karlsruhe Institute of Technology, Germany*; <sup>2</sup>*Universitaet Wuppertal, Germany*

### **N26-5 Alpha Decay/Neutron Discrimination in a CF3I Bubble Chamber for Dark Matter Detection**

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

On behalf of the COUPP collaboration

### **N26-6 Progress in the Development of Ultra-Thin Silicon Solid-State Detectors for dE/dx Measurements in Heavy-Ion Identification Instruments**

M. E. Wiedenbeck, *Jet Propulsion Laboratory, California Institute of Technology, USA*; C. S. Tindall, *Lawrence Berkeley National Laboratory, USA*; J. Klemic, A. C. Cummings, A. W. Labrador,

R. A. Mewaldt, E. C. Stone, *California Institute of Technology, USA*

## **N27: Synchrotron Radiation and FEL Instrumentation: posters**

Tuesday, Nov. 2 16:00-18:00 Exhibit Hall B

See listings in the NSS Poster section.

## **N28: Trigger and Front-End Systems: posters**

Tuesday, Nov. 2 16:00-18:00 Exhibit Hall B

See listings in the NSS Poster section.

## **N29: High Energy and Nuclear Physics Instrumentation: posters**

Tuesday, Nov. 2 16:00-18:00 Exhibit Hall B

See listings in the NSS Poster section.

## MIC Oral Presentations

**NM1: NSS/MIC Joint Session I - Silicon-Based Photodetectors**

Tuesday, Nov. 2 08:00-10:00 Ballroom B&C  
See listings in the NSS section.

**NM2: NSS/MIC Joint Session II - Particle Beam Therapy**

Tuesday, Nov. 2 10:30-12:00 Ballroom B&C  
See listings in the NSS section.

**NM3: NSS/MIC Joint Session III - New Technologies & Medical Devices**

Tuesday, Nov. 2 13:30-15:30 Ballroom B&C  
See listings in the NSS section.

**NMR: NSS/MIC/RTSD Joint Session - Semiconductor-Based Imaging Systems**

Tuesday, Nov. 2 16:00-18:00 Ballroom B&C  
See listings in the NSS section.

## RTSD Oral Presentations

**R03: Characterization of CZT I**

Tuesday, Nov. 2 08:30-09:50 301A & 301B  
Session Chair: Robert D. McLaren, *Consultant, USA*

**R03-1 (08:30, invited) Photoconductivity Mapping of Semiinsulating CdTe**

J. Franc, J. Kubat, V. Dědič, E. Belas, R. Grill, P. Hoschl  
*Institute of Physics, Charles University, Czech Republic*

**R03-2 (08:50) Ion Beam (RBS) and XRF Analysis of Metal Contacts Deposited on CdZnTe and CdTe Crystals.**

A. Raulo<sup>1</sup>, L. Marchini<sup>2</sup>, G. Paternoster<sup>1</sup>, E. Perillo<sup>1</sup>, A. M. Mancini<sup>3</sup>, P. Paiano<sup>3</sup>, M. Zha<sup>2</sup>

<sup>1</sup>*University Federico II and INFN, Italy*; <sup>2</sup>*IMEM-CNR, Italy*;

<sup>3</sup>*University of Salento, Italy*

**R03-3 (09:05) CZT Signal Generation Effects in SPECT-MRI Systems**

J. W. Hugg<sup>1</sup>, D. J. Wagenaar<sup>1</sup>, D. Meier<sup>2</sup>, M. J. Hamamura<sup>3</sup>, O. Nalcioglu<sup>3</sup>, B. M. Tsui<sup>4</sup>, S. Chowdhury<sup>1</sup>, B. E. Patr<sup>1</sup>

<sup>1</sup>*Gamma Medica-Ideas, USA*; <sup>2</sup>*Gamma-Medica-Ideas, Norway*;

<sup>3</sup>*University of California, USA*; <sup>4</sup>*Johns Hopkins University, USA*

**R03-4 (09:20) Metal Contacts for CdTe and (CdZn)Te X-Ray and Gamma-Ray Detectors**

E. Belas, R. Grill, S. Uxa, P. Moravec, J. Franc, P. Hoschl, *Institute of Physics, Charles University, Czech Republic*; R. B. James, *Brookhaven National Laboratory, Upton, NY, USA, USA*

**R03-5 (09:35) Hole Transport and Pixel Count Variations in CdZnTe Monolithic Pixellated Detectors with Dynamic Polarization under X-Ray Irradiation**

S. A. Soldner, D. S. Bale, C. Szeles

*Endicott Interconnect Detection and Imaging Systems, USA*

**R04: CdZnTe: Detectors and Applications**

Tuesday, Nov. 2 10:30-12:05 301A & 301B  
Session Chair: Paul N. Luke, *Lawrence Berkeley National Laboratory, USA*

**R04-1 (10:30, invited) Toward Making CZT Detector Deployment a Reality**

H. Chen, R. Redden, J. Mackenzie, S. A. Awadalla, S. Taherion, P. Mathadam, P. Lu, E. S. Chen, W. Chen, J. Kumar, G. Bindley,

*Redlen Technologies, Canada*; M. Amman, J. S. Lee, P. N. Luke, *Lawrence Berkeley National Laboratory, USA*; A. Bolotnikov, G. S. Camarda, Y. Cui, G. Yang, R. B. James, *Brookhaven National Laboratory, USA*

**R04-2 (10:50) Performance of 3-D Position Sensitive CdZnTe Detector Array Based on the BNL H3D ASIC Readout System**

F. Zhang, C. Herman, Z. He, *The University of Michigan, USA*;

G. De Geronimo, E. Vernon, J. Fried, *Brookhaven National Laboratory, USA*

**R04-3 (11:05) HX-POL's Hard X-Ray Polarization Sensitivity**

A. B. Garson III<sup>1,2</sup>, K. Lee<sup>1,2</sup>, J. Martin<sup>1,2</sup>, Q. Guo<sup>1,2</sup>,

H. Krawczynski<sup>1,2</sup>, E. A. Wulff<sup>3</sup>, E. Novikova<sup>3</sup>, M. Subramanian<sup>3</sup>, J. Hong<sup>4</sup>, J. E. Grindlay<sup>4</sup>



<sup>1</sup>Washington University in St. Louis, USA; <sup>2</sup>McDonnell Center for the Space Sciences, USA; <sup>3</sup>Naval Research Laboratory, USA; <sup>4</sup>Harvard Smithsonian Center for Astrophysics, USA

#### R04-4 (11:20) A CZT High Efficiency Detector with Three Dimensional Spatial Resolution for Laue Lens

E. Caroli<sup>1</sup>, N. Auricchio<sup>1</sup>, C. Budtz-Jorgensen<sup>2</sup>, R. M. Curado da Silva<sup>3</sup>, S. Del Sordo<sup>4</sup>, I. Kuvvetli<sup>2</sup>, L. Natalucci<sup>5</sup>, E. M. Quadrini<sup>6</sup>, J. B. Stephen<sup>1</sup>, M. Zanichelli<sup>7,8</sup>, A. Zappettini<sup>7</sup>  
<sup>1</sup>INAF/IASF-Bologna, Italy; <sup>2</sup>DTU Space, Denmark; <sup>3</sup>Universidade de Coimbra, Portugal; <sup>4</sup>INAF/IASF-Palermo, Italy; <sup>5</sup>INAF/IASF-Roma, Italy; <sup>6</sup>INAF/IASF-Milano, Italy; <sup>7</sup>IMEM/CNR, Italy; <sup>8</sup>Universita' di Parma, Italy

#### R04-5 (11:35) Investigation of CdTe-Medipix Assemblies in a Synchrotron Focusing Its High Flux Behavior

D. Greiffenberg<sup>1</sup>, A. Fauler<sup>1</sup>, A. Zwerger<sup>1</sup>, A. Cecilia<sup>2</sup>, P. Vagovič<sup>2</sup>, J. Butzer<sup>2</sup>, E. Hamann<sup>2</sup>, T. dos Santos Rolo<sup>2</sup>, T. Baumbach<sup>2</sup>, M. Fiederle<sup>1</sup>  
<sup>1</sup>Albert-Ludwigs-Universitt Freiburg, Germany; <sup>2</sup>Karlsruhe Institute of Technology (KIT), Germany

#### R04-6 (11:50) Study of CZT Detectors with a Collimated Gamma Ray Source for the COBRA Experiment

D. Gehre<sup>1</sup>, B. Janutta<sup>1</sup>, T. Koettig<sup>2</sup>, O. Schulz<sup>2</sup>, K. Zuber<sup>1</sup>, C. Goessling<sup>2</sup>  
<sup>1</sup>Dresden University of Technology, Germany; <sup>2</sup>Dortmund University of Technology, Germany

#### R05: RTSD Poster I

Tuesday, Nov. 2 13:30-15:30 Exhibition Hall B  
 See listings in the RTSD Poster section.

#### NMR: NSS/MIC/RTSD Joint Session - Semiconductor-Based Imaging Systems

Tuesday, Nov. 2 16:00-18:00 Ballroom B&C  
 See listings in the NSS section.

#### NSS Poster Presentations

#### N14: Astrophysics and Space Instrumentation: posters

Tuesday, Nov. 2 08:00-10:00 Exhibit Hall B  
 Session Chair: Michael J. Pivovarov, *Lawrence Livermore National Laboratory, USA*

#### N14-3 Front-End Electronics and Data Acquisition System for the MIDAS Experiment

M. Bogdan, A. Berlin, M. Bohacova, P. Facal, J.-F. Genat, E. Mills, M. Monasor, P. Privitera, L. Reyes, B. Rouille d'Orfeuille, S. Wayne, C. Williams  
*The University of Chicago, USA*

#### N14-6 Probing the eV-Mass Range for Solar Axions with CAST

J. K. Vogel, *Lawrence Livermore National Laboratory (LLNL), USA*  
 On behalf of the CAST Collaboration

#### N14-9 Back-End Readout Electronics for Hyper Suprime-Cam

H. Fujimori, H. Aihara, S. Mineo, H. Miyatake, *University of Tokyo, Japan*; S. Miyazaki, H. Nakaya, *National Astronomical Observatory of Japan, Japan*; T. Uchida, *High Energy Accelerator Research Organization, Japan*

#### N14-12 The Performance of Hard X-Ray Polarimeter PHENEX with Eight Unit Counters

S. Gunji, *Yamagata University, Japan*  
 On behalf of the PHENEX Collaboration

#### N14-15 High Energy Gamma-Ray Calibration Facility for Space Applications

M. Kroupa<sup>1</sup>, Z. Janout<sup>1</sup>, M. Kralik<sup>2</sup>, F. Krejci<sup>1</sup>, S. Pospisil<sup>1</sup>  
<sup>1</sup>Institute of Experimental and Applied Physics, *Czech Technical University in Prague, Czech Republic*; <sup>2</sup>Czech Metrology Institute, *Inspectorate for Ionizing Radiation, Czech Republic*

#### N14-18 Silicon Photo-Multiplier Readouts for Scintillator-Based Gamma-Ray Detectors in Space

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

#### N14-21 Performance of SSSDs under High Temperature Environment for BepiColombo/MMO Mission

K. Nishimura<sup>1</sup>, T. Takashima<sup>2</sup>, M. Hirahara<sup>1</sup>, T. Mitani<sup>2</sup>  
<sup>1</sup>Department of Earth and Planetary Science, *Graduate school of Science, The University of Tokyo, Japan*; <sup>2</sup>JAXA/ISAS, *Japan*

#### N14-24 Preparations for the First Balloon Flight of the Gamma-Ray Polarimeter Experiment (GRAPE)

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

#### N14-27 Design Concept for a High-Altitude Balloon Flight of a Rotational Modulation Gamma-Ray Imager

B. Budden, G. L. Case, M. L. Cherry, T. G. Guzik, J. Isbert, M. F. Stewart  
*Louisiana State University, USA*

#### N14-30 High-Energy Electron Instrument for the Exploration of the Mercurys Magnetosphere by BepiColombo-MM0

T. Takashima, T. Mitani, *ISAS/JAXA, Japan*; M. Hirahara, K. Nishimura, *University of Tokyo, Japan*

**N14-33 Design of a Si-CZT Hard X-Ray Imaging Polarimeter**

Q. Guo<sup>1,2</sup>, T. Michel<sup>3</sup>, G. Alfred<sup>1</sup>, J. Martin<sup>1</sup>, M. Beilicke<sup>1</sup>, K. Lee<sup>1</sup>, D. Juergen<sup>3</sup>, F. Bayer<sup>3</sup>, G. Anton<sup>3</sup>, B. Ramsey<sup>4</sup>, L. J. Meng<sup>5</sup>, H. Krawczynski<sup>1</sup>

<sup>1</sup>Washington University in St. Louis, USA; <sup>2</sup>Northwestern Polytechnical University, China; <sup>3</sup>Erlangen Centre for Astroparticle Physics, Germany; <sup>4</sup>Marshall Space Flight Center, USA; <sup>5</sup>University of Illinois in Urbana-Champaign, USA

**N14-36 Development of the Pulse Shape Processor for the Soft X-Ray Spectrometer Onboard ASTRO-H**

H. Seto<sup>1</sup>, Y. Shimoda<sup>1</sup>, M. S. Tashiro<sup>1</sup>, Y. Ishisaki<sup>2</sup>, M. Tsujimoto<sup>3</sup>, Y. Terada<sup>1</sup>, Y. Abe<sup>2</sup>, T. Yasuda<sup>1</sup>, Y. Takei<sup>3</sup>, K. Mitsuda<sup>3</sup>, K. Matsuda<sup>4</sup>, K. Masukawa<sup>4</sup>

<sup>1</sup>Saitama University, Japan; <sup>2</sup>Tokyo Metropolitan University, Japan; <sup>3</sup>Institute of Space and Astronautical Science, Japan; <sup>4</sup>Mitsubishi Heavy Industries, Ltd., Japan

**N14-39 Time-Resolved Gamma Ray Spectral Analysis of Planetary Neutron and Gamma Ray Instrumentation**

J. Bodnarik<sup>1,2</sup>, A. Burger<sup>2,3</sup>, D. Burger<sup>2</sup>, L. Evans<sup>1,4</sup>, S. Floyd<sup>1</sup>, L. Lim<sup>1</sup>, T. McClanahan<sup>1</sup>, M. Namkung<sup>1</sup>, S. Nowicki<sup>1,5</sup>, A. Parsons<sup>1</sup>, J. Schweitzer<sup>6</sup>, R. Starr<sup>1,7</sup>, K. Stassun<sup>2,3</sup>, J. Trombka<sup>1,8</sup>

<sup>1</sup>NASA's Goddard Space Flight Center, USA; <sup>2</sup>Vanderbilt University, USA; <sup>3</sup>Fisk University, USA; <sup>4</sup>Computer Sciences Corporation, USA; <sup>5</sup>University of Michigan, USA; <sup>6</sup>University of Connecticut, USA; <sup>7</sup>Catholic University of America, USA; <sup>8</sup>University of Maryland, USA

**N14-42 Comparison of Radiation Data from the Akebono Satellite Calibrated Using Geant4 with CRRES**

K. T. Asai<sup>1</sup>, T. Takashima<sup>2</sup>, T. Koi<sup>3</sup>, T. Nagai<sup>1</sup>

<sup>1</sup>Tokyo Institute of Technology, Japan; <sup>2</sup>JAXA, Japan; <sup>3</sup>SLAC, USA

**N18: Nuclear Measurements and Monitoring Techniques: posters**

Tuesday, Nov. 2 10:30-12:00 Exhibit Hall B

Session Chair: Len Cirignano, *Radiation Monitoring Devices, Inc.*,

**N18-182 Examination of the Standardization Method for 22Na Sealed Point Sources under Several Measurement Conditions**

Y. Sato<sup>1</sup>, H. Murayama<sup>2</sup>, K. Oda<sup>3</sup>, F. Nishikido<sup>2</sup>, E. Yoshida<sup>2</sup>, T. Sato<sup>4</sup>, T. Hasegawa<sup>2</sup>, N. Inadama<sup>2</sup>, T. Yamaya<sup>2</sup>, T. Yamada<sup>6</sup>, Y. Unno<sup>1</sup>, A. Yunoki<sup>1</sup>

<sup>1</sup>National Institute of Advanced Industrial Science and Technology, Japan; <sup>2</sup>National Institute of Radiological Sciences, Japan; <sup>3</sup>Tokyo Metropolitan Institute of Gerontology, Japan; <sup>4</sup>Shimadzu corporation, Japan; <sup>5</sup>Kitasato university, Japan; <sup>6</sup>Japan Radioisotope Association, Japan

**N18-185 Measurement of Production Cross-Sections of Residual Radionuclides by Charged Particle Induced Reactions on natFe**

G. Kim, K. Kim, M. Khandaker, K.-S. Kim, M. Lee, *Kyungpook National University, Korea*; M. Baba, H. Yamazaki, *Tohoku University, Japan*

**N18-188 Response Measurements for Cherenkov Glass Samples Using Isotopic Gamma Sources**

J. P. Hayward<sup>1,2</sup>, C. L. Hobbs<sup>1</sup>, Z. W. Bell<sup>2</sup>, L. A. Boatner<sup>2</sup>, J. O. Ramey<sup>2</sup>, G. E. Jellison<sup>2</sup>, B. Rangarajan<sup>1</sup>

<sup>1</sup>University of Tennessee, USA; <sup>2</sup>Oak Ridge National Laboratory, USA

**N18-191 Experimental Detection System for the Idaho National Lab (INL) ATR Fuel Burnup Measurement**

R. Aryaeinejad, J. Navarro, D. W. Nigg

*Idaho National Laboratory, USA*

**N18-194 Integrated Readout of Organic Scintillator and ZnS:Ag/6LiF for Segmented Antineutrino Detectors**

S. D. Kiff<sup>1</sup>, N. Bowden<sup>2</sup>, J. Monahan<sup>3</sup>, D. Reyna<sup>1</sup>

<sup>1</sup>Sandia National Laboratories, USA; <sup>2</sup>Lawrence Livermore National Laboratory, USA; <sup>3</sup>Drexel University, USA

**N18-197 Optimal Si Detection for the Focal Plane Detection System of S3 at SPIRAL2**

R. L. Lozeva, *IPHC, CNRS, IN2P3, France*

On behalf of the S3-FPDS

**N18-200 Beam Profile Monitoring System for Proton Therapy**

C. Ho, A. E. Chen, *National Central University, Taiwan*; P. Teng, M. Chu, *Academia Sinica, Taiwan*; C. Wang, *National United University, Taiwan*

**N18-203 A Digital Neutron Monitoring System for Tsing Hua Open-Pool Reactor (THOR)**

M.-H. Hsieh, H.-P. Chou

*National Tsing Hua University, Taiwan*

**N18-206 Multispectral UV-Visual Imaging as a Tool for Locating and Assessing Ionizing Radiation in Air**

D. L. Chichester, S. M. Watson

*Idaho National Laboratory, USA*

**N18-209 Portable Nuclear Safeguard Equipment Using Pinhole Gamma Camera**

C.-H. Baek<sup>1</sup>, J. Y. Hwang<sup>1</sup>, S. J. An<sup>1</sup>, H.-I. Kim<sup>1</sup>, S.-W. Kwak<sup>2</sup>, Y. H. Chung<sup>1</sup>

<sup>1</sup>Yonsei University, Republic of Korea; <sup>2</sup>Korea Institute of Nuclear Nonproliferation and Control, Republic of Korea

**N18-212 Gamma Camera with a New Diverging Collimator for Safeguard Verification**

H.-I. Kim<sup>1</sup>, C.-H. Baek<sup>1</sup>, J. Y. Hwang<sup>1</sup>, S. J. An<sup>1</sup>, S.-W. Kwak<sup>2</sup>, Y. H. Chung<sup>1</sup>

<sup>1</sup>Yonsei University, Republic of Korea; <sup>2</sup>Korea Institute of Nuclear Nonproliferation and Control, Republic of Korea

**N18-215 A Cherenkov Counter Using Liquid Core Fiber for Verifying Inventory of High Intensity Low Level Waste**

J. Kawarabayashi, H. Hayakawa, Y. Sato, H. Tomita, T. Iguchi *Nagoya University, JAPAN*

**N18-218 An Alpha Particle Detector for Measurement of Radon Levels**

A. Frojdh, G. Thungstrom, C. Frojdh, S. Petersson

*Mid Sweden University, Sweden*

**N18-221 Data Acquisition System for the Daya Bay Reactor Neutrino Experiment**

X. Li, *Inst Of High Energy Physics, Chinese Academy Of Sciences, P. R. China*

On behalf of the DAQ group of the Daya Bay collaboration

**N18-224 Non-Contact Imaging with Enhanced Spatial Resolution by Secondary Electron Detection**

M. Kroupa, J. Jakubek, F. Krejci

*Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic*

**N18-227 Design, Production, Metrological Tests and Certification of a Large-Volume (200L) Calibration Source for Gamma-Spectrometry Systems for Assay of Radioactive Waste Drums**  
K. K. Mitev, T. A. Boshkova, *Sofia University, Bulgaria*; L. L. Minev, *Three Sigma LTD, Bulgaria*

**N18-230 Measurement of Cold Neutron Spectra and Beam Profiles at HANARO CNRF**  
M. Moon, S.-W. Lee, Y.-S. Han, C.-H. Lee, G.-M. Sun, M.-S. Ryu  
*Korea Atomic Energy Research Institute, Korea*

**N18-233 DETERMINATION of K0 and Q0 for Zn-64(n, $\gamma$ )Zn-65 and Zn-68(n, $\gamma$ )Zn-69m REACTIONS**  
M. S. Dias, V. Cardoso, M. F. Koskinas, I. M. Yamazaki, R. Semmler, M. Morales, G. S. Zahn, F. A. Genezini, M. O. de Menezes  
*IPEN-CNEN/SP, Brazil*

**N18-236 Development of Two-Dimensional Differential Calibration Method for a Neutron Dosimeter Using a Thermal Neutron Beam**  
T. Matsumoto, H. Harano, A. Masuda, J. Nishiyama, *National Metrology Institute of Technology, National Institute of Advanced Industrial Science and Technology, Japan*; H. Matsue, *Japan Atomic Energy Agency, Japan*; A. Uritani, *Nagoya University, Japan*

**N18-239 A Prototype of Radiation Source Monitoring System Based on Si PIN detector with GIS and Accelerometer**  
H. Yu, M. Zeng, J. Li, J. Li, *Tsinghua University, China*

**N18-242 APPLICATION of MONTE CARLO SIMULATION to  $^{111}\text{In}$  STANDARDIZATION by MEANS of a  $4\pi$   $\beta$ - $\gamma$  COINCIDENCE SYSTEM**  
M. F. Koskinas, A. B. Brito, M. S. Dias, M. N. Takeda  
*Instituto de Pesquisas Energeticas e Nucleares, Brazil*

**N18-245 DISINTEGRATION RATE and GAMMA RAY PROBABILITY per DECAY MEASUREMENT of  $^{166\text{m}}\text{Ho}$**   
D. S. Moreira, M. F. Koskinas, M. S. Dias, M. N. Takeda  
*Instituto de Pesquisas Energeticas e Nucleares, Brazil*

**N18-248 Carbon Buildup under Ion Bombardment**  
E. F. Aguilera<sup>1</sup>, E. Martinez-Quiroz<sup>1</sup>, F. J. Ramirez-Jimenez<sup>2</sup>, M. C. Fernandez<sup>1</sup>, G. M. Murillo<sup>1</sup>  
<sup>1</sup>*Instituto Nacional de Investigaciones Nucleares, Mexico*; <sup>2</sup>*Instituto Nacional de Investigaciones Nucleares, Mexico*

**N18-251 Estimation of Mass and Depth of Buried Depleted Uranium Using Neural Networks**  
W. Wei, Q. Du, N. H. Younan  
*Mississippi State University, USA*

**N18-254 Bayesian Analysis of Time-Interval Data for Environmental Radiation Monitoring**  
P. Luo, J. L. Sharp, T. A. DeVol, *Clemson University, USA*

**N18-257 Design of Multi-Detector System for Unattended Uranium Enrichment Monitoring**  
A. Favalli, J. M. Goda, T. R. Hill, I. D. Kiril, D. W. MacArthur, C. E. Moss, M. T. Paffet, C. D. Romero, M. K. Smith, M. T. Swinhoe  
*Los Alamos National Laboratory, USA*

## N19: Instrumentation for Homeland and National Security: posters

Tuesday, Nov. 2 10:30-12:00 Exhibit Hall B  
Session Chairs: Michael C. Wright, *Oak Ridge National Laboratory, USA*  
Nathan Hilton, *Sandia National Lab, USA*

**N19-45 The Comparison of Large Scintillators for High-Energy Gamma Rays Detection**  
M. Gierlik, J. Iwanowska, L. Swiderski, T. Szczesniak, M. Moszynski, T. Kozlowski  
*Soltan Institute for Nuclear Studies, Poland*

**N19-48 A Compton-Suppressed Phoswich Detector for Radioxenon Measurements**  
A. T. Farsoni, D. M. Hamby, *Oregon State University, USA*

**N19-51 Evaluation of Personal Dosimeters and Electronic Modules under High-Dose Field**  
K. Tsuchiya, K. Kuroki, K. Kurosawa, N. Akiba, *National Research Institute of Police Science, Japan*; K. Tonoike, G. Uchiyama, Y. Miyoshi, H. Sono, *Japan Atomic Energy Agency, JAPAN*; T. Horita, K. Futakami, *Chiyoda Maintenance, Japan*; T. Matsumoto, J. Nishiyama, H. Harano, *National Institute of Advanced Industrial Science and Technology, Japan*

**N19-54 Fast Neutron Detection in Homeland Security Applications**  
R. Chandra, *Arktis Radiation Detectors Ltd, Switzerland*; G. Davatz, A. Howard, *ETH Zurich, Switzerland*

**N19-57 Optimization Through Simulation for the Triple Layer Phoswich Simultaneous Beta Gamma Detector Upgrade.**  
E. Aguayo, *Oregon State University, USA*

**N19-60 Detectors for Intense, Pulsed Active Detection**  
S. L. Jackson<sup>1</sup>, R. J. Allen<sup>1</sup>, J. P. Apruzese<sup>1</sup>, R. J. Comisso<sup>1</sup>, D. D. Hinshelwood<sup>1</sup>, D. Mosher<sup>1,2</sup>, D. P. Murphy<sup>1</sup>, P. F. Ottinger<sup>1</sup>, J. W. Schumer<sup>1</sup>, S. B. Swanekamp<sup>1,2</sup>, F. C. Young<sup>1,2</sup>, G. Cooperstein<sup>1</sup>, A. W. Hunt<sup>3</sup>, H. A. Seipel<sup>3</sup>, M. A. Gagliardi<sup>3</sup>  
<sup>1</sup>*Naval Research Laboratory, USA*; <sup>2</sup>*L-3 Communications, USA*; <sup>3</sup>*Idaho State University, USA*

**N19-63 Outdoor Accelerator Range for High Energy, Bremsstrahlung-Based, Photonuclear Experiments**  
J. L. Jones, D. R. Norman, K. J. Haskell, J. W. Sterbentz, W. Y. Yoon, M. D. Sandvig  
*Idaho National Laboratory, USA*

**N19-66 A DD Neutron Generator-Based PGNA System for Chemical Warfare Agent and Explosive Identification**  
A. J. Caffrey, D. L. Chichester, K. M. Krebs, E. H. Seabury, C. J. Wharton, J. M. Zabrickie  
*Idaho National Laboratory, USA*

**N19-69 Material Discrimination Study of Dual-Energy Imaging Using Photon Counting Detector**  
J. Hao, L. Zhang, Y. Xing, K. Kang  
*Tsinghua University, China*

**N19-72 SNM Detection Based on PCANI and NRF Method**  
W. Huang<sup>1,2,3</sup>, Y. Yang<sup>1,2</sup>, Y. Li<sup>1,2</sup>, B. Wang<sup>3</sup>  
<sup>1</sup>*Tsinghua University, China*; <sup>2</sup>*Ministry of Education, China*; <sup>3</sup>*Institute of Chemical Defence, China*

**N19-75 Detection of Hidden Materials Using Nuclear Resonance Fluorescence Technique: Simulation and Measurements**

H. Yang, *Canberra Industries, USA*; S. Xiao, T. Jevremovic, *The University of Utah, USA*

**N19-78 Studying Potential Applications of Nuclear Resonance Fluorescence**

G. A. Warren, P. N. Peplowski  
*Pacific Northwest National Laboratory, USA*

**N19-81 2 D Imaging of Heavily Shielded Materials by NRF with Laser-Compton Gamma-Ray Beam**

H. Ohgaki, T. Kii, K. Masuda, *Kyoto University, Japan*; H. Harada, F. Kitatani, T. Hayakawa, N. Kikuzawa, N. Nishimori, R. Hajima, T. Shizuma, *Japan Atomic Energy Agency, Japan*; H. Toyokawa, *National Institute of Advanced Industrial Science and Technology, Japan*

**N19-84 Muon Scattering Tomography with Resistive Plate Chambers**

J. J. Velthuis, P. Baesso, A. Paull, D. G. Cussans, *Bristol University, United Kingdom*; L. Cox, S. Quillin, *AWE, United Kingdom*

**N19-87 Cosmic Ray Muon Tomography System Using Drift Chambers for the Detection of Special Nuclear Materials**

V. Anghel<sup>1</sup>, J. Armitage<sup>2</sup>, K. Boudjemline<sup>2</sup>, D. Bryman<sup>3</sup>, E. Charles<sup>4</sup>, T. Cousins<sup>5</sup>, A. Erlandson<sup>2</sup>, G. Gallant<sup>3</sup>, C. Jewett<sup>1</sup>, G. Jonkmans<sup>1</sup>, Z. Liu<sup>3</sup>, S. Noel<sup>5</sup>, G. Oakham<sup>2</sup>, T. J. Stocki<sup>6</sup>, M. Thompson<sup>1</sup>, D. Waller<sup>7</sup>

<sup>1</sup>*Atomic Energy of Canada Limited, Canada*; <sup>2</sup>*Carleton University, Canada*; <sup>3</sup>*Advanced Applied Physics Solutions, Canada*; <sup>4</sup>*Canada Border Services Agency, Canada*; <sup>5</sup>*International Safety Research, Canada*; <sup>6</sup>*Health Canada, Canada*; <sup>7</sup>*Defense Research and Development Canada, Canada*

**N19-90 Detection and Imaging of High-Z Materials with a Muon Tomography Station Using GEM Detectors**

K. Gnanvo, L. I. Grasso, M. Hohlmann, J. B. Locke, A. Quintero, *Florida Institute of Technology, USA*; H. Muller, S. Martou, *CERN, Switzerland*

**N19-93 Heavily-Shielded Isotope Identification Using Compressed Sensing**

R. B. Vilim, R. Klann, *Argonne National Laboratory, USA*

**N19-96 Integration of Radiation Transport Models in an Interactive Video Game to Train Law Enforcement and First Responders on Preventative RAD/NUC Detection (PRND) Methods**

J. H. Winso, J. B. Rolando, W. H. Knight, E. S. Ackermann, *Spectral Labs Incorporated (SLI), USA*; V. J. Wijekumar, *Indiana University of Pennsylvania, USA*; H. Yu, *Kalloe Studios, USA*

**N19-99 Application Scenarios for the High Efficiency Multimode Imager (HEMI)**

A. Zoglauer<sup>1</sup>, M. Galloway<sup>1</sup>, M. Amman<sup>2</sup>, S. E. Boggs<sup>1</sup>, P. N. Luke<sup>2</sup>  
<sup>1</sup>*University of California at Berkeley, USA*; <sup>2</sup>*Lawrence Berkeley National Laboratory, USA*

**N19-102 Effects of External Absorption and Scatter on SPRD Performance**

A. Ivan, S. T. Markham, F. J. A. Ross, M. J. Hartman  
*GE Research, USA*

**N19-105 Detection of Hidden Stationary Sources with Distributed Mobile Detectors in a Highly Variable Background**

S. E. Labov, L. J. Hiller, K. E. Nelson, Y. Yao, *Lawrence Livermore National Laboratory, USA*; K. M. Chandy, A. Liu, *California Institute of Technology, USA*; R. Sherbert, *Drexel University, USA*

**N19-108 Data Fusion for Radiation Screening of Cargo Containers**

S. E. Labov, M. Pivovarov, K. E. Nelson, Y. Yao, *Lawrence Livermore National Laboratory, USA*; D. Cohen, *Sandia National Laboratory, USA*; A. Dubrawski, K. Chen, S. Ray, *Carnegie Mellon University, USA*; A. Ramseger, *University of Hamburg, Germany*

**N23: Semiconductor Detectors: posters**

Tuesday, Nov. 2

13:30-15:30

Exhibit Hall B

Session Chair: Andre Sopczak, *Lancaster University, United Kingdom*

**N23-2 Evaluation of Monolithic Silicon-On-Insulator Pixel Devices Thinned to 100 µm**

K. Hara<sup>1</sup>, Y. Arai<sup>2</sup>, Y. Ikemoto<sup>2</sup>, T. Kohriki<sup>2</sup>, T. Miyoshi<sup>2</sup>, K. Shinsho<sup>1</sup>, K. Koike<sup>1</sup>

<sup>1</sup>*University of Tsukuba, Japan*; <sup>2</sup>*High Energy Accelerator Research Org. (KEK), Japan*

**N23-5 High Count-Rate Silicon Drift Detector for EXAFS Applications**

S. Barkan<sup>1</sup>, D. Bogg<sup>2</sup>, E. V. Damron<sup>1</sup>, G. Dennis<sup>3</sup>, A. J. Dent<sup>3</sup>, R. Farrow<sup>2</sup>, L. Feng<sup>1</sup>, J. Headspith<sup>2</sup>, W. I. Helsby<sup>2</sup>, J. Horswell<sup>3</sup>, V. D. Saveliev<sup>1</sup>, N. Tartoni<sup>3</sup>, M. Takahashi<sup>1</sup>, C. R. Tull<sup>1</sup>

<sup>1</sup>*SII Nano Technology USA, USA*; <sup>2</sup>*Duresbury Science and Innovation Campus, UK*; <sup>3</sup>*Diamond Light Source, Harwell Science Campus, UK*

**N23-8 Surface Characterisation and Surface Protection of Germanium Detector Crystals**

T. Engert<sup>1,2</sup>, I. Kojouharov<sup>1</sup>, J. Gerl<sup>1</sup>, P. Nolan<sup>2</sup>, T. Krings<sup>3</sup>

<sup>1</sup>*Helmholtzzentrum für Schwerionenforschung, Germany*; <sup>2</sup>*University of Liverpool, UK*; <sup>3</sup>*SEMIKON Detector GmbH, Germany*

**N23-11 Test and First Application of Artificial Sapphire Sensors**

A. Ignatenko<sup>1,2</sup>, H. Henschel<sup>1</sup>, W. Lange<sup>1</sup>, W. Lohmann<sup>1</sup>, S. Schuwalow<sup>1</sup>

<sup>1</sup>*Deutsches Elektronen-Synchrotron, Germany*; <sup>2</sup>*National Center of Particle and High Energy Physics of Belarusian State University, Belarus*

**N23-14 A Novel CMOS Detector Based on a Deep Trapping Gate**

N. T. Fourches, *CEA Saclay/IRFU/SEDI/LDEF, France*

**N23-17 3-Dimensional TCAD Simulation of Double-Sided Silicon Microstrip Detectors for the CBM Experiment at FAIR**

S. Chatterji<sup>1</sup>, A. Lymanets<sup>2</sup>, J. M. Heuser<sup>1</sup>

<sup>1</sup>*GSI Helmholtz Institute for Heavy Ion Research GmbH, Germany*; <sup>2</sup>*University of Frankfurt, Germany*

**N23-20 Radiation Spectra from PbSe Nanocrystalline (NC) Semiconductor / Conductive Polymer Composite Assembly Detectors**

G. Kim, J. Karbowski, E. Dupler, M. D. Hammig  
*University of Michigan, USA*

**N23-23 Characterisation of a Broad Energy Germanium (BEGe) Detector. Simulation and Experimental Results.**

D. Barrientos<sup>1</sup>, I. C. Sagrado<sup>1</sup>, A. J. Boston<sup>2</sup>, H. C. Boston<sup>2</sup>, B. Quintana<sup>1</sup>, C. Unsworth<sup>2</sup>, S. Moon<sup>2</sup>, J. R. Cresswell<sup>2</sup>

<sup>1</sup>*University of Salamanca, Spain*; <sup>2</sup>*University of Liverpool, United Kingdom*



### N23-26 Test Results from Mimoso-26HR, a Monolithic Active Pixel Sensor with Integrated Zero Suppressing Readout and a High-Resistivity Epitaxial Substrate

G. Baudot<sup>1</sup>, G. Bertolone<sup>1</sup>, G. Claus<sup>1</sup>, C. Colledani<sup>1</sup>, Y. Degerli<sup>2</sup>, R. De Masi<sup>1</sup>, A. Dorokhov<sup>1</sup>, G. Doziere<sup>1</sup>, W. Dulinski<sup>1</sup>, M. Gelin<sup>1</sup>, M. Goffe<sup>1</sup>, A. Himmi<sup>1</sup>, C. Hu-Guo<sup>1</sup>, K. Jaaskelainen<sup>1</sup>, M. Koziel<sup>1</sup>, F. Morel<sup>1</sup>, F. Orsini<sup>2</sup>, I. Valin<sup>1</sup>, G. Voutsinas<sup>1</sup>, M. Winter<sup>1</sup>  
<sup>1</sup>IPHC/IN2P3/CNRS, France; <sup>2</sup>CEA/IRFU/SEDI, France

### N23-29 Advanced X-Ray Spectrometers Based on High Performance Read-Out Electronics Coupled with Silicon Drift Detectors

R. Alberti<sup>1,2</sup>, L. Bombelli<sup>1,2</sup>, C. Fiorini<sup>1,2</sup>, T. Frizzi<sup>1,2</sup>, A. Longoni<sup>1,2</sup>, S. Moser<sup>1,2</sup>, R. Nava<sup>1,2</sup>  
<sup>1</sup>Politecnico di Milano, Italy; <sup>2</sup>XGLab srl Spinoff del Politecnico di Milano, Italy

### N23-32 Numerical Model of Graphene-Based Radiation Detector Response

M. Foxe, C. Roecker, J. Boguski, I. Childres, G. Lopez, A. Patil, Y. P. Chen, I. Jovanovic  
 Purdue University, USA

### N23-35 Temperature Effects on the Operational Characteristics of CVD Diamond Sensors

R. Wang, M. Hoeferkamp, S. Seidel, University of New Mexico, USA; H. Kagan, The Ohio State University, USA

### N23-38 Integrated 3D Electronics for Future ATLAS Pixel Hybrid Detector

T. Hemperck, M. Barbero, M. Karagounis, H. Krueger, N. Wermes, University of Bonn, Germany; A. Rozanov, B. Chantepie, J.-C. Clemens, R. Fei, D. Fougeron, S. Godiot, P. Pangaud, CPPM Aix-Marseille Universite, France; A. Mekkaoui, M. Garcia-Sciveres, Lawrence Berkeley National Laboratory, United States of America

### N23-41 Astroparticle Physics with a Customized Low-Background Broad Energy Germanium Detector

P. Finnerty<sup>1,2</sup>, J. I. Collar<sup>3</sup>, G. K. Giovanetti<sup>1,2</sup>, R. Henning<sup>1,2</sup>, M. G. Marino<sup>4</sup>, A. G. Schubert<sup>4</sup>, J. F. Wilkerson<sup>1,2</sup>  
<sup>1</sup>University of North Carolina, USA; <sup>2</sup>Triangle Universities Nuclear Laboratory, USA; <sup>3</sup>University of Chicago, USA; <sup>4</sup>University of Washington, USA

### N23-44 Electrode Response of 3D-Architecture Silicon Sensors

J. Hasi<sup>1</sup>, E. Brown<sup>2</sup>, C. J. Kenney<sup>1</sup>, S. I. Parker<sup>3</sup>, A. Thompson<sup>4</sup>, E. Westbrook<sup>4</sup>, C. Da Via<sup>5</sup>, A. Kok<sup>6</sup>, T.-E. Hasen<sup>6</sup>, S. Watts<sup>5</sup>, J. Morse<sup>7</sup>  
<sup>1</sup>SLAC, USA; <sup>2</sup>Reed College, USA; <sup>3</sup>University of Hawaii, USA; <sup>4</sup>Molecular Biology Consortium, USA; <sup>5</sup>University of Manchester, UK; <sup>6</sup>SINTEF, Norway; <sup>7</sup>European Synchrotron Research Facility, France

### N23-47 Graphene Field Effect Transistors for Detection of Ionizing Radiation

A. Patil, G. Lopez, M. Foxe, I. Childres, C. Roecker, J. Boguski, I. Jovanovic, Y. P. Chen  
 Purdue University, USA

### N23-50 A Ruggedized High Purity Germanium (HPGe) Detector Array for Stand-off Detection and Characterization

J. E. Fast, K. I. Johnson, O. D. Mullen, R. C. Thompson, J. A. Willett  
 Pacific Northwest National Laboratory, USA

### N23-53 Double-MIG (Modified Internal Gate) X-Ray Detector

A. Niemela<sup>1</sup>, J. Seppala<sup>2</sup>, A. Aurola<sup>1</sup>, H. Sipila<sup>1</sup>, T. Tuuva<sup>3</sup>

<sup>1</sup>Pixpolar, Finland; <sup>2</sup>MIKES, Finland; <sup>3</sup>Lappeenranta University of Technology, Finland

## N27: Synchrotron Radiation and FEL Instrumentation: posters

Tuesday, Nov. 2 16:00-18:00 Exhibit Hall B

Session Chair: Stephan Friedrich, Lawrence Livermore National Laboratory, USA

### N27-160 A Liquid Phase Epitaxy Facility at the ESRF for the Production and Development of Thin Film Scintillators for Imaging Applications with Micrometer Resolution

T. Martin, P. A. Douissard, E. Mathieu, ESRF, France

### N27-163 Assessment of PIN Photodiodes for Pulse Intensity/position Monitor for X-Ray Free Electron Laser Beamline

Y. Kirihara, T. Hatsui, T. Kudo, T. Kameshima, T. Togashi, K. Tono, M. Yabashi, T. Ishikawa  
 RIKEN, Japan

### N27-166 Progress in the Development of the DSSC: a Large Format X-Ray Imager with Mega-Frame Readout Capability for the European XFEL

M. Porro<sup>1,2</sup>, <sup>1</sup>Max Planck Institut fuer Extraterrestrische Physik, Germany; <sup>2</sup>MPI Halbleiterlabor, Germany  
 On behalf of the DSSC Consortium

### N27-169 Real-Time Processing of XPCS Data in an FPGA

T. J. Madden, J. T. Weizeorick, A. Sandy, S. Narayanan, B. Tieman, M. Sikorski, X. Jiao  
 Argonne Laboratory, USA

### N27-172 Development of the XFEL Timing System

A. Hidvegi<sup>1</sup>, P. Gessler<sup>2</sup>, K. Rehlich<sup>2</sup>, C. Bohm<sup>1</sup>  
<sup>1</sup>Stockholm University, Sweden; <sup>2</sup>Deutsches Elektronen-Synchrotron (DESY), Germany

### N27-175 Pulsed Proton Beam as a Diagnostic Tool for the Characterization of Semiconductor Detectors at High Charge Densities

L. Carraresi<sup>1</sup>, A. Castoldi<sup>2</sup>, N. Grassi<sup>1</sup>, C. Guazzoni<sup>2</sup>, R. Hartmann<sup>3</sup>, D. Mezza<sup>2</sup>, F. Taccetti<sup>1</sup>  
<sup>1</sup>Universita degli Studi di Firenze and INFN, Italy; <sup>2</sup>Politecnico di Milano and INFN, Italy; <sup>3</sup>pnSensor GmbH, Germany

### N27-178 Preamplifier Development for Superconducting Tunnel Junction Array Detector Electronics

W. K. Warburton, J. Harris, XIA LLC, USA; M. Carpenter, Lawrence Berkeley National Lab, USA; S. Friedrich, Lawrence Livermore National Lab, USA; L. Fabris, Oak Ridge National Lab, USA

### N27-181 Development of X-Ray 2D Detector for XFEL with Effective 10<sup>5</sup> Dynamic Range by Multi-via Pixel with SOI Sensor Technology

T. Hatsui, T. Kudo, T. Kameshima, Y. Kirihara, M. Omodani, K. Kobayashi, T. Ishikawa, RIKEN, Japan; Y. Arai, KEK, Japan; T. Imamura, T. Ohmoto, A. Iwata, A-R-Tec, Co., Japan

### N27-184 Beam Loss Monitors for NSLS-II Storage Ring

S. L. Kramer, B. Kosciuk, Brookhaven National Lab, USA



**N28: Trigger and Front-End Systems: posters**

Tuesday, Nov. 2 16:00-18:00 Exhibit Hall B

Session Chairs: Christian Bohm, *University of Stockholm, Department of physics, Sweden*  
Martin L. Purschke, *Brookhaven National Lab, USA*

**N28-303 The Front-End Data Acquisition Card for the Large Pixel Detector at the Eu-XFEL**

J. A. Coughlan, C. P. Day, R. N. J. Halsall, S. Taghavi  
*STFC Rutherford Appleton Laboratory, UK*

**N28-306 Copper-Lite : Modular DAQ Platform with GbE**

M. Tanaka, T. Uchida, M. Ikeno, M. Saito, K. Tauchi, Y. Igarashi  
*KEK, Japan*

**N28-309 A Beam Test Telescope Based on the Alibava Readout System**

R. Marco-Hernandez, *IFIC(CSIC-UV), Spain*  
On behalf of the ALIBAVA Collaboration

**N28-312 Development of High Resolution TDC Module for MicroTCA Based on the GPX ASIC**

H. Kleines, P. Kaemmerling, A. Ackens, M. Drochner, P. Wuestner, W. Erven  
*Forschungszentrum Juelich, Germany*

**N28-315 A Multi-Channel Digital Acquisition System for Ge Spectroscopy in the GERDA Experiment**

S. Riboldi<sup>1,2</sup>, C. A. Ur<sup>2</sup>, M. Bellato<sup>2</sup>, C. Cattadori<sup>2</sup>, A. D'Andragora<sup>2</sup>, A. Di Vacri<sup>2</sup>, R. Isocrate<sup>2</sup>, C. Manea<sup>2</sup>, A. Pullia<sup>1,2</sup>, C. Rossi Alvarez<sup>2</sup>, C. Rusu<sup>3</sup>, F. Zocca<sup>1,2</sup>

<sup>1</sup>*Universita' degli Studi di Milano, Italy;* <sup>2</sup>*Istituto Nazionale di Fisica Nucleare, Italy;* <sup>3</sup>*University of Texas at Dallas, US*

**N28-318 The Zero Degree Calorimeter Readout Card for ALICE**

S. Siddhanta, G. Usai, *Dipartimento di Fisica e INFN, Italy*

**N28-321 Piezoelectric Actuators Control Unit**

S. Galeotti, F. Bedeschi, A. Gennai, C. Magazzu', D. Passuello, E. Pedreschi, F. Spinella  
*I.N.F.N. sez. Pisa, Italy*

**N28-324 Accurate Measurement of Double Beta Decays in the NEXT TPC**

A. Gil, *Instituto de Fisica Corpuscular (CSIC-Universidad de Valencia), Spain*  
On behalf of the NEXT Collaboration

**N28-327 Muon Detection Based on a Hadronic Calorimeter**

T. Ciodaro Xavier, *COPPE/UFRJ, Brazil*  
On behalf of the ATLAS Tile calorimeter

**N28-330 A 72 Channel 125 MSPS Analog-to-Digital Converter Module for Drift Chamber Readout for the GlueX Detector**

G. J. Visser, *Indiana University, USA;* D. Abbot, F. J. Barbosa, C. Cuevas, H. Dong, E. Jastrzembki, B. Raydo, *Thomas Jefferson National Accelerator Facility, USA*

**N28-333 Tools for Trigger Aware Analysis in ATLAS**

A. Krasznahorkay, *New York University, USA*  
On behalf of the ATLAS Collaboration

**N28-336 Digital Pulse Shape Analysis and Self Adjusting Front End Control Loops**

V. Stoica<sup>1</sup>, N. Kalantar<sup>1</sup>, C. Rigollet<sup>1</sup>, H. Simon<sup>2</sup>, H. Wortche<sup>1</sup>

<sup>1</sup>*KVI - University of Groningen, Netherlands;* <sup>2</sup>*GSI, Germany*

**N28-339 VHDL Implementation of Feature-Extraction Algorithm for the PANDA Electromagnetic Calorimeter**

M. Kavatsyuk, *KVI, University of Groningen, The Netherlands*  
On behalf of the PANDA collaboration

**N28-342 Real-Time Event Reconstruction Using the CAPTAN System Embedded in the MicroTCA Framework**

R. A. Rivera, M. Turqueti, *Fermilab, USA*

**N28-345 Diagnostic Systems and Resource Utilization of the ATLAS High Level Trigger**

M. zur Nedden, *Humboldt-University of Berlin, Germany*  
On behalf of the ATLAS-Collaboration

**N28-348 The Na62 Liquid Krypton Electromagnetic Calorimeter Level 0 Trigger**

V. Bonaiuto<sup>1,2</sup>, G. Carboni<sup>1,2</sup>, A. Fucci<sup>1</sup>, G. Paoluzzi<sup>1</sup>, A. Salamon<sup>1</sup>, G. Salina<sup>1</sup>, E. Santovetti<sup>1,2</sup>, F. Sargeni<sup>1,2</sup>

<sup>1</sup>*INFN Sezione Roma Tor Vergata, Italy;* <sup>2</sup>*Universita' degli Studi di Roma Tor Vergata, Italy*

**N28-351 Application of Gigabit Ethernet for Continuous Real-Time Data Acquisition**

D. Makowski, P. Predki, T. Kozak, A. Piotrowski, G. Jablonski  
*Technical University of Lodz, Poland*

**N29: High Energy and Nuclear Physics Instrumentation: posters**

Tuesday, Nov. 2 16:00-18:00 Exhibit Hall B

Session Chairs: Maxim P. Titov, *CEA Saclay, IRFU/SPP, France*  
Jachoon Yu, *University of Texas, Arlington,*

**N29-187 Crosstalk Research of Long Strip Timing RPC**

Y. Wang, J. Wang, W. Ding, H. Chen, J. Cheng, Y. Li  
*Engineering Physics Department, Tsinghua University, China*

**N29-190 TMRS MK III Assembly**

J. A. O'Toole, E. L. Kerstiens, R. A. Valicenti  
*Los Alamos National Laboratory, USA*

**N29-193 TMRS MK III Installation**

J. A. O'Toole, E. L. Kerstiens, R. A. Valicenti  
*Los Alamos National Laboratory, USA*

**N29-196 Proposal for a Readout Driver Card for the ATLAS Insertable B-Layer**

A. Gabrielli<sup>1</sup>, A. Polini<sup>2</sup>, G. Bruni<sup>2</sup>, M. Bruschi<sup>2</sup>, D. Falchieri<sup>1</sup>, A. Zoccoli<sup>1</sup>, T. Flick<sup>3</sup>, J. Joseph<sup>4</sup>, J. Dopke<sup>3</sup>, A. Kugel<sup>3</sup>, J. Grosse-Knetter<sup>6</sup>, N. Kriger<sup>6</sup>, P. Morettini<sup>7</sup>, M. Rizzi<sup>2</sup>, S. Zannoli<sup>1</sup>, N. C. Schroer<sup>5</sup>

<sup>1</sup>*INFN & Physics Department University of Bologna, Italy;* <sup>2</sup>*INFN Bologna, Italy;* <sup>3</sup>*Fachbereich C Physik, Bergisch Universitaet Wuppertal, Germany;* <sup>4</sup>*LBNL, Berkeley, USA;* <sup>5</sup>*ZITI, LS Informatik V, Heidelberg University, Germany;* <sup>6</sup>*II. Physikalisches Institut, Universitaet Goettingen, Germany;* <sup>7</sup>*INFN Genova, Italy*

**N29-199 Development of Forward Si+W Calorimeter for the upgrade of LHC-ALICE experiment**

Y. Hori, H. Hamagaki, T. Gunji, T. Tsuji  
*University of Tokyo, Japan*

**N29-202 GANDALF - a Modular Electronic Readout System for High Energy Physics**

G. Ahluwalia<sup>1</sup>, J. Barth<sup>1</sup>, S. Bartknecht<sup>2</sup>, J. Bieling<sup>1</sup>, H. Fischer<sup>2</sup>, F. Herrmann<sup>2</sup>, F. Klein<sup>1</sup>, K. Koenigsmann<sup>2</sup>, L. Lauser<sup>2</sup>, J. Pretz<sup>1</sup>, C. Schill<sup>2</sup>, S. Schopferer<sup>2</sup>, H. Wollny<sup>2</sup>  
<sup>1</sup>University of Bonn, Germany; <sup>2</sup>University of Freiburg, Germany

**N29-205 Micro Pattern Gas Detector Technologies and Applications - the Work of the RD51 Collaboration**

M. P. Titov, CEA Saclay, France

On behalf of the RD51 Collaboration

**N29-208 The COUPP Cosmic Ray Veto Photomultiplier Systems**

S. U. Hansen, J. C. Hall, T. E. Kiper, C. B. Michael, R. Erik Fermilab, USA

**N29-211 SNO+ Electronics Upgrades**

T. M. Shokair, R. J. Bonventre  
 University of Pennsylvania, USA

**N29-214 Resolution Studies of Single-Crystal CVD Diamond Pixel Detectors**

M. S. Hollingsworth, University of Tennessee, USA

On behalf of the CMS Beam and Radiation Monitoring Group

**N29-217 Alignment of the ATLAS Inner Detector Tracking System**

S. Marti-Garcia, Instituto de Fisica Corpuscular (IFIC), Spain

On behalf of the ATLAS Collaboration

**N29-220 Development of 3D Tracking Detectors in the DCBA Experiment for Studies of Double Beta Decays**

H. Igarashi, T. Sumiyoshi, Tokyo Metropolitan University, Japan; N. Ishihara, G. Iwai, H. Iwase, T. Inagaki, T. Ohama, Y. Kato, Y. Kondou, K. Takahashi, S. Takeda, T. Haruyama, Y. Makida, Y. Yamada, M. Kawai, KEK, Japan; T. Ishizuka, Fukuoka Institute of Technology, Japan; S. Kitamura, Nihon Institute of Medical Science, Japan; Y. Teramoto, Osaka City University, Japan; Y. Sakamoto, Tohoku Gakuin University, JAPAN; I. Nakano, Okayama University, Japan; Y. Nagasaka, Hiroshima institute of technology, Japan; N. Tamura, Niigata university, Japan; K. Tanaka, SSI, Japan; R. Ito, GREE, Inc., Japan; M. Tonooka, SCTEC, Japan

**N29-223 Commissioning of the ATLAS Jet and Missing Energy Triggers with Beam Collisions at the LHC**

P.-H. Beauchemin, University of Oxford, UK

On behalf of the ATLAS Collaboration

**N29-226 Characterization of Segmented HPGe Detectors Using Pulse Shape Comparison Methods**

F. C. L. Crespi<sup>1</sup>, V. Vandone<sup>1</sup>, F. Camera<sup>1</sup>, S. Brambilla<sup>2</sup>, B. Million<sup>2</sup>, S. Riboldi<sup>1</sup>, O. Wieland<sup>2</sup>, A. Boston<sup>3</sup>, C. Unsworth<sup>3</sup>, H. Boston<sup>3</sup>, S. Colosimo<sup>3</sup>, S. Moon<sup>3</sup>, P. Nolan<sup>3</sup>

<sup>1</sup>University of Milan / INFN, ITALY; <sup>2</sup>INFN Milano, Italy; <sup>3</sup>University of Liverpool, UK

**N29-229 Depletion Region Dynamics of an AGATA Detector**

S. Moon<sup>1</sup>, D. Barrientos<sup>2</sup>, A. J. Boston<sup>1</sup>, H. C. Boston<sup>1</sup>, S. J. Colosimo<sup>1</sup>, J. R. Cresswell<sup>1</sup>, D. S. Judson<sup>1</sup>, P. J. Nolan<sup>1</sup>, C. Unsworth<sup>1</sup>

<sup>1</sup>University of Liverpool, UK; <sup>2</sup>Universidad de Salamanca, Spain

**N29-232 Study of 144-ch Hybrid Avalanche Photo-Detector with High Density Electronics System for Belle-II RICH Counter**

S. Iwata, Tokyo Metropolitan University, Japan

On behalf of the Belle II A-RICH group

**N29-235 Construction of a Large Scale Prototype for a SiW Electromagnetic Calorimeter for the ILC - EUDET Module**

R. Poeschl, LAL Orsay, France

On behalf of The groups working on the EUDET Ecal Module within the CALICE Collaboration

**N29-238 Use of Triple Modular Redundancy (TMR) Technology in FPGAs for the Reduction of Faults Due to Radiation in the Readout of the ATLAS Monitored Drift Tube (MDT) Chambers**

J. Dubbert, M. Fras, H. Kroha, O. Reimann, R. Richter, B. Weber  
 Max-Planck-Institut fuer Physik, Germany

**N29-241 Realization and Test of the Engineering Prototype of the CALICE Tile Hadron Calorimeter**

M. Reinecke, DESY, Germany

On behalf of the CALICE collaboration

**N29-244 Upgrade of the ATLAS Muon Trigger for the SLHC**

J. Dubbert, S. Horvat, O. Kortner, H. Kroha, R. Richter

Max-Planck-Institut fuer Physik, Germany

**N29-247 DAQ and Data Management for the KATRIN Neutrino Experiment**

A. Kopmann<sup>1</sup>, A. Beglarian<sup>1</sup>, T. Bergmann<sup>1</sup>, S. Chilingaryan<sup>1</sup>, M. A. Howe<sup>2,3</sup>, D. G. Phillips II<sup>2,3</sup>, D. Tcherniakhovski<sup>1</sup>, S. Voecking<sup>4</sup>, J. F. Wilkerson<sup>2,3</sup>, J. Wolf<sup>1</sup>, S. Wuestling<sup>1</sup>

<sup>1</sup>Karlsruhe Institute of Technology, Germany; <sup>2</sup>University of North Carolina, USA; <sup>3</sup>Triangle Universities Nuclear Laboratory, USA; <sup>4</sup>University of Muenster, Germany

**N29-250 Studies of the Pattern of Light Emitted from Waveshifting, Scintillating, and Waveguide Fibers Used in Detectors for Particle Physics**

B. W. Baumbaugh, R. C. Ruchti, M. J. Vigneault, J. F. Conti  
 University of Notre Dame, USA

**N29-253 The Large-Angle Photon Veto System for the NA62 Experiment at CERN**

F. Ambrosino<sup>1</sup>, A. Antonelli<sup>2</sup>, F. Costantini<sup>1</sup>, D. Di Filippo<sup>1</sup>, R. Fantechi<sup>1</sup>, G. Lamanna<sup>1</sup>, E. Leonardi<sup>3</sup>, I. Mannelli<sup>1</sup>, P. Massarotti<sup>1</sup>, M. Moulson<sup>2</sup>, M. Napolitano<sup>1</sup>, V. Palladino<sup>1</sup>, M. Raggi<sup>2</sup>, G. Saracino<sup>1</sup>, T. Spadaro<sup>2</sup>, P. Valente<sup>3</sup>, S. Venditti<sup>1</sup>

<sup>1</sup>Universita' and Sezione INFN, Italy; <sup>2</sup>Laboratori Nazionali di Frascati dell'INFN, Italy; <sup>3</sup>Universita' La Sapienza and Sezione INFN, Italy

**N29-256 Magnetic Shielding to 1 nT in Large Volume**

Z. A. Lindsey, Student, University of Tennessee, US

**N29-259 Alignment and Physics Performance of the CMS Silicon Tracker**

T. B. Arranged, CERN, Switzerland

On behalf of the CMS Collaboration

**N29-262 High Resolution Photon Timing with MCP-PMTs: a Comparison of Commercial CFD with ASIC-Based Waveform Digitizers TARGET and WaveCatcher.**

J. Va'vra<sup>1</sup>, D. Breton<sup>2</sup>, E. Delagnes<sup>3</sup>, J. Maalmi<sup>2</sup>, K. Nishimura<sup>4</sup>, L. Ruckman<sup>4</sup>, G. Varner<sup>4</sup>

<sup>1</sup>SLAC, USA; <sup>2</sup>Laboratoire de l'Accelrateur Linaire, Orsay, CNRS/IN2P3, France; <sup>3</sup>CEA/Irfu Saclay, France; <sup>4</sup>University of Hawaii, USA

**N29-265 Calibration UV LED System for CALICE Scintillator Based Tile Hadron Calorimeter**

I. Polak, Institute of Physics ASCR, Prague, Czech republic

On behalf of the calice

**N29-268 An Intelligent HV Control and Monitoring System for the PHENIX Hadron Blind Detector at the Relativistic Heavy Ion Collider**

M. D. Proissl<sup>1</sup>, B. Azmoun<sup>2</sup>, S. Boose<sup>2</sup>, M. Durham<sup>1</sup>, T. K. Hemmick<sup>1</sup>, A. Milov<sup>2</sup>, S. Polizzo<sup>2</sup>, M. Purschke<sup>2</sup>, C. L. Woody<sup>2</sup>  
<sup>1</sup>*Stony Brook University, USA*; <sup>2</sup>*Brookhaven National Laboratory, USA*

**N29-271 The Timing Counter of the MEG Experiment: Design and Commissioning**

M. De Gerone, *INFN Genova, Italy*  
 On behalf of the Timing counter group of MEG collaboration

**N29-274 Noise Model of the Sense Wire for Large Liquid Argon Time Projection Chambers: an Experimental Verification**

S. Rescia, V. Radeka, *Brookhaven National Laboratory, NY*

**RTSD Poster Presentations**

**R05: RTSD Poster I**

Tuesday, Nov. 2 13:30-15:30 Exhibition Hall B  
 Session Chair: Ernesto Dieguez, *Universidad Autonoma de Madrid*,

**R05-1 Coincidence Measurements with Stacked (Cd,Zn)Te Coplanar Grid Detectors**

C. Disch<sup>1</sup>, A. Zwerger<sup>1</sup>, A. Fauler<sup>1</sup>, M. Dambacher<sup>1</sup>, U. Stoehlker<sup>2</sup>, M. Fiederle<sup>1</sup>

<sup>1</sup>*Freiburg Materials Research Center (FMF), Germany*; <sup>2</sup>*German Federal Office for Radiation Protection, Germany*

**R05-2 Effect of Crucible Material on the Synthesis and Purity of LiGaTe<sub>2</sub>**

A. C. Stowe, D. Brasfield, J. Morrell, *Y-12 National Security Complex, USA*; P. Phattacharya, A. Burger, *Fisk University, USA*

**R05-3 Numerical Simulation of TEES and TSC Methods**

J. Franc, R. Grill, H. Elhadidy, P. Praus, P. Moravec  
*Institute of Physics, Charles University, Czech Republic*

**R05-4 The Sensitivity of Pure and Doped TlBr Crystals**

I. M. Gazizov, *JSC Institute of Physical-Technical Problems, Russian Federation*; V. M. Zaletin, *Dubna University, Russian Federation*

**R05-5 Ion Mobility and Polarization in Thallium Bromide**

C. Rocha Leao, V. Lordi  
*Lawrence Livermore National Lab, USA*

**R05-6 A New Charge Compensation Approach for Semi-Insulator Detector**

M. Zanichelli, M. Pavesi, *University of Parma, Italy*; E. Caroli, *INAF, Italy*; A. Zappettini, *IMEM-CNR, Italy*

**R05-7 The Vacancy-Cluster Mechanism of Photocurrent Degradation in TlBr Detectors irradiated by Gamma- Rays.**

I. M. Gazizov  
*JSC Institute of Physical-Technical Problems, Russian Federation*

**R05-8 The Application of Digital Pulse Processing to HgI<sub>2</sub> X-Ray Detectors**

S. K. Chaudhuri, A. Lohstroh, M. Nakhostin, P. J. Sellin  
*University of Surrey, United Kingdom*

**R05-9 Electrical Characterization of Bismuth Tri-iodide Crystals**

A. T. Lintereur, W. Qiu, J. C. Nino, M. J. Harrison, J. E. Baciaik  
*University of Florida, USA*

**R05-10 High Resolution X-Ray Imaging Detector Based on Polycrystalline CdTe Thick Films**

R. Sorgenfrei, C. Disch, A. Zwerger, K.-H. Bachem, M. Fiederle  
*Albert-Ludwigs-Universitaet, Germany*

**R05-11 Intrinsic Point Defects in Cadmium Telluride Studied Using Hybrid Density-Functional Theory Calculations**

P. Erhart, D. Aberg, V. Lordi  
*Lawrence Livermore National Laboratory, USA*

**R05-12 Layered GaTe Crystals for Radiation Detectors**

K. C. Mandal, P. G. Muzykov, R. M. Krishna, S. Das, T. C. Hayes, T. S. Sudarshan  
*University of South Carolina, USA*

**R05-13 Characterization of 4H Semi-Insulating Silicon Carbide for Radiation Detector Applications**

K. C. Mandal, P. G. Muzykov, R. M. Krishna, S. Das, T. S. Sudarshan

University of South Carolina, USA

**R05-14 Identification of New Candidate Semiconducting Gamma Radiation Detection Materials via Informatics-Based Property Maps**

K. F. Ferris, K. J. Shah, *Pacific Northwest National Laboratory, USA*; D. M. Jones, *Proximate Technologies, LLC, USA*

**R05-15 Assessing Optical Property-Based Band Gap Estimation Methods for Semiconducting Radiation Detection Materials**

T. B. Seifert, K. F. Ferris, K. J. Shah, *Pacific NW National Laboratory, USA*; D. M. Jones, *Proximate Technologies, LLC, USA*

**R05-16 Edge Effects in CdTe-Based Semiconductor Sensors**

M. J. Bosma  
*Nikhef - National Institute for Subatomic Physics, The Netherlands*

**R05-17 Improvement of CdZnTe Detector Performance by Annealing under Te Vapor Pressures**

J. Suh<sup>1,2</sup>, A. E. Bolotnikov<sup>2</sup>, K. Kim<sup>2</sup>, G. Yang<sup>2</sup>, G. S. Camarda<sup>2</sup>, A. Hossain<sup>2</sup>, Y. Cui<sup>2</sup>, R. B. James<sup>2</sup>, J. Hong<sup>1</sup>  
<sup>1</sup>*Korea University, South Korea*; <sup>2</sup>*Brookhaven National Laboratory, USA*

**R05-18 Enhanced Born Charges and Defect Properties in Halide-Based Semiconductor Radiation Detector**

M.-H. Du, D. J. Singh, *Oak Ridge National Laboratory, USA*

**R05-19 HIGH-TEMPERATURE TREATMENT of Cd<sub>0.9</sub>Zn<sub>0.1</sub>Te CRYSTALS**

P. Fochuk, O. Kopach, I. Nakonechnyi, Y. Verzhak, O. Panchuk, *Chernivtsi National University, Ukraine*; G. Yang, A. Bolotnikov, R. B. James, *Brookhaven National Laboratory, USA*

**R05-20 A STUDY of POINT DEFECTS in Cd<sub>1-x</sub>Zn<sub>x</sub>Te:In SINGLE CRYSTALS**

P. Fochuk, I. Nakonechnyi, Y. Verzhak, O. Panchuk, *Chernivtsi National University, Ukraine*; Y. Nykoniuk, *National University of Water Management and Nature Resources Use, Ukraine*; A. Bolotnikov, R. B. James, *Brookhaven National Laboratory, USA*

**R05-21 The Investigation of the Ionic Component of Conductivity in TlBr**

I. M. Gazizov, V. M. Zaletin, *JSC Institute of Physical-Technical Problems, Russian Federation*; M. V. Kuznetsov, I. S. Lisitsky, *GIREDMET, Russian Federation*

**R05-22 Structural and Electrical Properties of CdTe:Cl**

M. Bugar, E. Belas, R. Grill, R. Fesh, J. Prochazka  
*Charles University, Faculty of Mathematics and Physics, Czech Republic*

**R05-23 The Thermal Decomposition and Expansion Behavior of Mercury Indium Telluride Crystals for NIR Detectors**

L. Wang  
*Electronic Materials Research Laboratory, Xi'an Jiaotong University, P. R. China*

**R05-24 Preparation of CdZnTe Single Crystal Without Zn Segregation**

J. Liu, *Shandong University of Technology, China*

**R05-25 Darkfield Microscopy and AFM Measurements of Cd<sub>0.9</sub>Zn<sub>0.1</sub>Te Polished and Cleaned Using Capillary Force Wafer Mounts**

J. D. Crocco, H. Bensalah, J. L. Plaza, E. Dieguez  
*Crystal Growth Laboratory, University Autonoma, Spain*

**R05-26 Vapor Growth of Tetragonal Prismatic Mercuric Iodide Crystals**

E. Ariesanti<sup>1</sup>, A. Kargar<sup>2</sup>, D. S. McGregor<sup>1</sup>  
<sup>1</sup>*Kansas State University, USA*; <sup>2</sup>*Radiation Monitoring Devices, Inc., USA*

**R05-27 Mechanical Polishing and Wet Chemical Etching of TlBr Crystals**

L. E. Voss, A. M. Conway, R. T. Graff, P. R. Beck, R. J. Nikolic, A. J. Nelson, S. A. Payne, *Lawrence Livermore National Lab, USA*; K. Shah, *Research Monitoring Devices, USA*

**R05-28 Study of Different Cool down Schemes During CdZnTe Growths**

S. K. Swain, *Center for Materials Research, Washington State University, USA*

On behalf of the Center For Materials Research, WSU

**R05-29 Features of Optical Properties of CdTe(111) Crystals Subjected to Different Surface Treatments**

D. V. Gnatyuk, L. V. Poperenko, V. A. Odarych, I. V. Yurgelevych, *Taras Shevchenko National University of Kyiv, Ukraine*; T. Aoki, *Shizuoka university, Japan*; S. N. Levytskyi, *National Academy of Sciences of Ukraine, Ukraine*

**R05-30 Thermal-Capillary Analysis of the Micro-Pull-down Process for Screening Possible Detector Crystals**

J. J. Derby, G. Samanta, A. Yeckel  
*University of Minnesota, U.S.A.*

**R05-31 Correlations Between Extended Defects and Uniformity of Charge Carrier Collection in HgI<sub>2</sub> Material**

G. S. Camarda<sup>1</sup>, A. E. Bolotnikov<sup>1</sup>, Y. Cui<sup>1</sup>, R. Gul<sup>1</sup>, A. Hossain<sup>1</sup>, K. Kim<sup>1</sup>, L. Xu<sup>2</sup>, G. Yang<sup>1</sup>, R. B. James<sup>1</sup>, L. Van Der Berg<sup>3</sup>, M. R. Saleno<sup>3</sup>, R. D. Vigil<sup>3</sup>, J. L. Baker<sup>3</sup>  
<sup>1</sup>*Brookhaven National Lab, USA*; <sup>2</sup>*Northwestern Polytechnic University, China*; <sup>3</sup>*Constellation Technology Corporation, USA*

**R05-32 Energy Correction and Characterization of Charge Sharing Events for the CSTD Project Detectors**

J. Carrascal<sup>1</sup>, J. Castilla<sup>1</sup>, J. C. Oller<sup>1</sup>, A. Diaz<sup>2</sup>, O. Vela<sup>1</sup>, J. M. Perez<sup>1</sup>  
<sup>1</sup>*CIEMAT, Spain*; <sup>2</sup>*CEADEN, Cuba*

**R05-33 Design of the Focal Plane CdTe Double Side Strip Detector for ART-XC Telescope of SPECTRUM-ROENTGEN-GAMMA Mission**

V. Y. Levin, V. Akimov, E. Grebeneva, O. Smirnov, M. Pavlinsky, A. Rotin, M. Kuznetzova  
*Space Research Institute, IKI, Russia*

**R05-34 Efficiency Measurements on 6.0 cm<sup>3</sup> 3-D CdZnTe Detectors**

H. Yang, F. Zhang, Y. Zhu, Z. He

*University of Michigan, USA*

**R05-35 Analysis of System-Dependent Factors Affecting Pixelated CdZnTe Detector Performance Through Simulation**

J. C. Kim, W. Kaye, F. Zhang, Z. He  
*University of Michigan, US*

**R05-36 Application of CdTe (CdZnTe) Detectors in Pulse-Height Mode for Gamma-Ray Dosimetry**

A. A. Zakharchenko, A. V. Rybka, V. E. Kutny, L. N. Davydov, M. A. Khazhmuradov  
*National Science Center Kharkov Institute of Physics and Technology (NSC KIPT), Ukraine*



**R05-37 Physical Modelling of a High Count Rate Energy Resolving CdTe Hybrid Pixel Detector for the Performance Characterisation of a Medical Imaging System**

M. Ruat, G. Potter, M. Dimmock, A. Berry  
*Monash University, Australia*

**R05-38 3D Simulations of CdZnTe Detectors with Irregular Anode Pixel Structures: Charge Collection and Timing Properties**

S. A. Komarov<sup>1</sup>, Y. Yin<sup>1</sup>, L.-J. Meng<sup>2</sup>, H. Wu<sup>1</sup>, Y.-C. Tai<sup>1</sup>  
<sup>1</sup>*Washington University in St. Louis, USA;* <sup>2</sup>*University of Illinois at Urbana-Champaign, USA*

**R05-39 Results from Operating Pixelated CZT at Low-Background for the COBRA Experiment**

J. W. Martin<sup>1</sup>, M. Beilicke<sup>1</sup>, O. Schulz<sup>2</sup>, T. Neddermann<sup>2</sup>, A. Garson III<sup>1</sup>, Q. Guo<sup>1</sup>, K. Lee<sup>1</sup>, Q. Li<sup>1</sup>, H. Krawczynski<sup>1</sup>  
<sup>1</sup>*Washington University in Saint Louis, United States;* <sup>2</sup>*Technische Universität Dortmund, Germany*

**R05-40 Precision Measurements of the Response of a Pixelated CZT Detector with an Al<sub>2</sub>O<sub>3</sub> Insulated Steering Grid**

K. Lee<sup>1</sup>, J. Matteson<sup>2</sup>, Q. Li<sup>1</sup>, A. Garson III<sup>1</sup>, Q. Guo<sup>1</sup>, J. Martin<sup>1</sup>, M. Beilicke<sup>1</sup>, H. Krawczynski<sup>1</sup>  
<sup>1</sup>*Washington University in St. Louis, United States;* <sup>2</sup>*University of California, San Diego, United States*

**R05-41 Tests of CdZnTe Cross-Strip Detectors**

Y. Cui, P. Vaska, R. B. James, A. Hossain, S. Krishnamoorthy, S. P. Stoll, K. Kim, G. Camarda, G. Yang  
*Brookhaven National Laboratory, USA*

**R05-42 Clinical Measurements of Synthetic Diamond X-Ray Dosimeters for Radiotherapy**

S. P. Lansley<sup>1</sup>, G. T. Betzel<sup>1</sup>, F. Baluti<sup>2</sup>, L. Reinisch<sup>3</sup>, J. Meyer<sup>1</sup>  
<sup>1</sup>*University of Canterbury, New Zealand;* <sup>2</sup>*Christchurch Hospital, New Zealand;* <sup>3</sup>*Jacksonville State University, USA*

**R05-43 Investigation of Polarization Effect with TlBr Detectors at Different Operating Temperatures**

B. Donmez, C. Thrall, Z. He, *The University of Michigan, USA;* H. Kim, L. J. Cirignano, K. S. Shah, *Radiation Monitoring Devices Inc., USA*

**R05-44 Modular Sensor Pack for Large Thickness Cadmium Zinc Telluride (CZT) Gamma Radiation Detectors**

T. Zhang, J. E. Tkaczyk, K. Andreini, F. Pan, Y. Z. Williams, Y. Du, *General Electric Research, USA;* H. Chen, G. Bindley, *Redden Technologies, Canada*

**R05-45 Large Area Integrated Circuit for Spectroscopic Readout of Small Pixel CdZnTe X-Ray Detectors**

P. Seller<sup>1</sup>, L. L. Jones<sup>1</sup>, P. J. Sellin<sup>2</sup>, S. L. Thomas<sup>1</sup>, M. C. Veale<sup>1</sup>, M. D. Wilson<sup>1</sup>  
<sup>1</sup>*Rutherford Appleton Laboratory, UK;* <sup>2</sup>*University of Surrey, UK*

**R05-46 A Study of Pixelated CdZnTe Detectors for Neutrino Research**

T. Kutter, J. Miyamoto, A. Leder  
*Louisiana State University, USA*

**R05-47 Formation of CdTe Diode Detectors by Laser Irradiation in Water**

Y. A. Gnatyuk<sup>1,2</sup>, T. Aoki<sup>2</sup>, O. I. Vlasenko<sup>1</sup>, S. N. Levytskyi<sup>1</sup>  
<sup>1</sup>*National Academy of Sciences of Ukraine, Ukraine;* <sup>2</sup>*Shizuoka university, Japan*

**R05-48 Investigating the Small Pixel Effect in CdZnTe Hard X-Ray Detectors - The PIXIE ASIC**

M. C. Veale, L. Jones, P. Seller, M. D. Wilson, *Science and Technology Facilities Council, UK;* P. J. Sellin, P. Veeramani, *University of Surrey, UK*

**R05-49 Comparison of the Detector Performance for Different Metal Contacts on Cd(Zn)Te for Radiation Applications.**

Q. Zheng<sup>1</sup>, F. Dierre<sup>1</sup>, O. Vela<sup>2</sup>, V. Corregidor<sup>3</sup>, R. Fernandez-Ruiz<sup>4</sup>, E. Alves<sup>3</sup>, J. M. Perez<sup>2</sup>, E. Dieguez<sup>1</sup>  
<sup>1</sup>*Crystal Growth Laboratory, Spain;* <sup>2</sup>*CIEMAT, Spain;* <sup>3</sup>*Institute Technologia Nuclear, Portugal;* <sup>4</sup>*SIDI, Spain*

**R05-50 Study of Passivation with Time on CdZnTe Bulk Crystal by XPS and I-V**

H. Bensalah<sup>1</sup>, V. Carcelen<sup>1</sup>, J. D. Crocco<sup>1</sup>, J. L. Plaza<sup>1</sup>, G. Rodriguez<sup>2</sup>, L. Soriano<sup>2</sup>, E. Dieguez<sup>1</sup>  
<sup>1</sup>*Crystal Growth Laboratory, Spain;* <sup>2</sup>*Spectroscopy Laboratory, Spain*

**R05-51 Improving the Detection Performance of Heavy Metal Halides Films by Surface Treatment**

L. Fornaro<sup>1</sup>, I. Aguiar<sup>2</sup>, N. Sasen<sup>2</sup>, M. E. Perez<sup>2</sup>, A. L. Noguera<sup>1</sup>  
<sup>1</sup>*CURE, Uruguay;* <sup>2</sup>*Facultad de Quimica, Uruguay*

**R05-52 Carrier Transportation and Polarization Properties in CdTe Diode Detectors**

A. Koike, T. Okunoyama, T. Ito, H. Morii, Y. Neo, H. Mimura, T. Aoki  
*Shizuoka University, Japan*

**R05-53 A New Electroless Deposition Technique for W and Mo on CdTe:Cl Nuclear Detectors**

M. Ayoub<sup>1</sup>, F. Dierre<sup>2</sup>, R. L. Thompson<sup>3</sup>, A. T. G. Pym<sup>1</sup>, I. Radley<sup>1</sup>, A. Basu<sup>1</sup>  
<sup>1</sup>*Kromek Ltd., U.K.;* <sup>2</sup>*Universidad Autonoma de Madrid, Spain;* <sup>3</sup>*University of Durham, U.K.*

**R05-54 A Low Noise CZT Readout ASIC for Energy Spectrometer**

J. Luo, Z. Deng, Y. N. Liu, *Tsinghua University, China*

**R05-55 New Applications of the RENA-3 IC for Position-Sensitive Solid State Detectors**

A. Volkovskii, M. Clajus, S. Snyder, E. C. Tümer, T. O. Tümer  
*NOVA R&D Inc., USA*

**R05-56 Development of a Versatile Dual Channel MCA with Digital Pulse Processing and Coincidence Sum Mode to Operate Stacked CPG (Cd,Zn)Te Detector Designs**

M. Dambacher<sup>1</sup>, A. Zwerger<sup>1</sup>, C. Disch<sup>1</sup>, A. Fauler<sup>1</sup>, U. Stoechker<sup>2</sup>, M. Fiederle<sup>1</sup>  
<sup>1</sup>*Freiburg Materials Research Center, Germany;* <sup>2</sup>*German Federal Office for Radiation Protection, Germany*

**R05-57 Multidimensional Data Processing Methods for Material Discrimination Using an Ideal X-Ray Spectrometric Photon Counting Detector**

G. Beldjoudi, J. Rinkel, V. Rebuffel, *CEA, FRANCE;* V. Kaftandjian, *INSA, France*

**R05-58 Gamma Spectroscopic Measurements Using PID350**

K. Karafasoulis<sup>1</sup>, K. Zachariadou<sup>2</sup>, S. Seferlis<sup>1</sup>, I. Papadakis<sup>2</sup>, D. Loukas<sup>2</sup>, C. Potiriadis<sup>1</sup>  
<sup>1</sup>*Greek Atomic Energy Commission, Greece;* <sup>2</sup>*National Center for Scientific Research Demokritos, Greece*

**R05-59 Calibration and Operation of the Polaris CdZnTe Array**

W. R. Kaye, F. Zhang, Z. He, *University of Michigan, USA*



**R05-60 Research of Detection Units Characteristics on the Basis of P-I-N CdTe Detector, Equipped with the Suppression System of Detector Polarization**

Y. Petukhov, G. Putenis, *Center of Radiation and Nuclear Safety Technologies, Latvia*; D. Merkulov, *ELMI, Ltd, Latvia*; S. Mulivanov, *RSS, Ltd, Latvia*; Y. Ivanov, *A.V.Shubnikov Institute of Crystallography, Russia*

**R05-61 A High Count Rate Energy Resolving CdTe Hybrid Pixel Detector**

A. Berry, G. Panjkovic, A. Lynch, D. Fitrio, S. Tjoa, A. Mohan, M. Dimmock, M. Ruat, S. King, E. Mujcinovic, R. Veljanovski, R. Lewis  
*Monash University, Australia*

**R05-62 Polarization degree and vector angle effects on a CdZnTe focal plane prototype**

R. M. Curado da Silva<sup>1</sup>, E. Caroli<sup>2</sup>, J. B. Stephen<sup>2</sup>, N. Auricchio<sup>3</sup>, J. M. Maia<sup>1</sup>, S. Del Sordo<sup>2</sup>, A. Donati<sup>2</sup>, F. Schiavone<sup>2</sup>, J. B. Campos<sup>1</sup>, C. P. Gloster<sup>1</sup>, A. Trindade<sup>1</sup>, V. Honkimaki<sup>4</sup>  
<sup>1</sup>*Universidade de Coimbra, Portugal*; <sup>2</sup>*INAF/IASF, Italy*; <sup>3</sup>*University of Ferrara, Italy*; <sup>4</sup>*ESRF, France*

**R05-63 3D Monte Carlo Simulations of Pixelated CdZnTe Detectors under High Photon Fluxes**

M. L. Rodrigues, Z. He, *University of Michigan, USA*

**R05-64 Sequential Multi Sliced X-Ray CT by Using Vertical Projection for High Speed CT.**

A. Hashimoto, H. Morii, Y. Imura, Y. Neo, H. Mimura, T. Aoki  
*Shizuoka university, Japan*

**R05-65 Simulation of the Spectral Response of a Pixelated X-Ray Imaging Detector Operating in Single Photon Processing Mode**

D. Krapohl, B. Norlin, E. Frojdh, G. Thungstrom, H.-E. Nilsson, C. Frojdh  
*Mid Sweden University, Sweden*

**R05-66 Energy Selective X-Ray Imaging of Biological Objects with Medipix-2**

S. Procz<sup>1</sup>, J. Luebke<sup>2</sup>, A. Zwerger<sup>1</sup>, M. Mix<sup>2</sup>, M. Fiederle<sup>1</sup>  
<sup>1</sup>*Albert-Ludwigs-Universitaet Freiburg, Germany*; <sup>2</sup>*Uniklinik Freiburg, Germany*

**R05-67 Adaptation of Pixelated CdZnTe Gamma-Ray Imaging Technology for in Situ Planetary Science Applications**

S. F. Nowicki<sup>1,2</sup>, A. Parsons<sup>1</sup>  
<sup>1</sup>*Goddard Space Flight Center, USA*; <sup>2</sup>*University of Michigan, USA*

**R05-68 Experimental Limitations of Coded Aperture Imaging Using Thick 3D-Position-Sensitive CdZnTe Detectors**

S. Joshi Kaye, W. R. Kaye, Z. He  
*University of Michigan, USA*

**R05-69 The Application of the Medipix2 Single Photon Detectors at the ANKA Synchrotron Facility**

E. Hamann<sup>1</sup>, A. Cecilia<sup>1</sup>, D. Greiffenberg<sup>2</sup>, J. Butzer<sup>1</sup>, P. Vagovic<sup>1</sup>, T. dos Santos Rolo<sup>1</sup>, A. Ershov<sup>1</sup>, A. Minkevich<sup>1</sup>, A. Zwerger<sup>2</sup>, V. Altapova<sup>1</sup>, M. Fiederle<sup>2</sup>, T. Baumbach<sup>1</sup>  
<sup>1</sup>*Karlsruhe Institute of Technology (KIT), Germany*; <sup>2</sup>*Universitaet Freiburg, Germany*

**R05-70 Passive Imaging of SNM with Cosmic-Ray Generated Neutrons and Gamma-Gays**

K. N. Borozdin, C. Morris, S. J. Greene, A. V. Klimenko, A. Saunders, R. Spaulding, Z. Wang

*Los Alamos National Laboratory, USA*

**R05-71 Coincidence Measurement of 350µm Pitched Pixelated CdZnTe Detector with LSO PET Module**

Y. Yin<sup>1,2</sup>, H. Wu<sup>1</sup>, S. Komarov<sup>1</sup>, A. Garson<sup>3</sup>, Q. Guo<sup>3</sup>, H. Krawczynski<sup>3</sup>, L.-J. Meng<sup>3</sup>, Y.-C. Tai<sup>1</sup>

<sup>1</sup>*Mallinckrodt Institute of Radiology, Washington University in St. Louis, USA*; <sup>2</sup>*School of Nuclear Science and Technology, Lanzhou University, China*; <sup>3</sup>*Washington University in St. Louis, USA*; <sup>4</sup>*University of Illinois at Urbana-Champaign, USA*

**R05-72 Energy Dispersive X-Ray Diffraction Spectral Resolution Considerations for Security Screening Applications**

C. Cozzini<sup>1</sup>, G. Harding<sup>2</sup>, P. Edic<sup>3</sup>, D. Beque<sup>1</sup>, D. Kosciesza<sup>3</sup>, Y. Du<sup>3</sup>, H. Strecker<sup>2</sup>

<sup>1</sup>*GE Global Research, Germany*; <sup>2</sup>*Morpho Detection, Germany*; <sup>3</sup>*GE Global Research, USA*

**R05-73 First X-Ray Detection with Semi-Insulating 4H-Silicon Carbide**

G. Bertuccio<sup>1,2</sup>, D. Puglisi<sup>1,2</sup>, D. Macera<sup>1,2</sup>, A. Pullia<sup>2,3</sup>, C. Lanzieri<sup>4</sup>, S. Lavanga<sup>4</sup>

<sup>1</sup>*Politecnico di Milano - Polo Regionale di Como, Italy*; <sup>2</sup>*INFN - sez. Milano, Italy*; <sup>3</sup>*University of Milan, Italy*; <sup>4</sup>*Selext Sistemi Integrati, Italy*

**R05-74 Energy Resolution of Compton Electrons in CZT Measured by the Wide Angle Compton Coincidence Technique**

M. Szawłowski<sup>1</sup>, L. Swiderski<sup>1</sup>, M. Moszynski<sup>1</sup>, T. Szczesniak<sup>1</sup>, M. Grodzicka<sup>1</sup>, M. Kapusta<sup>2</sup>, D. Wolski<sup>1</sup>, A. Celler<sup>3</sup>

<sup>1</sup>*Soltan Institute for Nuclear Studies, Poland*; <sup>2</sup>*ICx Technologies, Germany*; <sup>3</sup>*UBC & Vancouver Coastal Health Research Institute, Canada*

Wed. Nov. 3	07:30	08:00	08:30	09:00	09:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30
Ballroom A				N30 -Instr. for Homeland and National Security II				N37: Semiconductor Detectors: Characterization						N43: Nuclear Measurements and Monitoring Techniques III				N50: Radiation Imaging Detectors II									
Ballroom B				M01 -MIC Plenary				M02: Awards Plenary						M03: PET/MR and SPECT/MR Instrumentation				M04: X-ray/CT Reconstruction and Correctors									
Ballroom C																											
Ballroom E				N31: Sci. Simulation and Computing: Software for Nucl. Applications				N38: Radiation Damage Effects: Scintillators						N44: Scientific Simulation and Computing: Simulation for Space and Earth Sciences					N51: Analog and Digital Circuits III								
Ballroom F				N32: HEP & NP: Silicon Vertex and Tracking Detectors I				N39: HEP & NP: Silicon Vertex and Tracking Detectors II						N45: Trigger and Front-End Systems II					N52: HEP & NP: Beam Monitors and Tracking Detectors								
Ballroom G				N33: Gaseous Detectors: Development of Techniques										N46: Scintillators and Scintillation Detectors: New Materials I					N53: Scintillators and Scintillation Detectors: New Materials II								
Room 301A																											
Room 301B				R07: Characterization of CZT II				R08: CZT Pixel Detectors						R09: CdTe and CdZnTe					R10: RTSD Scientist Award & Semiconductor Materials								
Room 301D								N40: Instrum. for Medical & Biological Research I											N54: Instrum. for Hadron Therapy & Biological Research								
Room 301E																											

Wed. Nov. 3	07:30	08:00	08:30	09:00	09:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30
Lecture Hall																											
Room 200A																											
Room 200B																											
Room 200C																											
Room 200D																											
Room 200E																											
Exhibit Hall B				N35: Nuclear Power Reactor Instrumentation N36: Radiation Damage Effects				N41: Radiation Imaging Detectors N42: Scientific Simulation and Computation																			
Other Events																											

## NSS Oral Presentations

## N30: Instrumentation for Homeland and National Security II

Wednesday, Nov. 3 08:00-10:00 Ballroom A

Session Chairs: David Beach, *DOE NA-22*,Richard T. Kouzes, *PNNL, USA***N30-1 An Analysis of Intense Pulsed Active Detection (IPAD)****System for the Detection of Special Nuclear Materials**S. B. Swanekamp<sup>1</sup>, J. P. Apruzese<sup>2</sup>, R. J. Commisso<sup>2</sup>, D. Mosher<sup>1</sup>, J. W. Schumer<sup>2</sup><sup>1</sup>Naval Research Laboratory (L3 Contractor), USA; <sup>2</sup>Naval Research Laboratory, USA**N30-2 Feasibility Study of the Neutron Interrogation System for Threat Detection in Underwater Environment.**I. S. Novikov, A. Barzilov, *Western Kentucky University, USA***N30-3 Prompt Neutrons from Photofission and Its Use in Homeland Security Applications**A. Danagoulian, W. Bertozzi, C. L. Hicks, Jr., A. V. Klimenko, S. E. Korbly, R. J. Ledoux, C. M. Wilson, *Passport Systems Inc., USA***N30-4 Detecting Special Nuclear Materials Inside Cargo Containers Using Photofission**M. Agelou<sup>1</sup>, A. Binet<sup>2</sup>, F. Carrel<sup>1</sup>, D. Dore<sup>3</sup>, E. Dupont<sup>3</sup>, M. Gmar<sup>1</sup>, F. Laine<sup>1</sup>, J.-P. Negre<sup>2</sup><sup>1</sup>CEA, LIST, France; <sup>2</sup>CEA, DAM, DIF, France; <sup>3</sup>CEA, IRFU, France**N30-5 First X-Ray Phase Contrast Images Obtained with Conventional X-Ray Source under Exposure Conditions Compatible with Real-World Applications.**K. Ignatyev, P. R. Munro, R. D. Speller, A. Olivo  
*University College London, UK***N30-6 Sensing Small Angle Scattering with an X-Ray Grating Interferometer**V. Revol<sup>1</sup>, C. Kottler<sup>1</sup>, R. Kaufmann<sup>1</sup>, I. Jerjen<sup>2</sup>, T. Luethi<sup>2</sup>, F. Cardot<sup>1</sup>, P. Niedermann<sup>1</sup>, U. Straumann<sup>3</sup>, U. Sennhauser<sup>2</sup>, C. Urban<sup>1</sup><sup>1</sup>Centre Suisse d'Electronique et Microtechnique, Switzerland;<sup>2</sup>Eidgenossische Materialpruefungs- und Forschungsanstalt, Switzerland;<sup>3</sup>University of Zuerich, Switzerland**N30-7 Phase Contrast X-Ray Imaging Signatures for Homeland Security Applications**E. A. Miller, A. Seifert, T. A. White, *Pacific Northwest National Laboratory, USA*; M. J. Flynn, *Henry Ford Health System, USA*

## N31: Scientific Simulation and Computation: Software for Nuclear Applications

Wednesday, Nov. 3 08:00-10:00 Ballroom E

Session Chairs: Tsukasa Aso, *Toyama National College of Maritime Technology, Japan*Elena I. Novikova, *Naval Research Laboratory, USA***N31-1 Application of the Gamma Spectrum Generator and easyMonteCarlo Simulation Tools on Nuclear Security Issues**V. Kleinrath<sup>1,2</sup>, R. Arlt<sup>3</sup>, A. Berlizov<sup>4</sup>, J. Magill<sup>2</sup><sup>1</sup>Vienna University of Technology, Austria; <sup>2</sup>European Commission, Joint Research Center, Germany; <sup>3</sup>Consultant for the International Atomic Energy Agency, Austria; <sup>4</sup>Kiev Institute for Nuclear Research, Ukraine**N31-2 Accounting for Correlated Errors in Inverse Radiation Transport Problems**C. L. Stork, E. V. Thomas, J. K. Mattingly  
*Sandia National Laboratories, USA***N31-3 Data Driven Models for Radiation Detection Architecture Analysis**D. J. Lange, *Lawrence Livermore National Laboratory, USA***N31-4 RS Algorithm for 3D Localization of Gamma Interactions in Segmented HPGc Detectors: Tests with Calculated and Experimental Signal Basis**F. C. L. Crespi<sup>1</sup>, V. Vandone<sup>1</sup>, F. Camera<sup>1</sup>, S. Brambilla<sup>2</sup>, B. Million<sup>2</sup>, S. Riboldi<sup>1</sup>, O. Wieland<sup>2</sup><sup>1</sup>Universit di Milano / INFN Milano, ITALY; <sup>2</sup>INFN Milano, Italy**N31-5 Geant4 Calculations of the Effective Neutron Multiplication Factor**L. J. Bignell<sup>1,2</sup>, D. Alexiev<sup>2</sup><sup>1</sup>The University of Sydney, Australia; <sup>2</sup>Australian Nuclear Science and Technology Organisation, Australia**N31-6 Photo-Neutron Source by High Energy Electrons on Target: Comparison Between Monte Carlo Predictions and Experimental Measurements**L. Quintieri, *INFN - LNF, Italy*

On behalf of the BTF collaboration

**N31-7 Variance Reduction of Monte-Carlo Radiation Transport Simulations**M. H. Mendenhall, *Vanderbilt University Electrical Engineering / ISDE, USA*; F. Currell, S. McMahon, M. Muir, *Queens University Belfast, UK*

## N32: High Energy and Nuclear Physics Instrumentation: Silicon Vertex and Tracking Detectors I

Wednesday, Nov. 3 08:00-10:00 Ballroom F

Session Chairs: Maxim P. Titov, *CEA Saclay, IRFU/SPP, France*  
James E. Brau, *University of Oregon, USA***N32-1 The CDF Run II Silicon Detector: Performance and Aging Studies**M. Stancari, *Fermi National Accelerator Laboratory, 60510*

On behalf of the CDF collaboration

**N32-2 Commissioning and Operation of the ATLAS Pixel Detector.**C. Troncon, *INFN Milano, Italy*

On behalf of the ATLAS Collaboration

**N32-3 Operational Experiences and Systematic Studies of the CMS Pixel Detector in First Collisions**T. B. Arranged, *CERN, Switzerland*

On behalf of the CMS Collaboration

**N32-4 First Results from the LHCb VELO**C. J. Pakes, *University of Glasgow, UK*

On behalf of the LHCb VELO

**N32-5 CMS Silicon Strip Tracker Operations and Performance**T. B. Arranged, *CERN, Switzerland*

On behalf of the CMS Collaboration

**N32-6 Performance of the LHCb Silicon Tracker in pp Collisions at the LHC**

M. Tobin, *Physik Institut der Universitaet Zuerich, Switzerland*  
On behalf of the LHCb Silicon Tracker Group

**N32-7 ATLAS Silicon Microstrip Tracker Operation and Performance**

Z. Dolezal, *Charles University Prague, Czech Republic*  
On behalf of the ATLAS SCT

**N33: Gaseous Detectors: Development of Techniques**

Wednesday, Nov. 3 08:00-10:00 Ballroom G

Session Chairs: Aleksey E. Bolotnikov, *Brookhaven National Laboratory, USA*  
Archana Sharma, *CERN, Switzerland*

**N33-1 (invited) The Performance of GridPix Detectors**

M. Fransen, Y. Bilevych, H. V. D. Graaf, F. Hartjes, W. Koppert, J. Timmermans, J. Visschers, *Nikhef, The Netherlands*; V. B. Carballo, J. Schmitz, *University of Twente, The Netherlands*; N. D. Groot, A. Konig, M. Rogers, *Radboud university, The Netherlands*

**N33-2 A Pixel Readout for a TPC with MPGDs and TimePix**

U. Renz, *Albert-Ludwigs-University, Germany*  
On behalf of the LCTPC Collaboration

**N33-3 R&D on Long-Strip MRPC**

Y. Sun, C. Li, Z. Tang, L. Xu  
*University of Science and Technology of China, China*

**N33-4 Micromegas with High Resistivity Anode**

L. Guan, X. Wang, Z. Xu, *University of Science and Technology of China, China*; T. Zhao, *University of Washington, USA*

**N33-5 Development of  $\mu$ -PIC with Resistive Cathode**

A. Ochi, Y. Homma, H. Komai, K. Miyazaki, *Kobe University, JAPAN*; R. D. Oliveira, *CERN, Switzerland*

**N33-6 Using Electron Drift Velocity Measurements for Different Electric Field Strengths to Precisely Monitor the Gas Composition in Gaseous Detectors**

S. Xie, F. Ahles, G. Herten, K. Strig, S. Zimmermann, U. Landgraf, W. Mohr  
*PHD student, Germany*

**N34: Neutron Detectors and Instrumentation: posters**

Wednesday, Nov. 3 08:00-10:00 Exhibit Hall B

See listings in the NSS Poster section.

**N35: Nuclear Power Reactor Instrumentation: poster**

Wednesday, Nov. 3 08:00-10:00 Exhibit Hall B

See listings in the NSS Poster section.

**N36: Radiation Damage Effects: posters**

Wednesday, Nov. 3 08:00-10:00 Exhibit Hall B

See listings in the NSS Poster section.

**N37: Semiconductor Detectors: Characterization of Silicon Detectors**

Wednesday, Nov. 3 10:30-12:00 Ballroom A

Session Chairs: Grzegorz Deptuch, *Fermilab, USA*  
Wojciech Dulinski, *IPHC/IN2P3/CNRS, France*

**N37-1 EIGER: a New Generation of Pixel Detectors for High Frame Rate X-Ray Applications**

R. Dinapoli, A. Bergamaschi, B. Henrich, R. Horisberger, I. Johnson, A. Mozzanica, B. Schmitt, X. Shi  
*Paul Scherrer Institut, Switzerland*

**N37-2 First Beam Test Results of the FORTIS Sensor**

J. J. Velthuis, *Bristol University, United Kingdom*  
On behalf of the SPiDeR collaboration

**N37-3 DEPFET Beam Test Results - Sub-Pixel Properties Studied at Micron Level Resolution**

P. Kodys, *Charles University, Czech Republic*  
On behalf of the DEPFET collaboration

**N37-4 Characterization of Edgeless Pixel Detectors Coupled to Medipix2 Readout Chip**

J. J. Kalliopuska<sup>1</sup>, L. Tlustos<sup>2</sup>, S. Eranen<sup>1</sup>, T. Virolainen<sup>1</sup>, A. Gadda<sup>1</sup>  
<sup>1</sup>*VTI, Finland*; <sup>2</sup>*CERN, Switzerland*

**N37-5 Development of Radiation-hard Silicon-based Pixel Sensors for the ATLAS Upgrade**

Y. A. Fadeyev, *UCSC, USA*  
On behalf of the ATLAS Planar Pixel Sensor R&D Collaboration

**N38: Radiation Damage Effects: Scintillators**

Wednesday, Nov. 3 10:30-12:00 Ballroom E

Session Chairs: Rainer W. Novotny, *2nd Physics Institute, University Giessen, Germany*  
Ren-yuan Zhu, *California Institute of Technology, USA*

**N38-1 (invited) An overview of results on scintillating crystals exposed to high hadron fluences**

F. Nessi-Tedaldi, *CERN, Switzerland*

**N38-2 Quality of 25 X0 (28 cm) Long LYSO Crystals**

R. Mao, L. Zhang, R.-Y. Zhu  
*California Institute of Technology, USA*

**N38-3 LFS-3-New Radiation Hard Scintillator for Electromagnetic Calorimeters**

Y. Kozlov<sup>1</sup>, A. Zagumennyi<sup>2</sup>, Y. Zavartsev<sup>2</sup>, M. Zavertyaev<sup>1</sup>, F. Zerrouk<sup>3</sup>

<sup>1</sup>*P.N. Lebedev Physical Institute of Russian Academy of Science, Russia*;

<sup>2</sup>*Prohorov General Physics Institute of Russian Academy of Science, Russia*;

<sup>3</sup>*Zecotek Imaging Systems Pte Ltd., Canada*

**N38-4 Radiation Damage and Its Origin of Lead Fluoride Cherenkov Radiation Materials**

G. Ren, X. Chen, S. Wang, D. Shen, *Shanghai Institute of Ceramics, China*; H. Shi, *Jiliang University of China, China*

**N39: High Energy and Nuclear Physics Instrumentation: Silicon Vertex and Tracking Detectors II**

Wednesday, Nov. 3 10:30-12:00 Ballroom F

Session Chairs: Mar Capeans, *CERN, Switzerland*  
Kendall Reeves, *Germany***N39-1 Research Towards the PANDA Micro-Vertex-Detector**K.-T. Brinkmann, *Universitaet Bonn, Germany*  
On behalf of the PANDA MVD group**N39-2 The DEPFET Active Pixel Sensor - High Precision Vertexing for Belle-II and Future e+e- Colliders**L. Andricek, *MPI Halbleiterlabor, Germany*  
On behalf of the DEPFET collaboration**N39-3 Test of the First Prototype of the Time Stamping Monolithic CMOS Pixel Detector**N. B. Sinev<sup>1</sup>, C. Baltay<sup>2</sup>, J. E. Brau<sup>1</sup>, W. Emmet<sup>2</sup>, D. Rabinowitz<sup>2</sup>, D. Strom<sup>1</sup>  
<sup>1</sup>*University of Oregon, USA*; <sup>2</sup>*Yale University, USA***N39-4 Performance Studies of CMS Pixel Tracker Using DC-DC Conversion Powering Scheme**A. Todri, M. Turqueti, R. Rivera, S. Swalk, L. Perera  
*Fermi National Accelerator Laboratory, USA***N39-5 ATLAS Tracker Upgrade: Silicon Strip Detectors for the sLHC**Z. Dolezal, *Charles University Prague, Czech Republic*  
On behalf of the ATLAS SCT**N40: Instrumentation for Medical and Biological Research I**

Wednesday, Nov. 3 10:30-12:00 301D &amp; 301E

Session Chairs: Andrew G. Weisenberger, *Thomas Jefferson National Accelerator Facility, USA*  
Rostyslav Boutchko, *Lawrence Berkeley National Lab, USA***N40-1 Requirements on the Instrumentation of a Prompt Gamma Measuring Device**F. Fiedler<sup>1</sup>, T. Kormoll<sup>2</sup>, A. Miller<sup>1</sup>, W. Enghardt<sup>1,2</sup>  
<sup>1</sup>*Forschungszentrum Dresden-Rossendorf, Germany*; <sup>2</sup>*TU Dresden, Germany***N40-2 CMOS Monolithic Sensors in a Homogeneous 3D Process for Low Energy Particle Imaging**L. Ratti<sup>1,2</sup>, M. Caccia<sup>3,2</sup>, L. Gaioni<sup>4,2</sup>, A. Manazza<sup>1,2</sup>, M. Manghisoni<sup>4,2</sup>, V. Re<sup>4,2</sup>, G. Traversi<sup>4,2</sup>, S. Zucca<sup>1,2</sup>  
<sup>1</sup>*University of Pavia, Italy*; <sup>2</sup>*INFN, Italy*; <sup>3</sup>*University of Insubria, Italy*; <sup>4</sup>*University of Bergamo, Italy***N40-3 Towards a Time-of-Flight Positron Emission Tomography System Based on Multi-Pixel Photon Counter Read-Out**M. Goettlich, E. Garutti, *DESY, Germany*; T. Harion, H.-C. Schultz-Coulon, W. Shen, R. Stamen, A. Tadday, *University of Heidelberg, Germany***N40-4 Quantum Dot Composite Radiation Detector**M. Urdaneta, P. Stepanov, I. N. Weinberg, *Weinberg Medical Physics, USA*; I. Pala, S. Brock, *Wayne State University, USA***N40-5 Improved Energy-Dispersive X-Ray Scattering Based on Polycapillary Collimation and a Silicon Drift Detector**A. Castoldi, C. Guazzoni, C. Ozkan, *Politecnico di Milano and INFN, Italy*; A. Bjeoumikhov, *Institute for Scientific Instruments GmbH, Germany***N41: Radiation Imaging Detectors: posters**

Wednesday, Nov. 3 10:30-12:00 Exhibit Hall B

See listings in the NSS Poster section.

**N42: Scientific Simulation and Computation: posters**

Wednesday, Nov. 3 10:30-12:00 Exhibit Hall B

See listings in the NSS Poster section.

**N43: Nuclear Measurements and Monitoring Techniques III**

Wednesday, Nov. 3 13:30-15:30 Ballroom A

Session Chairs: Jim Lund, *Sandia National Laboratories, USA*  
Belkis Cabrera-Palmer, *Sandia National Laboratories, USA***N43-1 (invited) Needs of the Well Logging Industry for New Nuclear Detectors**A. Nikitin, S. Bliven, *Baker Hughes, USA***N43-2 Variance Estimation for Analysis of Radiation Measurements**D. J. Mitchell, *Sandia National Laboratories, USA***N43-3 Measurement of Radon Levels in Buildings by Spectroscopic Measurement of Radon Progeny**A. Frojdh, G. Thungstrom, C. Frojdh, S. Petersson  
*Mid Sweden University, Sweden***N43-4 Optimization of a Mixed Multiplicity Counter Using Monte Carlo Simulations and Measurements**A. Enqvist, S. A. Pozzi, M. Flaska, K. Weinfurther  
*University of Michigan, USA***N43-5 A Phantom for Research Studies of Radiologically-Contaminated Land**J. C. Adams<sup>1</sup>, M. Mellor<sup>2</sup>, M. J. Joyce<sup>1</sup>  
<sup>1</sup>*Lancaster University, UK*; <sup>2</sup>*REACT Engineering Ltd, UK***N43-6 In-Beam Calibration of Photon Detectors in 14-MeV Fast Neutron Analysis**A. Barzilov, I. Novikov, P. Womble  
*Western Kentucky University, USA***N43-7 Multi-Hypothesis Tracking of Charged Particles Through Drift Tube Arrays**K. N. Borozdin, A. M. Fraser, D. M. Higdon  
*Los Alamos National Laboratory, USA***N44: Scientific Simulation and Computing: Simulation for Space and Earth Sciences**

Wednesday, Nov. 3 13:30-15:30 Ballroom E

Session Chairs: Lina Quintieri, *INFN - LNF, Italy*  
Andy Buckley, *University of Edinburgh, UK*



**N44-1 MEGALib - a Simulation and Data Analysis Tool for Gamma-Ray Instruments**

A. Zoglauer, *University of California at Berkeley, USA*

**N44-2 Background Simulations for the IXO Wide Field Imager**

S. Hauf<sup>1</sup>, M. Kuster<sup>1</sup>, D. H. H. Hoffmann<sup>1</sup>, A. Stefanescu<sup>2,3</sup>, L. Strueder<sup>2,4</sup>, M. G. Pia<sup>5</sup>

<sup>1</sup>TU Darmstadt, Germany; <sup>2</sup>Max-Planck-Institut fuer extraterrestrische Physik, Germany; <sup>3</sup>Johannes Gutenberg University, Germany; <sup>4</sup>Max-Planck-Institut Halbleiter Labor, Germany; <sup>5</sup>INFN, Italy

**N44-3 R&D on the Geant4 Radioactive Decay Physics**

S. Hauf<sup>1</sup>, M. Kuster<sup>1</sup>, D. H. H. Hoffmann<sup>1</sup>, Z. W. Bell<sup>2</sup>, M. M. Guenther<sup>1</sup>, K. Harres<sup>1</sup>, F. Nuernberg<sup>1</sup>, M. G. Pia<sup>3</sup>, M. Roth<sup>1</sup>, G. Weidenspointner<sup>4</sup>, A. Zoglauer<sup>5</sup>

<sup>1</sup>TU Darmstadt, Germany; <sup>2</sup>Oak Ridge National Laboratory, USA;

<sup>3</sup>INFN, Sezione di Genova, Italy; <sup>4</sup>Max Planck Institut, Germany;

<sup>5</sup>University of California, USA

**N44-4 CREME-MC: a Physics-Based Single Event Effects Tool**

B. D. Sierawski, *Institute for Space and Defense Electronics, Vanderbilt University, US*; M. H. Mendenhall, R. A. Weller, R. A. Reed, *Vanderbilt University, US*; J. H. Adams, J. W. Watts, A. F. Barghouty, *NASA Marshall Space Flight Center, US*

**N44-5 Monte Carlo Simulation of Radiation Effects in Microelectronics**

R. A. Weller<sup>1</sup>, M. H. Mendenhall<sup>1,2</sup>, R. A. Reed<sup>1</sup>, K. M. Warren<sup>2</sup>, B. D. Sierawski<sup>2</sup>, R. D. Schrimpf<sup>1</sup>, L. W. Massengill<sup>1</sup>, M. Asai<sup>3</sup>

<sup>1</sup>Vanderbilt University, USA; <sup>2</sup>Institute for Space and Defense Electronics, Vanderbilt U., USA; <sup>3</sup>Stanford Linear Accelerator Laboratory, USA

**N44-6 The Reverse Monte Carlo Method in Geant4**

L. Desorgher, *Space IT GmbH, Switzerland*; G. Santin, *European Space Agency/ ESTEC, The Netherlands*; F. Lei, *QinetiQ, UK*; M. Asai, *SLAC, USA*

**N44-7 Using Geant4 Code to Develop Strategies to Generate Images of Deposition Tanks Used in Geological Studies**

G. Hoff, W. P. D. Souza

*Pontifical Catholic University in Rio Grande do Sul, Brazil*

**N45: Trigger and Front-End Systems II**

Wednesday, Nov. 3 13:30-15:30 Ballroom F

Session Chairs: Christian Bohm, *University of Stockholm, Department of physics, Sweden*

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

**N45-1 Triggering on 7 TeV Collisions with the ATLAS High Level Trigger**

J. Stelzer, *DESY, Germany*

On behalf of the ATLAS Collaboration

**N45-2 Commissioning of the ATLAS Electron, Photon and Tau Trigger Selection**

S. Xella, *Copenhagen University, ATLAS collaboration, Denmark*

On behalf of the ATLAS Collaboration

**N45-3 Development of a Data Acquisition System for the MALBEK Low-Background BEGe Detector**

G. K. Giovanetti<sup>1,2</sup>, P. Finnerty<sup>1,2</sup>, R. Henning<sup>1,2</sup>, M. A. Howe<sup>1,2</sup>, M. G. Marino<sup>3</sup>, J. Strain<sup>1,2</sup>, J. F. Wilkerson<sup>1,2</sup>

<sup>1</sup>University of North Carolina at Chapel Hill, USA; <sup>2</sup>Triangle Universities Nuclear Laboratory, USA; <sup>3</sup>University of Washington, USA

**N45-4 New Analog Sum Trigger System for the MAGIC Project with a Continuously Adjustable Analog Delay Line and Automatic Calibration**

D. Haefner, T. Schweizer, M. Shayduk, R. Mirzoyan

*Max Planck Institute for Physics, Germany*

**N45-5 Production and Commissioning of a Large Prototype Digital Hadron Calorimeter for Future Colliding Beam Experiments**

G. Drake, *Argonne National Laboratory, go439*

**N45-6 A Digital Sampling Data Acquisition System for Gammasphere**

J. T. Anderson<sup>1</sup>, M. P. Carpenter<sup>1</sup>, D. Doering<sup>2</sup>, C. Hoffman<sup>1</sup>, A. S. Kreps<sup>1</sup>, T. Lauritsen<sup>1</sup>, I.-Y. Lee<sup>2</sup>, C. A. Lionberger<sup>2</sup>, C. J. (. Lister<sup>1</sup>, P. Wilt<sup>1</sup>, S. Zhu<sup>1</sup>, S. Zimmermann<sup>2</sup>

<sup>1</sup>Argonne National Laboratory, USA; <sup>2</sup>Lawrence Berkeley Laboratory, USA

**N45-7 Data Acquisition Technologies for the PHENIX Detector Upgrades**

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

On behalf of the PHENIX Collaboration

**N46: Scintillators and Scintillation Detectors: New materials I**

Wednesday, Nov. 3 13:30-15:30 Ballroom G

Session Chairs: Lynn A. Boatner, *ORNL, USA*

Paul R. Lecoq, *CERN, Switzerland*

**N46-1 Comparative Gamma Ray Spectroscopy Performance of Europium-Doped Strontium Iodide and Cerium-Doped Gadolinium Garnet**

N. Cherepy, S. A. Payne, B. Sturm, J. Kuntz, Z. Seeley, O. Drury, T. Gosnell, *Lawrence Livermore National Laboratory, USA*; A. Burger, *Fisk University, USA*; K. S. Shah, *Radiation Monitoring Devices, USA*; L. Boatner, *Oak Ridge National Laboratory, USA*

**N46-2 Structure and Scintillation of Eu<sup>2+</sup>-Activated BaClI and Related Solid Solutions**

G. Gundiah, Z. Yan, G. Bizarri, E. D. Bourret-Courchesne, S. E. Derenzo

*Lawrence Berkeley National Laboratory, USA*

**N46-3 Study on Scintillation Properties of Rare Earth (Pr, Nd, and Tm) Activated Lu<sub>2</sub>SiO<sub>5</sub>**

D. Totsuka<sup>1,2</sup>, T. Yanagida<sup>1</sup>, Y. Fujimoto<sup>1</sup>, Y. Yokota<sup>1</sup>, A. Yoshikawa<sup>1,3</sup>

<sup>1</sup>Institute of Multidisciplinary Research for Advanced Materials, *Tohoku University, JAPAN*; <sup>2</sup>NIHON KESSHO KOGAKU CO.,LTD, *Japan*;

<sup>3</sup>New Industry Creation Hatchery Center (NICHE), *JAPAN*

**N46-4 Crystal Growth and Scintillation Characterization of Cs<sub>3</sub>CeX<sub>6</sub> and CsCe<sub>2</sub>X<sub>7</sub> (X = Cl, Br)**

M. Zhuravleva<sup>1</sup>, K. Yang<sup>1</sup>, H. Rothfuss<sup>2</sup>, C. Melcher<sup>1</sup>

<sup>1</sup>University of Tennessee, USA; <sup>2</sup>Siemens Medical Solutions Molecular Imaging, USA

**N46-5 Influence of Eu Concentration on Growth and Performance of SrI<sub>2</sub>:Eu Scintillator**

E. Y. Tupitsyn, R. Santos-Ortiz, M. Ekon, P. Bhattacharya, Y. Cui, M. Groza, V. Buliga, A. Burger, *Fisk University, USA*; N. Cherepy, S. Payne, B. Sturm, *Lawrence Livermore National Laboratory, USA*

**N46-6 Crystal Growth and Scintillation Properties of AGd<sub>2</sub>Cl<sub>7</sub>:Ce<sup>3+</sup> (A=K, Cs) New Scintillators for Gamma/Neutron Detection**

K. Yang<sup>1</sup>, M. Zhuravleva<sup>1</sup>, H. Rothfuss<sup>1,2</sup>, C. Melcher<sup>1</sup>

<sup>1</sup>University of Tennessee at Knoxville, USA; <sup>2</sup>Siemens Medical Solutions Molecular Imaging, USA

#### N46-7 Optical and Scintillation Characterization of Europium Doped BaBrI and Ba<sub>2</sub>CsI<sub>5</sub>

G. A. Bizzari, Z. Yan, E. D. Bourret-Courchesne, S. E. Derenzo  
Lawrence Berkeley National Laboratory, USA

#### N47: Analog and Digital Circuits: posters

Wednesday, Nov. 3 13:30-15:30 Exhibit Hall B  
See listings in the NSS Poster section.

#### N48: Gaseous Detectors: posters

Wednesday, Nov. 3 13:30-15:30 Exhibit Hall B  
See listings in the NSS Poster section.

#### N49: Instrumentation for Medical and Biological Research: posters

Wednesday, Nov. 3 13:30-15:30 Exhibit Hall B  
See listings in the NSS Poster section.

#### N50: Radiation Imaging Detectors II

Wednesday, Nov. 3 16:00-18:00 Ballroom A  
Session Chair: Michael R. Squillante, *Radiation Monitoring Devices, Inc., USA*

#### N50-1 Electron-Track Compton Imaging Using High Resolution Charge-Coupled Devices

D. H. Chivers<sup>1</sup>, A. Coffey<sup>1</sup>, B. Plimley<sup>1</sup>, K. Vetter<sup>1,2</sup>

<sup>1</sup>University of California, Berkeley, USA; <sup>2</sup>Lawrence Berkeley National Laboratory, USA

#### N50-2 Design and Fabrication of Silicon CCD-Strip Hybrid Detectors

L. Avci<sup>1</sup>, D. H. Chivers<sup>1</sup>, C. Tindall<sup>2</sup>, K. Vetter<sup>1,2</sup>

<sup>1</sup>University of California, Berkeley, USA; <sup>2</sup>Lawrence Berkeley National Laboratory, USA

#### N50-3 Model-Based Reconstruction of Spectral and Spatial Activity Distribution from Objects with Known Motion

J. M. Jaworski, C. G. Wahl, J. A. Fessler, Z. He  
University of Michigan, USA

#### N50-4 A Novel Method to Determine the Directionality of Radiation Sources with Two Detectors Based on Coincidence Measurements

A. Gueorguiev, J. Preston, L. Hoy, G. Pausch, C. Herbach, J. Stein  
*ICx Radiation, USA*

#### N50-5 Overview of the High Efficiency Multimode Imager

M. Amman, P. N. Luke, J. S. Lee, L. Mihailescu, K. Vetter, *Lawrence Berkeley National Laboratory, USA*; A. Zoglauer, M. Galloway, S. E. Boggs, *University of California, USA*; H. Chen, P. Marthandam, S. Awadalla, S. Taherion, G. Bindley, *Redden Technologies, Canada*

#### N50-6 Adaptive Imaging Methods Using a Rotating Modulation Collimator

D. T. Willcox, B. R. Kowash, *Air Force Institute of Technology, USA*; D. K. Wehe, *University of Michigan, USA*

#### N50-7 Progress in the Development of Plasma Panel Radiation Detectors

P. S. Friedman, *Integrated Sensors, LLC, USA*; R. Ball, J. W. Chapman, *Oak Ridge National Laboratory, USA*; T. Dai, D. S. Levin, C. Weaverdyck, B. Zhou, *University of Michigan, USA*; Y. Benhammou, M. Ben Moshe, E. Etzion, Y. Silver, *Tel Aviv University, Israel*; S. White, *Brookhaven National Laboratory, USA*

#### N51: Analog and Digital Circuits III

Wednesday, Nov. 3 16:00-18:00 Ballroom E  
Session Chairs: Chiara Guazzoni, *Politecnico di Milano and INFN, Italy*  
Richard Van Berg, *University of Pennsylvania, USA*

#### N51-1 VIPIC IC - Design and Test Aspects of the 3D Pixel Chip

G. Deptuch, M. Trimpl, R. Yarema, *FNAL, USA*; D. P. Siddons, G. Carini, *BNL, USA*; P. Grybos, R. Szczygiel, M. Kachel, P. Kmon, P. Maj, *AGH-UST, Poland*

#### N51-2 Monolithic Active Pixel Matrix with Binary Counters (MAMBO) ASIC

F. F. Khalid, G. Deptuch, A. Shenai, R. Yarema  
*Fermi National Accelerator Laboratory, USA*

#### N51-3 Test Results and Irradiation Performances of 3-D Circuits

Developed in the Framework of ATLAS Hybrid Pixel Upgrade  
P. Pangaud<sup>1</sup>, D. Arutinov<sup>2</sup>, M. Barbero<sup>2</sup>, B. Chantepie<sup>1</sup>, J.-C. Clemens<sup>1</sup>, R. Fei<sup>1</sup>, D. Fougeron<sup>1</sup>, M. Garcia-Sciveres<sup>3</sup>, S. Godiot<sup>1</sup>, T. Hemperek<sup>2</sup>, M. Karagounis<sup>2</sup>, H. Kruger<sup>2</sup>, A. Mekkaoui<sup>3</sup>, S. Rozanov<sup>1</sup>, N. Wermes<sup>3</sup>

<sup>1</sup>Centre de Physique des Particules de Marseille, France; <sup>2</sup>Physikalisches Institut der Universität Bonn, Germany; <sup>3</sup>Lawrence Berkeley National Laboratory, USA

#### N51-4 Details of the First 3D-IC Multi-Project Wafer Run

G. W. Deptuch<sup>1</sup>, M. Demarteau<sup>1</sup>, J. Hoff<sup>1</sup>, F. Khalid<sup>1</sup>, R. Lipton<sup>1</sup>, R. Patti<sup>2</sup>, A. Shenai<sup>1</sup>, M. Trimpl<sup>1</sup>, R. Yarema<sup>1</sup>, T. Zimmerman<sup>1</sup>  
<sup>1</sup>Fermilab, USA; <sup>2</sup>Tezzaron Semiconductor, USA

#### N51-5 A Front-End ASIC for CdTe Detectors Readout in Battery Powered Capsule for Colon 3D-Imaging

G. Bertuccio<sup>1,2</sup>, S. Caccia<sup>1,2</sup>, D. Macera<sup>1,2</sup>, M. Troiani<sup>1</sup>, Y. Kimcký<sup>3</sup>, I. Klein<sup>3</sup>

<sup>1</sup>Politecnico di Milano - Polo regionale di Como, Italy; <sup>2</sup>INFN-sez. Milano, Italy; <sup>3</sup>Check Cap Ltd, Israel

#### N51-6 IDeF-X HD: a Low Power Multi-Gain CMOS ASIC for the Readout of Cd(Zn)Te Detectors

O. Gevin, O. Lemaire, F. Lugiez, A. Michalowska, P. Baron, O. Limousin, E. Delagnes  
*CEA Saclay, FRANCE*

#### N51-7 Performance of Low Noise 64-Channel ASIC with CdTe Strip Detectors

M. Kachel, P. Grybos, R. Szczygiel, *AGH University of Science and Technology, Poland*; T. Takeyoshi, *Rigaku Corporation, Japan*

**N52: High Energy and Nuclear Physics Instrumentation: Beam Monitors and Tracking Detectors**

Wednesday, Nov. 3 16:00-18:00 Ballroom F

Session Chairs: Marcel Demarteau, *Fermilab, USA*  
 Giovanni Bonvicini, *Physics Dept, Wayne State University, USA*

**N52-1 Performance of the ATLAS Beam Diagnostic Systems**B. Macek, *Jozef Stefan Institute, Slovenia*

On behalf of the ATLAS Beam Conditions Monitor

**N52-2 Performance of the CMS Fast Beam Conditions Monitor**R. Walsh, *DESY, Germany*

On behalf of the DESY BCM and CMS BRM groups

**N52-3 Development of Polycrystalline Diamond Detectors for Fast Timing Applications of High Energy Heavy-Ion Beams**F. Schirru<sup>1</sup>, S. B. S. Nara Singh<sup>2</sup>, L. Scruton<sup>2</sup>, M. A. Bentley<sup>2</sup>, S. Fox<sup>2</sup>, A. Lohstroh<sup>1</sup>, P. J. Sellin<sup>1</sup>, A. Banu<sup>3</sup>, M. McCleskey<sup>3</sup>, B. R. Roeder<sup>3</sup>, E. Simmons<sup>3</sup>, A. A. Alharbi<sup>3</sup>, L. Trache<sup>3</sup><sup>1</sup>University of Surrey, UK; <sup>2</sup>University of York, UK; <sup>3</sup>Texas A & M University, USA**N52-4 Beam Monitors Using Diamond Detectors**B. Dehning<sup>1</sup>, D. Dobos<sup>1</sup>, E. Effinger<sup>1</sup>, E. Griesmayer<sup>2</sup>, H. Pernegger<sup>1</sup><sup>1</sup>CERN, Switzerland; <sup>2</sup>CIVIDEC Instrumentation, Austria**N52-5 The nanometer beam size monitor (Shintake monitor) at ATF2**M. Oroku, Y. Yamaguchi, T. Yamanaka, S. Komamiya, *University of Tokyo, Japan*; Y. Kamiya, T. Suehara, *ICEPP, Japan*; T. Okugi, N. Terunuma, T. Tauchi, S. Araki, J. Urakawa, *KEK, Japan***N52-6 Large Prototype TPC Development for ILD Detector at ILC**M. Dixit, *Carleton University & TRIUMF, Canada*

On behalf of the LCTPC Collaboration

**N52-7 Spatially Correlated and Coincidence Detection of Fission Fragments with the Pixel Detector Timepix**C. Granja<sup>1</sup>, J. Jakubek<sup>1</sup>, Y. Kopatch<sup>2</sup>, U. Köster<sup>3</sup>, P. Masek<sup>1</sup>, M. Platkevic<sup>1</sup>, S. Pospisil<sup>1</sup>, S. Telezhnikov<sup>2</sup>, I. Tomandl<sup>4</sup>, J. Vacik<sup>4</sup><sup>1</sup>Institute of Experimental and Applied Physics, *Czech Technical University in Prague (IEAP CTU), Czech Republic*; <sup>2</sup>Frank Laboratory of Neutron Physics, *Joint Institute for Nuclear Research (JINR), Russia*; <sup>3</sup>Institute Laue Langevin (ILL), *France*; <sup>4</sup>Nuclear Physics Institute (NPI), *Academy of Sciences of the Czech Republic, Czech Republic***N53: Scintillators and Scintillation Detectors: New materials II**

Wednesday, Nov. 3 16:00-18:00 Ballroom G

Session Chairs: Pieter Dorenbos, *Delft University of Technology, Netherlands*  
 Nerine Cherepy, *Lawrence Livermore National Laboratory, USA*

**N53-1 Investigating Scintillation Properties of Ce Doped Cs<sub>2</sub>LiYBr<sub>6</sub>**

U. Shirwadkar, J. Glodo, E. V. D. Van Loef, R. Hawrami, S. Mukhopadhyay, K. S. Shah

*Radiation Monitoring Devices, U.S.A***N53-2 Scintillation Properties and Self Absorption in SrI<sub>2</sub>:Eu<sup>2+</sup>**M. S. Alekhin<sup>1</sup>, J. T. M. de Haas<sup>1</sup>, K. W. Kraemer<sup>2</sup>, I. V. Khodyuk<sup>1</sup>, L. de Vries<sup>1</sup>, P. Dorenbos<sup>1</sup><sup>1</sup>Delft University of Technology, *Netherlands*; <sup>2</sup>University of Bern, *Switzerland***N53-3 Scintillation of Nanoparticles: Case Study of Rare Earth Dope Fluorides**L. G. Jacobsohn<sup>1</sup>, C. J. Kucera<sup>1</sup>, K. B. Sprinkle<sup>1</sup>, S. A. Roberts<sup>1</sup>, E. G. Yukihara<sup>2</sup>, T. A. DeVol<sup>1</sup>, J. Ballato<sup>1</sup><sup>1</sup>Clemson University, *USA*; <sup>2</sup>Oklahoma State University, *USA***N53-4 Optical and Scintillation Properties of Single Crystal CsSr<sub>1-x</sub>Eu<sub>x</sub>I<sub>3</sub>**K. Yang<sup>1</sup>, M. Zhuravleva<sup>1</sup>, H. Rothfuss<sup>1,2</sup>, C. L. Melcher<sup>1</sup><sup>1</sup>University of Tennessee, *USA*; <sup>2</sup>Siemens Medical Solutions, *USA***N53-5 Evaluation of Large Volume SrI<sub>2</sub>(Eu) Scintillator Detectors**B. W. Sturm, N. J. Cherepy, O. B. Drury, P. A. Thelin, S. A. Payne, *Lawrence Livermore National Laboratory, USA*; A. Burger, *Fisk University, USA*; L. A. Boatner, *Oak Ridge National Laboratory, USA*; K. S. Shah, R. Hawrami, *Radiation Monitoring Devices, Inc., USA***N53-6 Scintillation Properties of LuAG (Ce) Ceramic and Single Crystalline Scintillator**T. Yanagida, Y. Fujimoto, Y. Yokota, A. Yoshikawa, *Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan*; T. Ishikawa, H. Fujimura, H. Shimizu, *Tohoku University, Japan*; H. Yagi, T. Yanagitani, *Konoshima Chemical, Japan***N53-7 Optical and Scintillation Properties of CeCl<sub>3</sub> and Ce Doped LaBr<sub>3</sub> Single Crystals Grown by Modified Micro-Pulling-down Method**Y. Yokota<sup>1</sup>, N. Kawaguchi<sup>1,2</sup>, K. Fukuda<sup>1,2</sup>, D. Totsuka<sup>1,3</sup>, T. Yanagida<sup>1</sup>, A. Yoshikawa<sup>1,4</sup><sup>1</sup>Institute of Multidisciplinary Research for Advanced Materials, *Tohoku University, Japan*; <sup>2</sup>Tokuyama Corporation, *Japan*; <sup>3</sup>Nihon Kessho Kogaku Corporation, *Japan*; <sup>4</sup>New Industry Creation Hatchery Center (NICHe), *Tohoku University, JAPAN***N54: Instrumentation for Hadron Therapy and Biological Research**

Wednesday, Nov. 3 16:00-18:00 301D &amp; 301E

Session Chairs: Val G. Zavarzin, *A&D Precision, Co., USA*  
 Irving N. Weinberg, *Weinberg Medical Physics, USA*

**N54-1 Phase-Contrast Tomosynthetic Experiment on Biological Samples with Synchrotron Radiation**L. Zhang<sup>1</sup>, M. Jin<sup>1</sup>, Z. Huang<sup>1</sup>, Y. Xiao<sup>1</sup>, H. Yin<sup>2</sup>, Z. Wang<sup>2</sup>, T. Xiao<sup>3</sup><sup>1</sup>Tsinghua University, *China*; <sup>2</sup>Beijing Tongren Hospital, *Capital Medical University, China*; <sup>3</sup>Chinese Academy of Sciences, *China***N54-2 Design Aspects for Very High Energy Electron (150-250 MeV) Acceleration for Radiation Therapy Use: Beam Shaping, Electromagnetic Scanning**D. K. Stewart, *Purdue University, USA*; C. DesRosiers, V. Moskvina, *Indiana University School of Medicine, USA***N54-3 Fragments Identification in a 62 MeV/u 12C Ion Beam**A. Fazzi, A. Pola, M. V. Introini, G. D'Angelo, C. Pirovano, D. Rozzi, V. Varoli, S. Agosteo  
*Politecnico di Milano, Italy*

**N54-4 Study of Microdosimetric Energy Deposition Patterns in Tissue Equivalent Medium Due to Low Energy Neutron Fields Using a Graphite Walled Proportional Counter**

A. J. Waker, A. Ibrahim

*University of Ontario Institute of Technology (UOIT), Canada*

**N54-5 Silicon PIN Structures for Radiation Fields Diagnostics in Hadron Therapy**

A. B. Rosenfeld<sup>1</sup>, I. E. Anokhin<sup>2</sup>, O. S. Zinet<sup>2</sup>, A. L. Ziebell<sup>1</sup>, J. Poder<sup>1</sup>, E. Simpson<sup>1</sup>, S. Dowdell<sup>1</sup>, S. Guatelli<sup>1</sup>, M. L. Lerch<sup>1</sup>, M. Petasecca<sup>1</sup>, B. Clasio<sup>3</sup>, J. Flanz<sup>3</sup>, A. Wroe<sup>4</sup>, R. Schulte<sup>4</sup>, M. Reinhard<sup>5</sup>, D. Prokopovich<sup>5</sup>, V. Perevertaylo<sup>6</sup>

<sup>1</sup>Centre for Medical Radiation Physics, University of Wollongong, Australia; <sup>2</sup>Institute for Nuclear Research, Ukraine; <sup>3</sup>Massachusetts General Hospital, USA; <sup>4</sup>Loma Linda University Medical Center, USA;

<sup>5</sup>Australian Nuclear Science and Technology Organisation, Australia;

<sup>6</sup>Institute of the Microdevices, Ukraine

**N54-6 Spatial Distribution of Dose Deposition by Proton and Carbon Beams for Hadron Therapy**

M. Martisikova<sup>1</sup>, C. Granja<sup>2</sup>, J. Jakubek<sup>2</sup>, O. Jäkel<sup>3</sup>, S. Pospisil<sup>2</sup>

<sup>1</sup>German Cancer Research Center (DKFZ), Germany; <sup>2</sup>Institute of Experimental and Applied Physics, Czech Technical University in Prague (IEAP CTU), Czech Republic; <sup>3</sup>Heidelberger Ionenstrahl-Therapiezentrum (HIT), Germany

**N54-7 Evaluation of on-chip Micro Antennas for In-Vivo Dosimetry Applications**

G. E. Villani, Y. Chen, STFC Rutherford Appleton Laboratory, United Kingdom; R. Bose, A. Khan, D. R. Smith, Brunel University, United Kingdom; G. Alessandro, University of Bologna, Italy

**MIC Oral Presentations**

**M01: MIC Plenary**

Wednesday, Nov. 3 08:30-10:00 Ballroom B&C

Session Chairs: David W. Townsend, *Singapore Bioimaging Consortium, Singapore*

Charles C. Watson, *Siemens Medical Solutions Molecular Imaging, USA*

**(08:30) Welcome**

**M01-1 (08:40, invited) Mechanistic Imaging and MR-PET**

G. A. Sorensen, *Massachusetts General Hospital, USA*

**M01-2 (09:20, invited) Life That Sparkles**

A. K. Campbell, *Cardiff University, UK*

**M02: Awards Plenary**

Wednesday, Nov. 3 10:30-12:00 Ballroom B&C

Session Chairs: Anna M. Celler, *University of British Columbia, Canada*

Charles C. Watson, *Siemens Medical Solutions Molecular Imaging, USA*

**(10:30) Presentation of the Edward J. Hoffman and Bruce H. Hasegawa Awards**

**(11:15) Recognition of the first recipients of the IEEE Medal for Innovations in Healthcare Technology**

**M03: PET/MR and SPECT/MR Instrumentation**

Wednesday, Nov. 3 13:30-15:30 Ballroom B&C

Session Chairs: Suleman Surti, *University of Pennsylvania, USA*

Douglas J. Wagenaar, *Gamma Medica-Ideas, Inc., USA*

**M03-1 (13:30) Sub-500 µm Resolution SPECT Imaging Inside a 3T MRI Scanner**

L.-J. Meng, L. Cai, J.-W. Tan

*University of Illinois at Urbana-Champaign, USA*

**M03-2 (13:45) PET Performance of the Gemini TF PET-MR: the Worlds First Whole Body PET-MRI Scanner**

N. Ojha<sup>1</sup>, Z. Hu<sup>1</sup>, L. Shao<sup>1</sup>, D. Izquierdo<sup>2</sup>, J. Machac<sup>2</sup>, V. Fuster<sup>2</sup>, H. Zaidi<sup>3</sup>, O. Ratib<sup>3</sup>, Z. Fayad<sup>2</sup>

<sup>1</sup>Philips Healthcare, USA; <sup>2</sup>Mt Sinai Medical Center, USA; <sup>3</sup>Hopitaux Universitaires de Geneve, Switzerland

**M03-3 (14:00) Simultaneous PET/MR Imaging and Electromagnetic Interference Studies in 9.4 T MRI**

S. H. Maramraju<sup>1</sup>, S. D. Smith<sup>2</sup>, S. Rescia<sup>2</sup>, S. Junnarkar<sup>2</sup>, S. Stoll<sup>2</sup>, M. Purschke<sup>2</sup>, B. Ravindranath<sup>1</sup>, D. Schulz<sup>2</sup>, P. Vaska<sup>2</sup>, C. Woody<sup>2</sup>, D. Schlyer<sup>2</sup>

<sup>1</sup>Stony Brook University, USA; <sup>2</sup>Brookhaven National Laboratory, USA

**M03-4 (14:15) Simultaneous preclinical PET/MR insert using novel digital PET detectors**

V. Schulz<sup>1,2</sup>, T. Solf<sup>1</sup>, B. Weissler<sup>1</sup>, P. Gebhardt<sup>1</sup>, M. Zinke<sup>1</sup>, P. Fischer<sup>3</sup>, M. Ritzert<sup>3</sup>, V. Mlotok<sup>3</sup>, C. Piemonte<sup>4</sup>

<sup>1</sup>Philips Research Europe - Aachen, Germany; <sup>2</sup>RWTH University, Germany; <sup>3</sup>University of Heidelberg, Germany; <sup>4</sup>Fondazione Bruno Kessler, Italy

**M03-5 (14:30) A MR Insertable Brain PET Using Tileable GAPD Arrays**

K. J. Hong<sup>1</sup>, Y. Choi<sup>1</sup>, J. Kang<sup>1,2</sup>, W. Hu<sup>1,2</sup>, H. K. Lim<sup>1</sup>, Y. S. Huh<sup>1,2</sup>, S. Kim<sup>1</sup>, J. W. Jung<sup>1</sup>, K. B. Kim<sup>1</sup>, M. S. Song<sup>3</sup>, H.-W. Park<sup>3</sup>  
<sup>1</sup>Sogang University, Republic of Korea; <sup>2</sup>Sungkyunkwan University School of Medicine, Republic of Korea; <sup>3</sup>Korea Advanced Institute of Science and Technology, Republic of Korea

**M03-6 (14:45) Imaging Results of a Simultaneous PET-MRI Breast Scanner**

B. Ravindranath<sup>1</sup>, S. Junnarkar<sup>2</sup>, M. L. Purschke<sup>2</sup>, S. Stoll<sup>2</sup>, S. H. Maramraju<sup>1</sup>, X. Hong<sup>3</sup>, D. Bennett<sup>3</sup>, K. Cheng<sup>3</sup>, D. Tomasi<sup>2</sup>, P. Vaska<sup>2</sup>, C. Woody<sup>2</sup>, D. Schlyer<sup>2</sup>  
<sup>1</sup>Stony Brook University, USA; <sup>2</sup>Brookhaven National Laboratory, USA; <sup>3</sup>Aurora Imaging Technology, USA

**M03-7 (15:00) A Flexible Optical Fiber Based LGSO DOI Block Detector for an Ultra High Resolution Integrated PET/MRI System**

S. Yamamoto, Kobe City College of Technology, Japan; M. Aoki, E. Sugiyama, Neomax Engineering, Japan; H. Watabe, E. Shimosegawa, J. Hatazawa, Osaka University Graduate School of Medicine, Japan

**M03-8 (15:15) Optical Network-based PET DAQ System: One Fiber Optical Connection**

E. Kim, P. D. Olcott, C. S. Levin  
Stanford University, U.S.A

**M04: X-ray CT Reconstruction and Corrections**

Wednesday, Nov. 3 16:00-18:00 Ballroom B&C

Session Chairs: Johan L. Nuyts, *K.U.Leuven, Belgium*  
Xiaochuan Pan, *The University of Chicago, USA*

**M04-1 (16:00) Motion Index Based on Grangeat's Formula for Projection Data**

Y. Zou, I. Hein  
Toshiba Medical Research Institute USA, Inc., USA

**M04-2 (16:15) Coronary Segmentation Based Motion Corrected Cardiac CT Reconstruction**

A. A. Isola<sup>1,2</sup>, C. T. Metz<sup>2</sup>, M. Schaap<sup>2</sup>, S. Klein<sup>2</sup>, W. J. Niessen<sup>2,3</sup>, M. Grass<sup>1</sup>  
<sup>1</sup>Philips Research Europe - Hamburg, Germany; <sup>2</sup>Erasmus MC, University Medical Center Rotterdam, The Netherlands; <sup>3</sup>Delft University of Technology, The Netherlands

**M04-3 (16:30) Blooming Artifact Reduction for Cardiac CT**

S. Steckmann, M. Kachelriess  
Institute of Medical Physics, Germany

**M04-4 (16:45) A New Method for Scatter Correction in Cone-Beam CT and Its Application to Metal Artifact Reduction**

E. Meyer<sup>1</sup>, R. Raupach<sup>2</sup>, M. Baer<sup>1</sup>, B. Schmidt<sup>2</sup>, M. Kachelriess<sup>1</sup>  
<sup>1</sup>Institute of Medical Physics, Germany; <sup>2</sup>Siemens Healthcare, Germany

**M04-5 (17:00) Preliminary Experience in Sparse-view Reconstruction from Clinical Patient Data in Offset-detector CBCT**

J. Bian<sup>1</sup>, X. Han<sup>1</sup>, J. Wang<sup>2</sup>, E. Y. Sidky<sup>1</sup>, L. X. Shao<sup>2</sup>, X. Pan<sup>1</sup>  
<sup>1</sup>The University of Chicago, US; <sup>2</sup>Philips Healthcare, US

**M04-6 (17:15) A Statistical Image Reconstruction Algorithm for Polyenergetic X-Ray CT: Preliminary Results on a Small Animal Scanner**

M. Abella<sup>1</sup>, J. J. Vaquero<sup>1</sup>, M. Descoteaux<sup>1,2,3</sup>, J. A. Fessler<sup>4</sup>  
<sup>1</sup>Hospital General Universitario Gregorio Marañon, Spain; <sup>2</sup>CIBERSAM, Instituto de Salud Carlos III, Spain; <sup>3</sup>Universidad Carlos III, Spain; <sup>4</sup>The University of Michigan, USA

**M04-7 (17:30) Low-Dose Phase-Correlated Cone-Beam Micro-CT of Small Animals**

S. Sawall<sup>1</sup>, F. Bergner<sup>1</sup>, R. Lapp<sup>2</sup>, M. Mronz<sup>2</sup>, M. Karolczak<sup>1</sup>, A. Hess<sup>1</sup>, M. Kachelriess<sup>1</sup>  
<sup>1</sup>University Erlangen-Nuremberg, Germany; <sup>2</sup>CT Imaging GmbH, Germany

**M04-8 (17:45) Preliminary Investigation of Optimal Imaging Parameters for Dose-reduction in Cone-Beam CT**

X. Han<sup>1</sup>, E. Pearson<sup>1</sup>, J. Bian<sup>1</sup>, S. Cho<sup>2</sup>, E. Y. Sidky<sup>1</sup>, C. A. Pelizzari<sup>1</sup>, X. Pan<sup>1</sup>  
<sup>1</sup>The University of Chicago, USA; <sup>2</sup>Korea Advanced Institute of Science and Technology, Korea



## RTSD Oral Presentations

## R07: Characterization of CZT II

Wednesday, Nov. 3 08:30-09:50 301A &amp; 301B

Session Chair: Arnold Burger, *Fisk University, USA***R07-1 (08:30, invited) Correlations Between Crystal Defects and Performance of CdZnTe Detectors**

A. E. Bolornikov<sup>1</sup>, S. Babalola<sup>2</sup>, G. S. Camarda<sup>1</sup>, Y. Cui<sup>1</sup>, R. Gul<sup>1</sup>, S. U. Egarievwe<sup>2</sup>, P. M. Fochuk<sup>3</sup>, A. Hossain<sup>1</sup>, K. H. Kim<sup>1</sup>, O. O. Kopach<sup>3</sup>, L. Marchini<sup>4</sup>, G. Yang<sup>1</sup>, L. Xu<sup>5</sup>, R. B. James<sup>1</sup>  
<sup>1</sup>Brookhaven National Laboratory, USA; <sup>2</sup>Alabama A&M University, USA; <sup>3</sup>Chernivtsi National University, Ukraine; <sup>4</sup>IMEM-CNR, Italy; <sup>5</sup>Northwestern Polytechnic University, China

**R07-2 (08:50) Charge Collection and Depth Sensing Investigation on CZT Drift Strip Detectors**

I. Kuvvedi<sup>1</sup>, C. Budtz-Jrgensen<sup>1</sup>, E. Caroli<sup>2</sup>, J. B. Stephen<sup>2</sup>, E. Kalemci<sup>3</sup>, N. Auricchio<sup>2</sup>  
<sup>1</sup>DTU Space National Space Institute, Technical University of Denmark, Denmark; <sup>2</sup>INAF/IASF-Bologna, Italy; <sup>3</sup>Sabancı University, Turkey

**R07-3 (09:05) Internal Electric Field Estimation, Charge Transport and Detector Performance of as-Grown Cd<sub>0.9</sub>Zn<sub>0.1</sub>Te:In by THM**

U. N. Roy, S. Weiler, J. Stein, *ICx Radiation, USA*; M. Groza, V. Buliga, A. Burger, *Fisk University, USA*

**R07-4 (09:20) The Effect of DC Bias Field on the Time-of-Flight Current Waveforms of CdTe and CdZnTe Detectors**

K. Suzuki, T. Sawada, K. Imai  
*Hokkaido Institute of Technology, Japan*

**R07-5 (09:35) Comparison of Results from 20x20x15 mm<sup>3</sup> Pixelated CdZnTe Semiconductor Detectors**

Y. A. Boucher, F. Zhang, W. Kaye, Y. Zhu, C. Herman, Z. He  
*University of Michigan, MI*

## R08: CZT Pixel Detectors

Wednesday, Nov. 3 10:30-12:05 301A &amp; 301B

Session Chair: Larry A. Franks, *Keystone International, USA***R08-1 (10:30, invited) The Medipix Chips as Tools for the Development and Evaluation of New Detector Structures**

M. Campbell, *CERN, Switzerland*  
 On behalf of the Medipix2 and Medipix3 Collaborations

**R08-2 (10:50) Application of Dynamic Time over Threshold Method to Pixelated CdTe Detector**

K. Shimazoe, H. Nguyen, T. Orita, Y. Wang, B. Shi, T. Suzuki, H. Takahashi  
*The University of Tokyo, Japan*

**R08-3 (11:05) Indium-Tin Bump Deposition for the Hybridization of CdTe Sensors and Readout Chips**

H. Heikkinen, A. Gadda, J. Salonen, P. Monnoyer, *VTT Technical Research Center of Finland, Finland*; L. Tlustos, M. Campbell, *CERN, Switzerland*

**R08-4 (11:20) M- $\pi$ -n Cdte Pixel Detector Coupled to Medipix2 Readout Chip**

J. J. Kalliopuska<sup>1</sup>, S. Nenonen<sup>2</sup>, R. Penttila<sup>1</sup>, H. Pohjonen<sup>1</sup>, A. Gadda<sup>1</sup>, L. Tlustos<sup>3</sup>, I. Vanttaja<sup>1</sup>, H. Andersson<sup>2</sup>, P. Laakso<sup>1</sup>, J. Likonen<sup>1</sup>  
<sup>1</sup>VTT, Finland; <sup>2</sup>Oxford Instruments Analytical Oy, Finland; <sup>3</sup>CERN, Switzerland

**R08-5 (11:35) Development of Small-Pixel CZT and CdTe Detectors Read Out by a Novel Energy-Resolved Photon-Counting ASIC**

L.-J. Meng, J. W. Tan, L. Cai, *University of Illinois at Urbana-Champaign, USA*; Q. Z. Guo, H. S. Krawczynski, *Washington University in St. Louis, USA*

**R08-6 (11:50) Suitability of the Medipix2 with Different Semiconductor Materials for Computed Tomography**

J. Luebke<sup>1</sup>, S. Procz<sup>2</sup>, A. Zwerger<sup>2</sup>, M. Fiederle<sup>2</sup>, M. Mix<sup>1</sup>  
<sup>1</sup>Universitaetsklinikum Freiburg, Germany; <sup>2</sup>Albert-Ludwigs-Universitaet Freiburg, Germany

## R09: CdTe and CdZnTe

Wednesday, Nov. 3 13:30-15:05 301A &amp; 301B

Session Chair: Paul Siffert, *Eurorad, Strasbourg, France***R09-1 (13:30, invited) Comparison of the Characteristics of CdTe and CdZnTe Single Crystals Grown by THM**

H. Shiraki, Y. Ando, H. Katakabe, Y. Shuto, A. Tachibana, R. Ohno  
*ACRORAD CO., LTD., Japan*

**R09-2 (13:50) Annealing Effects on CdTe:Ge: Structural and Electrical Properties**

A. Cavallini, B. Fraboni, F. Boscherini, *University of Bologna, Dept. Physics, Italy*; P. Fochuk, *Chernivtsi National University, Ukraine*

**R09-3 (14:05) Recent Developments of Schottky CdTe Diodes and Applications to Imaging Devices**

G. Sato<sup>1</sup>, T. Fukuyama<sup>1,2</sup>, K. Hagino<sup>1,2</sup>, H. Ikeda<sup>1</sup>, S. Ishikawa<sup>1,2</sup>, J. Katsuta<sup>1,2</sup>, M. Kokubun<sup>1</sup>, K. Nakazawa<sup>2</sup>, H. Odaka<sup>1,2</sup>, M. Ohta<sup>1</sup>, S. Saito<sup>1,2</sup>, T. Sato<sup>1,2</sup>, T. Takahashi<sup>1,2</sup>, S. Takeda<sup>1</sup>, T. Tanaka<sup>3</sup>, S. Watanabe<sup>1</sup>  
<sup>1</sup>JAXA, JAPAN; <sup>2</sup>The University of Tokyo, Japan; <sup>3</sup>Stanford University, U.S.

**R09-4 (14:20) High Speed CdTe Photon Counting Detector for Practical X-Ray Energy Spectrum Imaging**

T. Aoki, A. Koike, T. Okunoyama, B. Shinomiya, H. Morii, T. Yamakawa, Y. Neo, H. Mimura  
*Shizuoka university, Japan*

**R09-5 (14:35) Experimental Evaluation of Material Identification Methods with a CdTe X-Rays Spectrometric Detector**

J. Rinkel<sup>1</sup>, G. Beldjoudi<sup>1</sup>, G. Gonon<sup>1</sup>, A. Brambilla<sup>1</sup>, V. Rebuffel<sup>1</sup>, C. Boudou<sup>2</sup>, P. Ouvrier-Buffer<sup>1</sup>, L. Verger<sup>1</sup>  
<sup>1</sup>CEA, France; <sup>2</sup>Thales, France

**R09-6 (14:50) Development of Counting-Type CdTe Pixel Detector for High Energy X-Ray Application at SPring-8**

H. Toyokawa, T. Hirono, M. Kawase, Y. Furukawa, T. Ohata, M. Sato, T. Honma, *Japan Synchrotron Radiation Research Institute, Japan*; H. Ikeda, G. Sato, S. Watanabe, T. Takahashi, *Japan Aerospace Exploration Agency, Japan*

**R10: RTSD Scientist Award & Semiconductor Materials**

Wednesday, Nov. 3 16:00-17:55 301A &amp; 301B

Session Chair: Ralph James, *Brookhaven National Laboratory, USA***R10-1 (16:00, invited) Development of CdZnTe Radiation Detectors at FMF**M. Fiederle, *Freiburger Materialforschungszentrum, Germany***R10-2 (16:20) Stabilizing the Detached Bridgman Process via Model-Based, Nonlinear Control**J. J. Derby, P. Daoutidis, A. Yeckel  
*University of Minnesota, U.S.A.***R10-3 (16:35) Effects of Annealing on Te Inclusions and Electron Trapping Non-Uniformity in THM-Grown CdZnTe Crystals**P. N. Luke, M. Amman, J. S. Lee, *Lawrence Berkeley National Laboratory, USA*; M. Jason, C. Henry, B. Glenn, *Redden Technologies, Canada***R10-4 (16:50) The COCAE Detector: An Instrument for Localization - Identification of Radioactive Sources**C. P. Lambropoulos<sup>1</sup>, T. Aoki<sup>2</sup>, J. Crocco<sup>3</sup>, E. Dieguez<sup>3</sup>, C. Disch<sup>4</sup>, A. Fauler<sup>4</sup>, M. Fiederle<sup>4</sup>, D. S. Hatzistratis<sup>1</sup>, V. A. Gnatyuk<sup>5</sup>, K. Karafasoulis<sup>6</sup>, L. A. Kosyachenko<sup>7</sup>, S. N. Levytskyi<sup>5</sup>, D. Loukas<sup>8</sup>, O. L. Maslyanchuk<sup>7</sup>, A. Medvids<sup>9</sup>, T. Orphanoudakis<sup>1</sup>, I. Papadakis<sup>8</sup>, A. Papadimitriou<sup>8</sup>, C. Potiradis<sup>6</sup>, T. Schulman<sup>10</sup>, V. M. Sklyarchuk<sup>9</sup>, K. Spartiotis<sup>10</sup>, G. Theodoratos<sup>1</sup>, O. I. Vlasenko<sup>5</sup>, K. Zachariadou<sup>8</sup>, M. Zervakis<sup>1</sup><sup>1</sup>*Technological Educational Institute of Chalkida, Greece*; <sup>2</sup>*Shizuoka university, Japan*; <sup>3</sup>*Universidad Autonoma de Madrid, Spain*; <sup>4</sup>*Albert Ludwigs University, Germany*; <sup>5</sup>*National Academy of Sciences of Ukraine, Ukraine*; <sup>6</sup>*Greek Atomic Energy Commission, Greece*; <sup>7</sup>*Chernivtsi Yury Fedkovych National University, Ukraine*; <sup>8</sup>*National Center for Scientific Research, Greece*; <sup>9</sup>*Riga Technical University, Latvia*; <sup>10</sup>*Oy Ajat Ltd, Finland***R10-5 (17:05) Preliminary Results on Elimination of Secondary Phases in Cd<sub>1-x</sub>Zn<sub>x</sub>Te for MVB Growth**A. Datta, K. A. Jones, S. Swain, K. Lynn  
*Washington State University, US***R10-6 (17:20) Nanoparticles for Nucleation of Heavy Metal Iodides Films Mercuric Iodide and Bismuth Tri-Iodide Cases**L. Fornaro, *CURE, Uruguay*; M. E. Perez, I. Aguiar, H. Bentos Pereira, *Facultad de Quimica, Uruguay***R10-7 (17:35, invited) Novel Concept of the Surface Barrier Electrode: Application to Radiation Detector Based on Semi-Insulating GaAs**F. Dubecky, B. Zařko, P. Bohařek, *Inst. of Electrical Engineering, Slovak Academy of Sciences, Slovakia*; E. Gombia, *IMEM-CNR, Italy*; V. Nečas, *University of Technology, Slovakia***NSS Poster Presentations****N34: Neutron Detectors and Instrumentation: posters**

Wednesday, Nov. 3 08:00-10:00 Exhibit Hall B

Session Chair: Marek Flaska, *University of Michigan, USA***N34-280 Storage Characteristics of KBr:Eu<sup>2+</sup> Phosphors with Radiators by Irradiation of Fast Neutrons**K. Sakasai, Y. Iwamoto, K. Toh, T. Nakamura, K. Takakura, C. Konno  
*Japan Atomic Energy Agency, Japan***N34-283 Gamma-ray Suppression in a Ce:LiCaAlF<sub>6</sub> Neutron Scintillator Using Pulse Shape Discrimination Technique**K. Watanabe<sup>1</sup>, A. Yamazaki<sup>1</sup>, A. Uritani<sup>1</sup>, T. Iguchi<sup>1</sup>, N. Kawaguchi<sup>2</sup>, T. Yanagida<sup>3</sup>, Y. Fujimoto<sup>3</sup>, Y. Yokota<sup>3</sup>, K. Kamada<sup>3</sup>, K. Fukuda<sup>2</sup>, T. Suyama<sup>2</sup>, A. Yoshikawa<sup>3</sup>  
<sup>1</sup>*Nagoya University, Japan*; <sup>2</sup>*Tokuyama Corporation, Japan*; <sup>3</sup>*Tohoku University, Japan***N34-286 Study of a Thermal Neutron Scintillation Detector Prototype with Wavelength Shifting Fiber Readout**R. Engels<sup>1</sup>, U. Clemens<sup>1</sup>, A. Houben<sup>2</sup>, G. Kemmerling<sup>1</sup>, W. Schweika<sup>1</sup>, J. Schelten<sup>1</sup><sup>1</sup>*Forschungszentrum Juelich GmbH, Germany*; <sup>2</sup>*RWTH Aachen, Germany***N34-289 Spatial Resolution Research on <sup>225</sup>Gd<sub>2</sub>O<sub>3</sub> Coated MCP Thermal Neutron Converter**N. Lu<sup>1,2</sup>, Y. Yang<sup>1,2</sup>, Y. Li<sup>1,2</sup><sup>1</sup>*Tsinghua University, P.R. China*; <sup>2</sup>*Ministry of Education, P.R. China***N34-292 Development of Epithermal Neutron Camera with Resonance Filters**C. Shoda, H. Tsuji, H. Tomita, J. Kawarabayasi, T. Iguchi  
*Nagoya University, Japan***N34-295 Fabrication and Imaging Performance of Thin Scintillation Screens for Neutron Imaging Detectors with High Sensitivity and Spatial Resolution**J. Kim, G. Cho, *KAIST, Republic of Korea*; S. W. Lee, T. Kim, *KAERI, Republic of Korea*; B. K. Cha, *KERI, Republic of Korea***N34-298 Development of a Compact Flat Response Neutron Detector**H. Harano, T. Matsumoto, J. Nishiyama, A. Masuda, A. Uritani, K. Kudo  
*National Institute of Advanced Industrial Science and Technology, JAPAN***N34-301 Absolute Determination of Far-Ultraviolet Photon Yield from the n(3He, Pt) Reaction in Ar, Kr, and Xe**P. P. Hughes<sup>1</sup>, M. A. Coplan<sup>2</sup>, A. K. Thompson<sup>2</sup>, M. Arif<sup>2</sup>, R. E. Vest<sup>2</sup>, C. W. Clark<sup>1,2,3</sup><sup>1</sup>*National Institute of Standards and Technology, U.S.A.*; <sup>2</sup>*University of Maryland, U.S.A.*; <sup>3</sup>*Joint Quantum Institute, U.S.A.***N34-304 Electro-Optic Detector: a New Class of Radiation Detectors**L. E. Sadler, N. C. Bartelt, S. E. Bisson, A. A. Hoops, K. D. Krenz, T. J. Kulp, F. Leonard, J. C. Lund, K. E. Strecker, J. T. Steele  
*Sandia National Laboratories, USA*

**N34-307 Development of a Neutron Flux Monitor Using a Small Scintillator Coupled with Quartz Fiber for a Cyclotron-Based Boron Neutron Capture Therapy**

H. Tanaka<sup>1</sup>, Y. Sakurai<sup>1</sup>, M. Suzuki<sup>1</sup>, S. Masunaga<sup>1</sup>, T. Mitsumoto<sup>2</sup>, G. Kashino<sup>1</sup>, Y. Kinashi<sup>1</sup>, Y. Liu<sup>1</sup>, Y. Kawabata<sup>1</sup>, T. Yagi<sup>1</sup>, T. Misawa<sup>1</sup>, K. Ono<sup>1</sup>, A. Maruhashi<sup>1</sup>

<sup>1</sup>Kyoto University Research Reactor Institute, Japan; <sup>2</sup>Sumitomo Heavy Industries, Japan

**N34-310 Measurement of Detector Resolution for Neutral Particle Detection with Liquid Scintillators**

M. M. Bourne, S. D. Clarke, E. C. Miller, M. Flaska, S. A. Pozzi  
University of Michigan, United States

**N34-313 A Novel Neutron Response Measurement System for Scintillation Material Characterization**

A. Green, M. Williamson, I. Sen, D. Penumadu, L. Miller  
The University of Tennessee, USA

**N34-316 Response Measurement of Bonner Sphere Spectrometer for High-Energy Neutrons**

A. Masuda<sup>1</sup>, T. Matsumoto<sup>1</sup>, H. Harano<sup>1</sup>, J. Nishiyama<sup>1</sup>, Y. Iwamoto<sup>2</sup>, M. Hagiwara<sup>3</sup>, D. Satoh<sup>2</sup>, H. Iwase<sup>3</sup>, H. Yashima<sup>4</sup>, T. Nakamura<sup>5</sup>, T. Sato<sup>2</sup>, T. Itoga<sup>6</sup>, Y. Nakane<sup>2</sup>, H. Nakashima<sup>2</sup>, Y. Sakamoto<sup>2</sup>, C. Theis<sup>7</sup>, E. Feldbaumer<sup>7</sup>, L. Jaegerhofer<sup>7</sup>, C. Picoh<sup>8</sup>, V. Mares<sup>9</sup>, A. Tamii<sup>9</sup>, K. Hatanaka<sup>9</sup>

<sup>1</sup>National Institute of Advanced Industrial Science and Technology, JAPAN; <sup>2</sup>Japan Atomic Energy Agency, JAPAN; <sup>3</sup>High Energy Accelerator Research Organization(KEK), Japan; <sup>4</sup>Kyoto University, Japan; <sup>5</sup>Toboku University, Japan; <sup>6</sup>RIKEN, Japan; <sup>7</sup>European Organization for Nuclear Research(CERN), Switzerland; <sup>8</sup>National Research Center for Environment and Health, Germany; <sup>9</sup>Osaka University, Japan

**N34-319 Reference-Pulses Neutron/Gamma-Ray Pulse Shape Discrimination in Liquid Scintillators for Deposited Neutron Energies from 200 keV**

S. D. Ambers, L. Huang, M. Flaska, S. A. Pozzi  
University of Michigan, USA

**N34-322 Large Standoff Thermal Neutron Detection of Fissile Materials Sources**

B. W. Robertson, University of Nebraska-Lincoln, USA

**N34-325 MCNP-PoliMi Analysis of Neutron-Source Penetrability in Uranium-Oxide Samples Measured with an Active Well Coincidence Counter**

S. D. Clarke, M. Flaska, S. A. Pozzi, University of Michigan, USA; R. Oberer, L. Chiang, Y-12 National Security Complex, USA

**N34-328 Efforts to Reduce the Gamma Sensitivity of Ce(III) Doped 6-Li Silicate Glass Thermal Neutron Detectors**

K. D. Weston, NuSAFE, Inc., USA

On behalf of the NuSAFE, Inc.

**N34-331 New Method for Absolute Detection of Thermal Neutrons and Depth Profiling of Boron Based on Coincidence Measurement of Reaction Products from the <sup>10</sup>B(n, $\gamma$ )<sup>7</sup>Li Nuclear Reaction**

J. Vacik<sup>1,2</sup>, V. Hnatowicz<sup>1</sup>, S. Posta<sup>2</sup>

<sup>1</sup>Nuclear Physics Institute, Academy of Sciences of the Czech Republic, Czech Republic; <sup>2</sup>Research Centrum Rez, Czech Republic

**N34-334 (08:00) 2-Dimensional He-3 M-MSGC with Floating Pads**

T. Fujiwara<sup>1</sup>, H. Takahashi<sup>1</sup>, B. Shi<sup>1</sup>, N. Torikai<sup>2</sup>, N. Yamada<sup>3</sup>, M. Uesaka<sup>1</sup>

<sup>1</sup>The University of Tokyo, Japan; <sup>2</sup>Mie University, Japan; <sup>3</sup>High Energy Accelerator Research Organization, Japan

**N34-337 Neutron Response of Rare-Earth-Doped <sup>6</sup>LiF/CaF<sub>2</sub> Eutectic Composites with the Ordered Lamellar Structure**

N. Kawaguchi<sup>1,2</sup>, K. Fukuda<sup>1</sup>, T. Yanagida<sup>2</sup>, Y. Fujimoto<sup>2</sup>, Y. Yokota<sup>2</sup>, K. Watanabe<sup>3</sup>, A. Yamazaki<sup>3</sup>, T. Suyama<sup>1</sup>, A. Yoshikawa<sup>2</sup>

<sup>1</sup>Tokuyama Corporation, Japan; <sup>2</sup>Tohoku University, Japan; <sup>3</sup>Nagoya University, Japan

**N34-340 Thermal Neutron Imaging Tests with Rare-Earth-Ion-Doped LiCaAlF<sub>6</sub> and Sealed <sup>252</sup>Cf Source**

N. Kawaguchi<sup>1,2</sup>, T. Yanagida<sup>2</sup>, Y. Fujimoto<sup>2</sup>, Y. Yokota<sup>2</sup>, K. Kamada<sup>2</sup>, K. Fukuda<sup>1</sup>, T. Suyama<sup>1</sup>, K. Watanabe<sup>3</sup>, A. Yamazaki<sup>3</sup>, A. Yoshikawa<sup>1,2</sup>

<sup>1</sup>Tokuyama corp., Japan; <sup>2</sup>Tohoku univ., Japan; <sup>3</sup>Nagoya univ., Japan

**N34-343 Neutron Detectors Based on Optimally Distributed Neutron Sensors**

V. D. Jardret, A. C. Stephan

Material Innovations, Inc., USA

**N34-346 Development of High-Speed Diamond Detectors for Fast-Neutron Analysis of Inertial Confinement Fusion Plasmas**

S. Friedrich, T. J. Clancy, R. A. Zacharias, L. S. Dauffy, M. J. Eckart, Lawrence Livermore National Laboratory, USA; V. Y. Glebov, M. J. Shoup III, Laboratory for Laser Energetics, USA

**N34-349 Digital Gamma and Neutron Discrimination With CLYC Using a 500 MHz Spectrometer**

S. J. Asztalos, W. Hennig, XIA, LLC, USA

**N34-352 (08:00) Novel Organic Scintillators for Neutron Detection**

E. V. Van Loef<sup>1</sup>, J. Glodo<sup>1</sup>, U. Shirwadkar<sup>1</sup>, N. Zaitseva<sup>2</sup>, K. S. Shah<sup>1</sup>

<sup>1</sup>Radiation Monitoring Devices, Inc., USA; <sup>2</sup>Lawrence Livermore National Laboratory, USA

**N34-355 Neutron Fields Characterization for the INFN-LNL Accelerator-Based BNCT Facility**

A. Fazzi, A. Pola, S. Agosteo, M. V. Introini, C. Pirovano, V. Varoli, Politecnico di Milano, Italy; P. Colautti, J. Esposito, Istituto Nazionale di Fisica Nucleare, Italy

**N35: Nuclear Power Reactor Instrumentation: poster**

Wednesday, Nov. 3

08:00-10:00

Exhibit Hall B

Session Chair: Timothy A. DeVol, Clemson University, Environmental Engineering and Earth Sciences Department, USA

**N35-354 Characteristics of Fabricated SiC PIN-Type Neutron Detectors for a Nuclear Power Reactor Application**

J. H. Ha, H. S. Kim, S.-H. Park, Korea Atomic Energy Research Institute, Rep. of Korea; S. M. Kang, C. H. Lee, Hanyang University, Rep. of Korea

**N36: Radiation Damage Effects: posters**

Wednesday, Nov. 3

08:00-10:00

Exhibit Hall B

Session Chair: Liyuan Zhang, California Institute of Technology, USA

**N36-180 Radiation Damage Effects of Pure and Ce-doped Li<sub>6</sub>Gd(BO<sub>3</sub>)<sub>3</sub> Single Crystals**

J. F. Chen, S. H. Wang

Shanghai institute of ceramics, Chinese Academy of Sciences, China

**N36-183 Low Radiation Damage Maintaining of the Lead Tungstate Scintillation Crystals Operating in High Dose Rate Radiation Environment**

M. Korjik<sup>1</sup>, A. Borisevich<sup>1</sup>, A. Fedorov<sup>1</sup>, Y. Kubota<sup>2</sup>, R. Rusack<sup>2</sup>, T. Kuske<sup>3</sup>, V. Mechinski<sup>1</sup>, V. Dormenev<sup>3</sup>, O. Missevitch<sup>1</sup>, R. Novotny<sup>3</sup>, A. Singovski<sup>2</sup>

<sup>1</sup>RINP, Minsk, Belarus, Belarus; <sup>2</sup>School of Physics and Astronomy University of Minnesota, USA; <sup>3</sup>Justus Liebig University, Germany

**N36-186 A Study on Thin Films of (TeO<sub>2</sub>)<sub>0.9</sub> (In<sub>2</sub>O<sub>3</sub>)<sub>0.1</sub> for Real-Time Gamma Dosimetry**

S. L. Sharma, T. K. Maity

Indian Institute of Technology, Kharagpur, INDIA

**N36-189 INCREASED RADIATION HARDNESS of CdZnTe by LASER RADIATION**

A. Medvids, A. Mychko, E. Dauksta, Riga Technical University, Latvia; Y. Naseka, Institute of Semiconductor Physics, Ukraine; E. Dieguez, Autonoma University of Madrid, Spain

**N36-192 Effect of Radiation Damage on the Performance of Silicon Detector for the Harsh Environment Applications**

S.-H. Park<sup>1</sup>, H. S. Kim<sup>1</sup>, C. H. Lee<sup>2</sup>, J. H. Ha<sup>1</sup>, H.-S. Shin<sup>1</sup>

<sup>1</sup>KAERI, Republic of Korea; <sup>2</sup>Hanyang University, republic of Korea

**N36-195 The Recovery Instruction Duplication Algorithm as an Example of Software Implemented Radiation Protection Method Based on Instruction-Level Duplication**

A. Piotrowski, D. Makowski

Department of Microelectronics and Computer Science, Technical University of Lodz, Poland

**N36-198 Performance Evaluation of Low Complexity EDAC Systems for Application on-Board the Algerian Satellites**

Y. Bentoutou, Centre des Techniques Spatiales, Algeria

**N36-201 A Feasibility Test of a Fabricated Charge Sensitive Amplifier for a High-Level  $\gamma$ -Radiation Field Application**

H. S. Kim, J. H. Ha, S.-H. Park, J. H. Lee, Korea Atomic Energy Research Institute, Republic of Korea; C. H. Lee, Hanyang University, Republic of Korea; T. Y. Kim, SP Tech. Inc., Republic of Korea

**N36-204 Evaluation of Gamma and Neutron Radiation Influence on Reliability of xTCA Systems**

T. Kozak, A. Piotrowski, D. Makowski, A. Napieralski

Technical University of Lodz, Poland

**N36-207 Computation of energy absorption and exposure Build up Factors in Teeth**

H. C. Manjunatha, Assistant Professor, India

**N41: Radiation Imaging Detectors: posters**

Wednesday, Nov. 3 10:30-12:00 Exhibit Hall B

Session Chair: James A. Mullens, Oak Ridge National Laboratory,

**N41-111 A Fast-Neutron Imaging Detector Based on Micromegas Mini-TPC**

X. Zhang, Lanzhou University, China

On behalf of the collaboration of Saclay CEA/Irfu's group and Lanzhou University's group

**N41-114 A Novel X-Ray Detector System**

T.-E. Hansen, A. Ferber, N. Ahmed, O. Lovhaugen, J. Ostby,

G. Bouquet, F. Tyholdt, M. Hjelstuen, O. Paulsen

SINTEF, Norway

**N41-117 Development and Evaluation of a High Resolution CMOS Image Sensor with 17  $\mu$ m X 17  $\mu$ m Pixel Size for X-Ray Imaging**

J. H. Bae, J. Kim, D.-U. Kang, G. Cho

Korea Advanced Institute of Science and Technology, Republic of Korea

**N41-120 Pixelated Diamond-Based X-Ray Detector Using Medipix S. P. Lansley<sup>1</sup>, J. Meyer<sup>1</sup>, P. H. Butler<sup>1</sup>, M. Fiederle<sup>2</sup>, O. A. Williams<sup>3</sup>, R. J. Hall-Wilton<sup>4</sup>**

<sup>1</sup>University of Canterbury, New Zealand; <sup>2</sup>Albert-Ludwigs-Universitaet, Germany; <sup>3</sup>Fraunhofer Institute for Applied Solid State Research, Germany; <sup>4</sup>CERN, Switzerland

**N41-123 X-Ray Fluorescence Imaging with the Medipix2 Single-Photon Counting Detector**

J. Uher, CSIRO Process Science and Engineering, Australia; G. Harvey, University of Wollongong, Australia; J. Jakubek, IEAP-CTU, Czech Republic

**N41-126 Spectroscopic X-Ray Imaging Using a Pixelated Detector with Single Photon Processing Readout**

B. Norlin, E. Frojdh, D. Krapohl, A. Frojdh, G. Thungstrom, C. Frojdh

Mid Sweden University, Sweden

**N41-129 Spectral Response in a Pixelated X-Ray Imaging CdTe Detector with Single Photon Processing Readout**

E. Fröjdh, B. Norlin, G. Thungström, C. Fröjdh

Mid Sweden University, Sweden

**N41-132 A Calibration Process for Improving Crystal Identification Rate in the LabPET Phoswich Detectors**

F. Lemieux, N. Viscogliosi, M.-A. Tetrault, R. Lecomte, R. Fontaine

Universite de Sherbrooke, Canada

**N41-135 Radiation Imaging from Multiple Readout of a Monolithic Scintillator**

H. Park, P. J. Barton, D. K. Wehe

University of Michigan, USA

**N41-138 Predicting ROC Curves for Source Detection under Model Mismatch**

D. J. Lingenfelter, J. A. Fessler, C. D. Scott, Z. He

University of Michigan, USA

**N41-141 Point-Source Detection Using 3D-Position-Sensitive Semiconductor Detectors with Estimated Background**

C. G. Wahl, Z. He, University of Michigan, USA

**N41-144 Improvement of Compton Imaging Efficiency by Using Side-Neighbor Events**

W. Wang, W. R. Kaye, F. Zhang, Z. He

University of Michigan, 48105

**N41-147 Evaluation of Detection Sensitivity with Electron Tracking-Based Compton Imaging for Homeland Security Applications**

A. B. Coffer<sup>1</sup>, D. H. Chivers<sup>1</sup>, B. Plimley<sup>1</sup>, K. Vetter<sup>1,2</sup>

<sup>1</sup>University of California - Berkeley, USA; <sup>2</sup>Lawrence Berkeley National Laboratory, USA

**N41-150 Performance Evaluation of a Pixelated Ge Compton Camera**

M. A. Alnaaimi, University College London, UK; G. J. Royle,

R. D. Speller,



**N41-153 Compton Imaging with a Planar Semiconductor System**

A. Sweeney, A. J. Boston, H. C. Boston, M. Jones, D. P. Scraggs, D. S. Judson, J. McGrath, L. J. Harkness, P. J. Nolan, J. Dormand, *University of Liverpool, United Kingdom*; M. Ellie, A. Thandi, *AWE, United Kingdom*

**N41-156 Simulation Studies and Spectroscopic Measurements of a Position Sensitive Detector Based on Pixelated Cd(Zn)Te Crystals**

K. Karafasoulis<sup>1</sup>, K. Zachariadou<sup>2</sup>, S. Seferlis<sup>1</sup>, I. Kaissas<sup>1</sup>, C. Lambropoulos<sup>3</sup>, C. Potiriadis<sup>1</sup>  
<sup>1</sup>*Greek Atomic Energy Commission, Greece*; <sup>2</sup>*National Center for Scientific Research Demokritos, Greece*; <sup>3</sup>*Technological Educational Institute of Chalkida, Greece*

**N41-159 Monte Carlo Study of Compton-Camera Detection Sensitivity**

A. Poitrasson-Riviere, M. C. Hamel, S. D. Clarke, M. Flaska, S. A. Pozzi, *University of Michigan, United States*; A. Gueorguiev, G. Pausch, C.-M. Herbach, M. Ohmes, J. Stein, *ICx Radiation Inc., United States*

**N41-162 Performance Metrics for Rotating Modulation Collimators Used in Orphan Source Search Applications**

B. R. Kowash, *Air Force Institute of Technology, USA*; D. K. Wehe, *University of Michigan, USA*

**N41-165 Optimization of a Coded Aperture Mask for near Field 3D Gamma-Ray Imaging**

C. J. Moore-Gotcher<sup>1</sup>, L. Mihailescu<sup>2</sup>, D. Chivers<sup>1</sup>, J. Siegrist<sup>1,2</sup>, K. Vetter<sup>1,2</sup>  
<sup>1</sup>*University Of California, Berkeley, USA*; <sup>2</sup>*Lawrence Berkeley National Lab, USA*

**N41-168 Spectral Analysis for the High Efficiency Multimode Imager**

M. L. Galloway<sup>1</sup>, A. Zoglauer<sup>1</sup>, M. Amman<sup>2</sup>, S. Boggs<sup>1</sup>, P. N. Luke<sup>2</sup>  
<sup>1</sup>*University of California, USA*; <sup>2</sup>*Lawrence Berkeley National Laboratory, USA*

**N41-171 Characterization of a Multi Anode Photon Multiplier Tube with Single Photon Signal**

C. Arnaboldi, M. Calvi, E. Fanchini, A. Giachero, C. Gotti, M. Maino, C. Matteuzzi, D. L. Perego, G. Pessina  
*INFN Istituto Nazionale di Fisica Nucleare e Universit di Milano-Bicocca Dipartimento di Fisica, Italy*

**N41-174 Gadolinium Thin Foils in a Plasma Panel Sensor as an Alternative to <sup>3</sup>He**

R. L. Varner<sup>1</sup>, P. S. Friedman<sup>2</sup>, J. R. Beene<sup>1</sup>  
<sup>1</sup>*Oak Ridge National Laboratory, USA*; <sup>2</sup>*Integrated Sensors, USA*

**N41-177 Digital X-Ray Image Sensor Using Plasma Display Panel (PDP) Structure**

K. S. Song<sup>1</sup>, D. H. Lee<sup>2</sup>, S.-H. Kim<sup>1</sup>  
<sup>1</sup>*Kumoh National Institute of Technology, Korea*; <sup>2</sup>*Korea Electrotechnology Research Institute, Korea*

**N42-260 Simulation Study of the Wavelength Shifter Fiber Readout of Plastic Scintillator**

S. Kobayashi, *Saga University, Japan*; T. Yamamoto, *Konan University, Japan*

**N42-263 Simulation Study on the Timing Property of Wavelength Shifter Fiber Embedded in a Plastic Scintillator**

S. Kobayashi, *Saga University, Japan*; T. Yamamoto, *Konan University, Japan*

**N42-266 Space Charge Measurements for the Simulation of a CdTe:Cl Detector under High X-Ray Flux**

O. Alirol, F. Glasser, E. Gros d'Aillon, J. Tabary  
*CEA LETI, FRANCE*

**N42-269 KLOE Calorimeter Simulation with Virtual Monte Carlo**

F. Roukoutakis, *INFN-LNF, Italy*  
On behalf of the KLONE Collaboration

**N42-272 The ATLAS Fast Calorimeter Simulation FastCaloSim**

E. Lancon, *CEA-Saclay/IRFU, Fq*  
On behalf of the ATLAS Collaboration

**N42-275 Adaptive Super Mirror for Neutron Focusing**

C. G. Tate, *University of Tennessee, US*

**N42-278 Characterization of the PANDA Micro-Vortex-Detector and Analysis of the First Data Measured with a Tracking Station**

S. Bianco, *HISKP, Germany*  
On behalf of the PANDA MVD Group (Bonn-Julich-Torino)

**N42-281 Environmental Adaptability and Mutants: Exploring New Concepts in Particle Transport for Multi-Scale Simulation**

M. G. Pia<sup>1</sup>, M. Augelli<sup>2</sup>, M. Begalli<sup>3</sup>, M. Han<sup>4</sup>, S. Hauf<sup>5</sup>, C. H. Kim<sup>4</sup>, M. Kuster<sup>6</sup>, P. Queiroz<sup>7</sup>, L. Quintieri<sup>8</sup>, P. Saracco<sup>1</sup>, D. Souza-Santos<sup>7</sup>, H. Seo<sup>4</sup>, G. Weidenspointner<sup>9</sup>, A. Zoglauer<sup>10</sup>  
<sup>1</sup>*INFN Genova, Italy*; <sup>2</sup>*CNES, France*; <sup>3</sup>*UERJ, Brazil*; <sup>4</sup>*Hanyang Univ., Korea*; <sup>5</sup>*Darmstadt Univ. of Technology, Germany*; <sup>6</sup>*XFEL GmbH, Germany*; <sup>7</sup>*IRD, Brazil*; <sup>8</sup>*INFN LNF, Italy*; <sup>9</sup>*MPI Halbleiterlabor and MPE, Germany*; <sup>10</sup>*Univ. of California at Berkeley, USA*

**N42-284 Handling of the Generation of Primary Events in Gauss, the LHCb Simulation Framework**

I. Belyaev<sup>1</sup>, T. Brambach<sup>2</sup>, G. Corti<sup>3</sup>, N. Gauvin<sup>4</sup>, K. Harrison<sup>5</sup>, P. Harrison<sup>6</sup>, J. He<sup>7</sup>, C. Jones<sup>3</sup>, M. Lieng<sup>2</sup>, G. Manca<sup>8</sup>, S. Miglioranzzi<sup>3</sup>, P. Robbe<sup>7</sup>, V. Vagnoni<sup>9</sup>, M. Whitehead<sup>6</sup>, J. Wishahi<sup>2</sup>  
<sup>1</sup>*Institute of Theoretical and Experimental Physics (ITEP), Russia*; <sup>2</sup>*Technische Universität Dortmund, Germany*; <sup>3</sup>*CERN, Switzerland*; <sup>4</sup>*Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland*; <sup>5</sup>*University of Cambridge, United Kingdom*; <sup>6</sup>*University of Warwick, United Kingdom*; <sup>7</sup>*LAL, Université Paris-Sud, CNRS/IN2P3, France*; <sup>8</sup>*Universita' e INFN Cagliari, Italy*; <sup>9</sup>*INFN Bologna, Italy*

**N42-287 CALICE Software Framework and Operational Experience**

R. Poeschl, *LAL Orsay, France*  
On behalf of the CALICE collaboration

**N42-290 Monte-Carlo Simulation of Fast Neutron Detection Using Double-Scatter Events in Plastic Scintillator and Timepix**

J. Uher, *CSIRO Process Science and Engineering, Australia*; J. Jakubek, *IEAP-CTU, Czech Republic*

**N42: Scientific Simulation and Computation: posters**

Wednesday, Nov. 3 10:30-12:00 Exhibit Hall B

Session Chairs: Tatsumi Koi, *SLAC, USA*

Mauro Augelli, *CNES, France*



**N42-293 Modeling and Simulation of the Entire Detector System by Using Matlab and Simulink**

G. Panjkovic, A. Lynch, M. Ruat, G. Potter, D. Fitrio, M. Dimmock, A. Berry, S. Tjoa  
*Monash University, Australia*

**N42-296 Simulation of Gas Properties in Various Mixtures for High Resolution Position Sensitive Gas Detectors**

O. Ruebsamen, U. Pietsch, H. W. Schenk, A. H. Walenta  
*Universitaet Siegen, Germany*

**N42-299 Towards Design and Optimization of Scintillation-Detector Systems: a Monte-Carlo Simulation Framework**

Y. Kong, G. Pausch, K. Roemer, M. Neuer, C. Plettner, R. Lentering, J. Stein  
*ICx Technologies GmbH, Germany*

**N42-302 3D Simulations of High Resistivity Epitaxial Active Pixel Sensor Structures**

M. Fu<sup>1,2</sup>, A. Dorokhov<sup>2</sup>, C. Hu-Guo<sup>2</sup>, Z. Tang<sup>1</sup>, M. Winter<sup>2</sup>  
<sup>1</sup>Dalian University of Technology, P.R.China; <sup>2</sup>Institut Pluridisciplinaire Hubert Curien, France

**N42-305 Point Detector Scorer in GAMOS/GEANT4**

P. Arce, F. Sansaloni, J. I. Lagares, CIEMAT, Spain

**N42-308 First Results from the SuperB Simulation Production System**

D. Brown<sup>1</sup>, M. Corvo<sup>2</sup>, A. Di Simone<sup>3</sup>, A. Fella<sup>4</sup>, E. Luppi<sup>5</sup>, E. Paoloni<sup>6</sup>, R. Stroili<sup>2</sup>, L. Tomassetti<sup>5</sup>  
<sup>1</sup>Lawrence Berkeley National Laboratory, USA; <sup>2</sup>University of Padua and INFN, Italy; <sup>3</sup>University of Rome Tor Vergata, Italy; <sup>4</sup>INFN CNAF, Italy; <sup>5</sup>University of Ferrara and INFN, Italy; <sup>6</sup>INFN Pisa, Italy

**N42-311 SWORD: SoftWare for Optimization of Radiation Detectors**

E. I. Novikova, M. S. Strickman, C. Gwon, B. F. Philips, Naval Research Laboratory, USA; L. A. Jackson, K. Joseph, Praxis, Inc, USA

**N42-314 Calculation of Dosimetry Parameters for 192Ir and 125I Brachytherapy Sources Using Geant4**

M. C. Martins<sup>1</sup>, S. S. O. Fonseca-Rodrigues<sup>1</sup>, M. Begalli<sup>2</sup>, P. P. Queiroz Filho<sup>1</sup>, D. Souza-Santos<sup>1</sup>  
<sup>1</sup>Institute for Radiation Protection and Dosimetry, CNEN, Brazil; <sup>2</sup>State University of Rio de Janeiro, Brazil

**N42-317 Red Eye and Nagios Control System for INFN Tier-1 Dashboard**

D. Gregori, S. Antonelli, L. dell'Agnello, V. Sapunenko, P. Ricci, C. Vistoli, P. Veronesi, G. Guizzunti, F. Rosso, R. Veraldi, D. Degirolamo, G. Vita Finzi, S. Zani  
*INFN, Italy*

**N42-320 Charge Relaxation and Gain Depletion for Candidate Secondary Electron Emission Materials**

Z. Insepov<sup>1</sup>, V. Ivanov<sup>2</sup>, J. Elam<sup>1</sup>, B. Adams<sup>1</sup>, H. Frisch<sup>1,3</sup>  
<sup>1</sup>Argonne National Laboratory, USA; <sup>2</sup>Muons Inc., USA; <sup>3</sup>University of Chicago, USA

**N42-323 Anthropomorphic Phantoms and Geant4-Based Implementations for Dose Calculations**

M. C. Martins<sup>1</sup>, R. S. Silva<sup>2</sup>, M. Begalli<sup>2</sup>, P. P. Queiroz-Filho<sup>1</sup>, D. Souza-Santos<sup>1</sup>, M. G. Pia<sup>3</sup>  
<sup>1</sup>Institute for Radiation Protection and Dosimetry, Brazil; <sup>2</sup>State University of Rio de Janeiro, Brazil; <sup>3</sup>National Institute of Nuclear Physics, Italy

**N42-326 World Wide Web, Grid, and Other Spin-off from Computing in High Energy Physics**

J. Knobloch, CERN, Switzerland

**N42-329 TIME-DEPENDENT NEUTRON DETECTOR RESPONSE SIMULATION for SHIELDED Cf-252**

S. Prasad, S. D. Clarke, S. A. Pozzi, E. W. Larsen  
*University of Michigan, USA*

**N42-332 A Novel Algorithm for Pulse Amplitude Modulation for Digital Emulation of Radioactive Sources**

A. Abba, F. Caponio, A. Merati, F. Guerrieri, A. Geraci, G. Ripamonti  
*Politecnico di Milano University, Italy*

**N42-335 Simulating Curves of Transmission Used on PetCT Applications, Using Geant4 Toolkit**

G. Hoff, Pontifical Catholic University in Rio Grande do Sul, Brazil; R. Brasil, P. R. Costa, Nuclear Energy Research Institute, Brazil

**N42-338 Scaling Test of ATLAS Software, Benchmarking Virtual Clusters for Process-Parallel Scientific HPC**

Y. Yao, M. Tatarkhanov  
*Lawrence Berkeley National Laboratory, USA*

**N42-341 Volunteer Clouds for LHC Physics**

A. Sharma, CERN, Switzerland

**N42-344 SCOUT: Monte-Carlo Modeling Tool of Scintillation Camera Output**

W. C. J. Hunter, J. P. Muzi, T. K. Lewellen, R. S. Miyaoka, L. R. MacDonald, W. McDougald  
*University of Washington, USA*

**N42-347 MEG Simulation and Analysis Software**

R. Sawada, University of Tokyo, Japan  
 On behalf of the MEG software group

**N42-350 Geant4 Simulations of Proton Radiography Pertaining to SNM Detection**

J. O. Perry, K. Borozdin, C. Morris, W. Priedhorsky  
*Los Alamos National Labs, USA*

**N47: Analog and Digital Circuits: posters**

Wednesday, Nov. 3 13:30-15:30 Exhibit Hall B

Session Chairs: Valentin T. Jordanov, Yantel, LLC, USA  
 Nora D. Bull, ORNL, USA

**Analog and Digital Circuits****N47-56 A Full Digitizing Design of Measuring Systems in Diagnosing of High-Intensity Pulsed Radiation Field**

X. Cheng, North China Electric Power Univ., China; X. Ouyang, Northwest Institute of Nuclear Technology, China; M. Zeng, Tsinghua Univ., China

**N47-59 Presentation of the Front-End ROC Chips Readout for ECAL and HCAL ILC Calorimeters**

F. Dulucq, Laboratoire de l'Accelérateur Lineaire, FRANCE

**N47-62 A User-Programmable Digital Pulse Processor for Digital Spectroscopy**

A. T. Farsoni<sup>1,2</sup>, D. M. Hamby<sup>1</sup>  
<sup>1</sup>Oregon State University, USA; <sup>2</sup>Avicenna Instruments LLC, USA

**N47-65 High Accuracy Injection Circuit for Pixel-Level Calibration of Readout Electronics**M. Manghisoni<sup>1,2</sup>, E. Quartieri<sup>3,2</sup>, L. Ratti<sup>3,2</sup>, G. Traversi<sup>1,2</sup><sup>1</sup>Università degli Studi di Bergamo, Italy; <sup>2</sup>INFN, Italy; <sup>3</sup>Università degli Studi di Pavia, Italy**N47-68 A New Distributed and Programmable Voltage Control System for the CHIMERA Silicon Detectors**G. Saccà<sup>1</sup>, M. D'Andrea<sup>1</sup>, F. Fichera<sup>1</sup>, N. Guardone<sup>2</sup>, G. Lo Faro<sup>1</sup>, D. Nicotra<sup>1</sup>, S. Riggio<sup>1</sup><sup>1</sup>INFN Sezione di Catania, Italy; <sup>2</sup>Università degli Studi di Catania, Italy**N47-71 ITAC (Interpolated Time-to-Digital Converter with Auto-Calibration)**

S. Cadeddu, A. Lai, INFN Cagliari, Italy

**N47-74 Low Noise Preamplifier ASIC for the PANDA EMC**

P. Wiczorek, H. Flemming, GSI, Germany

**N47-77 Diamond Dosimeter ASIC Functional Tests**F. Petulla<sup>1</sup>, F. D. Notaristefani, V. Orsolini Cencelli, A. Fabbri, M. Marinelli, G. Verona Rinati

University of Rome, Italy

**N47-80 High Speed Data Transfer with FPGAs and QSFP+ Modules**

R. Ammendola, A. Biagioni, G. Chiodi, O. Frezza, F. Lo Cicero, R. Lunadei, D. Rossetti, A. Salamon, G. Salina, P. Vicini

INFN, Italy

**N47-83 Study on PMT Ringing Signals of the Daya Bay Neutrino Experiment**W. Jiang<sup>1,2</sup>, Z. Wang<sup>2</sup><sup>1</sup>University of Science and Technology of China, China; <sup>2</sup>Institute of High Energy Physics, China**N47-86 Independent Channel Readout System for a 2x2 Array of H8500 with SBA Photocathode**A. Fabbri<sup>1</sup>, V. Cencelli<sup>1</sup>, F. de Notaristefani<sup>1</sup>, R. Pani<sup>2</sup>, P. Bennati<sup>1</sup>, M. N. Cinti<sup>2</sup>, G. Moschini<sup>3</sup>, F. Navarra<sup>4</sup>, R. Pellegrini<sup>2</sup><sup>1</sup>INFN - Department of Electronic Engineering University of Rome, Italy; <sup>2</sup>INFN - Department of Experimental Medicine, University, Italy; <sup>3</sup>INFN - Laboratori Nazionali di Legnaro, Italy; <sup>4</sup>INFN - Department of Physics, University of Bologna, Italy**N47-89 FRONT END CURRENT BUFFER for SILICON PHOTOMULTIPLIER (SiPM) DETECTORS**

S. A. Maini, T. S. Kalkur, University of Colorado at Colorado Springs, USA; D. Ward, Semquest Inc, USA

**N47-92 Front-End Electronics for Silicon Photo-Multipliers Coupled to Fast Scintillators**

C. Marzocca, Politecnico di Bari, Italy

On behalf of the DASiPM2 collaboration

**N47-95 VLSI Cryogenic Front-End for HPGe Detectors Based on a Silicon-Germanium Technology**

A. Pullia, University of Milano, Italy; F. Zocca, M. Citterio, INFN, Italy

**N47-98 Low-Noise Current Preamplifier for Photodiodes with DC-Current Rejector and Precise Intensity Meter Suited for Optical Light Spectroscopy**A. Pullia<sup>1,2</sup>, F. Zocca<sup>2</sup><sup>1</sup>University of Milano, Italy; <sup>2</sup>INFN, Italy**N47-101 Single-Power-Supply Differential-Output Circuit-Architecture for Digitized Preamplifiers of Semiconductor Detector Signals**A. Pullia<sup>1,2</sup>, F. Zocca<sup>2</sup>, L. Marchetti<sup>1</sup><sup>1</sup>University of Milano, Italy; <sup>2</sup>INFN, Italy**N47-104 Development of a Read-Out System Using CMOS ASICs for a  $\mu$ PIC Micro-Pixel Gaseous Chamber**S. Iwaki<sup>1</sup>, H. Kubo<sup>1</sup>, M. Tanaka<sup>2</sup>, H. Ohwada<sup>3</sup>, N. Higashi<sup>1</sup>, S. Kabuki<sup>1</sup>, S. Kuosawa<sup>1</sup>, K. Miuchi<sup>1</sup>, K. Nakamura<sup>1</sup>, J. D. Parker<sup>1</sup>, T. Sawano<sup>1</sup>, A. Takada<sup>4</sup>, M. Takahashi<sup>1</sup>, T. Tanimori<sup>1</sup>, K. Taniue<sup>1</sup>, K. Ueno<sup>5</sup>, Y. Fujita<sup>2</sup><sup>1</sup>Kyoto University, Japan; <sup>2</sup>High Energy Accelerator Research Organization (KEK), Japan; <sup>3</sup>BeeBeans Technologies Co. Ltd., Japan; <sup>4</sup>JAXA/ISAS, Japan; <sup>5</sup>RIKEN, Japan**N47-107 Charge Sensitive Amplifier (CSA) in Cold Gas of Liquid Argon (LAR) Time Projection Chamber (TPC)**

E. Bechetoille, H. Mathez, Y. Zoccarato

IPNL CNRS/IN2P3, FRANCE

**N47-110 The FE-I4 ATLAS Pixel Chip for Upgraded LHC Luminosities**D. Arutinov<sup>1</sup>, M. Barbero<sup>1</sup>, R. Beccherle<sup>2</sup>, G. Darbo<sup>2</sup>, S. Dube<sup>3</sup>, D. Elledge<sup>3</sup>, J. Fleury<sup>4</sup>, D. Fougeron<sup>5</sup>, M. Garcia-Sciveres<sup>3</sup>, D. Gnani<sup>3</sup>, F. Gensolen<sup>3</sup>, V. Gromov<sup>6</sup>, T. Hemperek<sup>1</sup>, M. Karagounis<sup>1</sup>, R. Kluit<sup>6</sup>, A. Kruth<sup>1</sup>, A. Mekkaoui<sup>3</sup>, M. Menouni<sup>5</sup>, J. D. Schipper<sup>6</sup>, N. Wermes<sup>1</sup>, V. Zivkovic<sup>6</sup><sup>1</sup>University of Bonn, Germany; <sup>2</sup>University of Genova, Italy; <sup>3</sup>LBNL, USA; <sup>4</sup>LAL, France; <sup>5</sup>CPPM Aix-Marseille University, France; <sup>6</sup>NIKHEF, The Netherlands**N47-113 Performance of a New Preamplifier-Shaper-Discriminator Chip for the ATLAS MDT Chambers in 130 nm IBM Technology**

S. Abovyan, V. Danielyan, J. Dubbert, H. Kroha, O. Reimann, R. Richter

Max-Planck-Institut fuer Physik, Germany

**N47-116 First Measurements of a Gas Scintillation Neutron Detector Using the WaveDREAM DAQ System**A. S. Howard<sup>1</sup>, R. Chandra<sup>2</sup>, G. Davatz<sup>1</sup>, H. Friederich<sup>1</sup>, D. Murer<sup>1</sup><sup>1</sup>ETH, Switzerland; <sup>2</sup>Arktis, Switzerland**N47-119 High Voltage Power Supply with Low Power Consumption for Photomultiplier Tubes**

J. P. V. S. Cunha, M. Begalli, M. D. Bellar

State University of Rio de Janeiro, Brazil

**N47-122 A Self-Triggered Pulse Amplification and Digitization ASIC**

T. Armbruster, P. Fischer, I. Peric

Heidelberg University, Germany

**N47-125 Compact Digital Memory Blocks for the DSSC Pixel Readout ASIC**

F. Erdinger, P. Fischer, Heidelberg University, Germany

**N47-128 The Bias Generator System for the CUORE Large Mass Bolometer Detectors**

C. Arnaboldi, Università degli studi di Milano Bicocca e INFN

Milano Bicocca, Italy; X. Liu, University of California and Los Angeles, USA; G. Pessina, INFN Milano Bicocca, Italy

**N47-131 ASTEROID and VERITAS: Two Multi-Channel ASICs for the Readout of DEPFET Arrays and pnCCDs for X-Ray Imaging, Spectroscopy and Synchrotron Applications. Experimental Results and New Designs.**

M. Porro<sup>1,2</sup>, G. De Vita<sup>1,2</sup>, S. Herrmann<sup>1,2</sup>, A. Wassatsch<sup>1,3</sup>, D. Bianchi<sup>1,2,4</sup>, P. Lechner<sup>5</sup>, A. Meuris<sup>1,2</sup>, A. Stefanescu<sup>2,6</sup>, J. Treis<sup>2,7</sup>, L. Bombelli<sup>4,8</sup>, C. Fiorini<sup>4,8</sup>

<sup>1</sup>Max Planck Institut fuer Extraterrestrische Physik, Germany; <sup>2</sup>MPI Halbleiterlabor, Germany; <sup>3</sup>Max-Planck-Institut fuer Physik, Germany; <sup>4</sup>Politecnico Di Milano, Italy; <sup>5</sup>PNSensor GmbH, Germany; <sup>6</sup>Johannes-Gutenberg-Universitaet, Germany; <sup>7</sup>Max-Planck-Institut fuer Sonnensystemforschung, Germany; <sup>8</sup>INFN, Italy

**N47-134 Implementation of High Efficiency Non-Linear Least Squares in FPGA Devices for Digital Spectroscopy**

A. Abba, F. Caponio, A. Merati, A. Geraci, G. Ripamonti  
*Politecnico di Milano University, Italy*

**N47-137 An 8-Bit, Two-Step Embedded ADC for a SiPM Read-Out Chip**

F. Corsi, C. Marzocca, G. Matarrese, M. Foresta, A. Argentieri,  
*Politecnico di Bari, Italy*; A. Del Guerra, *Universita' di Pisa, Italy*

**N47-140 VERDI: a Versatile Readout ASIC for Radiation Detectors**

A. Celani<sup>1</sup>, L. Bombelli<sup>1,2</sup>, C. Fiorini<sup>1,2</sup>, T. Frizzi<sup>3</sup>, R. Nava<sup>3</sup>, J. Pavlick<sup>4</sup>, M. Morichi<sup>4</sup>, B. Roberson<sup>4</sup>, B. Zakrzewski<sup>4</sup>, O. Evrard<sup>5</sup>  
<sup>1</sup>Politecnico di Milano, Italy; <sup>2</sup>INFN, Italy; <sup>3</sup>XGLab s.r.l., Italy; <sup>4</sup>Canberra - BUMN AREVA, USA; <sup>5</sup>Canberra SEMICONDUCTORS N.V., Belgium

**N47-143 A Low-Noise Charge Sensitive Preamplifier for Ge Spectroscopy Operating at Cryogenic Temperature in the GERDA Experiment**

S. Riboldi<sup>1,2</sup>, F. Zocca<sup>1,2</sup>, A. Pullia<sup>1,2</sup>, M. Barnabe<sup>1</sup>-Heider<sup>3</sup>, D. Budjas<sup>3</sup>, A. D'Andragora<sup>2</sup>, C. Cattadori<sup>2</sup>  
<sup>1</sup>Universita' degli Studi di Milano, Italy; <sup>2</sup>Istituto Nazionale di Fisica Nucleare, Italy; <sup>3</sup>Max Planck Institute, Germany

**N47-146 A 16-Channel Programmable Antialiasing Amplifier**

C. Boiano<sup>1</sup>, C. Guazzoni<sup>1,2</sup>, P. Guazzoni<sup>1,2</sup>, L. Zetta<sup>1,3</sup>, A. Pagano<sup>1</sup>  
<sup>1</sup>INFN, Italy; <sup>2</sup>Politecnico di Milan, Italy; <sup>3</sup>University of Milan, Italy

**N47-149 Data Handling Processor for Belle2 Vertex Detector**

T. Hemperek<sup>1</sup>, A. Comerma<sup>2</sup>, A. Dieguez<sup>2</sup>, L. Freixes<sup>2</sup>, H. Krueger<sup>1</sup>, A. Kruth<sup>1</sup>, E. Vilella<sup>2</sup>, N. Wermes<sup>1</sup>  
<sup>1</sup>University Bonn, Germany; <sup>2</sup>University of Barcelona, Spain

**N47-152 The CDMS Test Stand Warm Electronics Card**

S. U. Hansen<sup>1</sup>, J. C. Hall<sup>1</sup>, B. Hines<sup>2</sup>, M. E. Huber<sup>2</sup>, T. E. Kiper<sup>1</sup>, V. Mandic<sup>3</sup>, W. Rau<sup>4</sup>, T. Saab<sup>5</sup>, D. Seitz<sup>4</sup>, K. Sundqvist<sup>4</sup>  
<sup>1</sup>Fermilab, USA; <sup>2</sup>U.C. Denver, USA; <sup>3</sup>University of Minnesota, USA; <sup>4</sup>U.C. Berkeley, USA; <sup>5</sup>University of Florida, USA

**N47-155 An FPGA Based DAQ System for the Readout of Madeira PET Probe.**

Y. Stankova, C. Lacasta, G. Llosa, V. Linhart, *Instituto de Fisica Corpuscular (IFIC/CSIC-UVEG)*, Spain; M. Mikuz, A. Studen, D. Zontar, V. Cindro, B. Grosičar, *Jozef Stefan Institute, Slovenia*; H. Kagan, E. Chesi, D. Burdette, E. Cochran, K. Honscheid, P. Weilhammer, *Ohio State University, USA*; N. Clinthorne, *University of Michigan, Ann Arbor, USA*

**N47-158 Characterization of an FPGA-Based DAQ System in the KATRIN Experiment**

D. G. Phillips II<sup>1</sup>, T. Bergmann<sup>2</sup>, M. A. Howe<sup>1</sup>, M. Kleifges<sup>2</sup>, A. Kopmann<sup>2</sup>, M. Leber<sup>3</sup>, A. Menshikov<sup>2</sup>, D. Tcherniakhovski<sup>2</sup>, B. VanDevender<sup>4</sup>, B. Wall<sup>4</sup>, J. F. Wilkerson<sup>1</sup>, S. Wustling<sup>2</sup>  
<sup>1</sup>University of North Carolina at Chapel Hill, USA; <sup>2</sup>Karlsruhe Institute of Technology, Germany; <sup>3</sup>University of California at Santa Barbara, USA; <sup>4</sup>University of Washington, USA

**N47-161 Novel Timing Method Using IEEE 1588 and Synchronous Ethernet for Compton Telescope**

J. Preston, D. Blankenship, H. Brands, L. Hoy, M. F. Ohmes, A. Gueorguiev, J. Stein  
*ICx Radiation, USA*

**N47-164 Evaluation of Real Time Digital Pulse Shapers with Various HPGe and Si Radiation Detectors**

N. Menaa, P. D'agostino, B. Zakrzewski, V. Jordanov, D. Nakazawa  
*Canberra Industries Inc, USA*

**N47-167 An Efficient Implementation on a Low Cost FPGA for Photon Detection in Nuclear Imaging**

L. Fysikopoulos<sup>1</sup>, M. Georgiou<sup>2</sup>, N. Efthimiou<sup>3</sup>, S. David<sup>3</sup>, G. Loudos<sup>4</sup>, G. Matsopoulos<sup>1</sup>  
<sup>1</sup>National Technical University of Athens, Greece; <sup>2</sup>University of Thessaly, Greece; <sup>3</sup>University of Patras, Greece; <sup>4</sup>Technological Educational Institution of Athens, Greece

**N47-170 FPGA Based TDC Using Virtex-4 ISERDES Blocks**

J. Imrek, G. Hegyesi, G. Kalinka, J. Molnar, F. Nagy, I. Valastyan,  
*Institute of Nuclear Research of the Hungarian Academy of Sciences, Hungary*; Z. Szabo, *University of Debrecen, Hungary*

**N47-173 Optimal Feature Extraction Algorithm Suitable for FPGA Implementation**

A. Sukhanov, *Brookhaven National Laboratory, USA*

**N47-176 Design and Performance of the Electronics Package for the Multi-Sensor Airborne Radiation Survey (MARS) High Purity Germanium (HPGe) Detector Array**

S. J. Morris, C. A. Bonebrake, J. E. Fast, G. P. Morgen, J. L. Orrell, J. S. Rohrer  
*Pacific Northwest National Laboratory, USA*

**N47-179 High Voltage Bias via a Bump Bond from a Submicron Circuit Chip**

C. J. Kenney<sup>1</sup>, D. Christian<sup>2</sup>, S. I. Parker<sup>3</sup>, J. Hasi<sup>1</sup>, C. Da Via<sup>4</sup>, E. Westbrook<sup>5</sup>, A. Thompson<sup>5</sup>, E. Mandelli<sup>6</sup>, G. Meddeler<sup>6</sup>, E. Brown<sup>7</sup>  
<sup>1</sup>SLAC National Accelerator Laboratory, USA; <sup>2</sup>Fermi National Laboratory, USA; <sup>3</sup>University of Hawaii, USA; <sup>4</sup>University of Manchester, UK; <sup>5</sup>Molecular Biology Consortium, USA; <sup>6</sup>Lawrence Berkeley National Laboratory, USA; <sup>7</sup>Reed College, USA

**N48: Gaseous Detectors: posters**

Wednesday, Nov. 3 13:30-15:30 Exhibit Hall B  
Session Chair: Scott D. Kiff, *Sandia National Laboratories, USA*

**N48-210 Characterization of Micro-Pattern Gas Detectors for Application in the CMS Muon Detection System**

D. Abbaneo, S. Bally, H. Postema, A. Conde Garcia, J.-P. Chatelain, G. Faber, L. Ropelewski, E. David, S. Duarte Pinto, G. Croci, M. Alfonsi, M. van Stenis, A. Sharma, *CERN, Switzerland*; S. Bianco, S. Colafranceschi, L. Benussi, F. Fabrizzi,

G. Saviano, *LNF Frascati, Italy*; N. Turini, E. Oliveri, G. Magazzu, *Universita' Degli Studi di Siena - INFN Sezione di Pisa, Italy*; A. Marinov, M. Tytgat, N. Zaganidis, *University of Gent, Belgium*; M. Hohlmann, K. Gnanvo, *Florida Institute of Technology, USA*; Y. Ban, H. Teng, J. Cai, *Peking University, China*

**N48-213 Large Area, High Spatial Resolution Tracker for New Generation of High Luminosity Experiments in Hall A at Jefferson Lab**

P. Musico<sup>1</sup>, V. Bellini<sup>2</sup>, M. Capogni<sup>3</sup>, D. Castelluccio<sup>4</sup>, S. Colilli<sup>5</sup>, E. Cisbani<sup>6</sup>, R. De Leo<sup>6</sup>, R. Fratoni<sup>5</sup>, S. Frullani<sup>7</sup>, F. Garibaldi<sup>7</sup>, F. Giuliani<sup>5</sup>, A. Giusa<sup>2</sup>, M. Gricia<sup>5</sup>, M. Lucentini<sup>5</sup>, F. Meddi<sup>8</sup>, S. Minutoli<sup>1</sup>, F. Noto<sup>2</sup>, R. de Oliveira<sup>9</sup>, F. Santavenere<sup>5</sup>, G. Urcioli<sup>7</sup>  
<sup>1</sup>I.N.F.N. Genova, Italy; <sup>2</sup>Universita' and I.N.F.N. Catania, Italy; <sup>3</sup>Enea and I.N.F.N. gruppo Sanita', Italy; <sup>4</sup>I.N.F.N. gruppo Sanita', Italy; <sup>5</sup>I.S.S. and I.N.F.N. gruppo Sanita', Italy; <sup>6</sup>Universita' and I.N.F.N. Bari, Italy; <sup>7</sup>I.N.F.N. Roma, Italy; <sup>8</sup>Universita' and I.N.F.N. Roma, Italy; <sup>9</sup>CERN, Switzerland

**N48-216 Optimal Gas System for the Operation of Resistive Plate Chambers at the Large Hadron Collider Experiments**

R. Guida, M. Capeans, I. Glushkov, F. Hahn, S. Haider, S. Rouwette  
*CERN, Switzerland*

**N48-219 Development of a CF<sub>4</sub> Recuperation Plant for the Cathode Strip Chambers Detector at the CERN Compact Muon Solenoid Experiment**

R. Guida, M. Capeans, F. Hanh, S. Haider, *CERN, Switzerland*

**N48-222 Construction of a High-Resolution Muon Drift Tube Prototype Chamber for LHC Upgrades**

B. Bittner, J. Dubbert, S. Horvat, O. Kortner, H. Kroha, R. Richter, *Max-Planck-Institut fuer Physik, Germany*; S. Adomeit, O. Biebel, A. Engl, R. Hertenberger, F. Legger, F. Rauscher, A. Zibell, *Ludwig-Maximilians-University Munich, Germany*

**N48-225 Study of GEM-Foil Defects with Optical Scanning System**

M. Kalliokoski, T. Hilden, R. Lauhakangas, A. Numminen  
*Helsinki Institute of Physics, Finland*

**N48-228 Compact Imaging System for GEM Detectors**

T. Uchida<sup>1</sup>, M. Ikeno<sup>1</sup>, T. Koike<sup>2</sup>, K. Miyama<sup>3</sup>, T. Murakami<sup>1</sup>, E. Nakano<sup>4</sup>, H. Ohwada<sup>5</sup>, M. Sekimoto<sup>1</sup>, M. Shoji<sup>6</sup>, S. Uno<sup>1</sup>, M. Wada<sup>3</sup>  
<sup>1</sup>HIGH ENERGY ACCELERATOR RESEARCH ORGANIZATION, JAPAN; <sup>2</sup>Tokyo University of Science, Japan; <sup>3</sup>Tokyo University of Agriculture and Technology, JAPAN; <sup>4</sup>Osaka City University, JAPAN; <sup>5</sup>Bee Beans Technologies Co., Ltd., JAPAN; <sup>6</sup>Tohoku Gakuin University, JAPAN

**N48-231 Neural Network Approach Applied to RPC Detectors**

S. Colafranceschi, *CERN, Swiss*

**N48-234 Gas Flow Simulations for Gaseous Detectors**

S. Colafranceschi, *CERN, Switzerland*

**N48-237 Micromegas and PIM with thermo-bond film frame and spacers**

L. Guan, X. Wang, H. Tang, Z. Xu, *University of Science and Technology of China, China*; T. Zhao, *University of Washington, USA*

**N48-240 Simulations and Measurements for Micromegas and PIM**

L. Guan, X. Wang, J. Guo, Z. Xu, *University of Science and Technology of China, China*; T. Zhao, *University of Washington, USA*

**N48-243 Development of New Kind of GRPC for a Semi-Digital Hadronic Calorimeter**

I. B. Laktineh, N. Lumb, R. Kieffer, M. Bedjidian, M. Vander Donckt, R. Han, L. Mirabito  
*IPNL-UCBL-IN2P3, France*

**N48-246 Photopeak Shift Effects Due to the Drift Electric Field in High Pressure Xenon Detectors**

C. A. N. Conde<sup>1</sup>, J. A. S. Barata<sup>1,2</sup>, L. M. N. Tavora<sup>1,3</sup>, P. N. B. Neves<sup>1</sup>, T. H. V. T. Dias<sup>1</sup>, F. I. G. M. Borges<sup>1</sup>  
<sup>1</sup>Universidade de Coimbra, Portugal; <sup>2</sup>Universidade da Beira Interior, Portugal; <sup>3</sup>Instituto Politecnico de Leiria, Portugal

**N48-249 Experimental Measurement of the Mobilities of Ne Ions in Ne**

P. N. B. Neves<sup>1</sup>, L. M. N. Tavora<sup>1,2</sup>, C. A. N. Conde<sup>1</sup>, J. A. S. Barata<sup>1,3</sup>, T. H. V. T. Dias<sup>1</sup>, F. I. G. M. Borges<sup>1</sup>, A. M. F. Trindade<sup>1</sup>, T. D. P. Oliveira<sup>1</sup>  
<sup>1</sup>Universidade de Coimbra, Portugal; <sup>2</sup>Instituto Politecnico de Leiria, Portugal; <sup>3</sup>Universidade da Beira Interior, Portugal

**N48-252 Elastic Cross-Sections for Low Energy Collision of Ar<sup>+</sup> with Ne and Monte Carlo Simulation of the Transport of Ar<sup>+</sup> Ions in Gaseous Ar/Ne Mixtures**

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

**N49: Instrumentation for Medical and Biological Research: posters**

Wednesday, Nov. 3 13:30-15:30 Exhibit Hall B

Session Chair: Gregory S. Mitchell, *UC Davis, USA*

**N49-255 An Investigation of Baseline Calibration Method for Digitally Sampling Scintillation Pulses in PET**

Q. Xie<sup>1,2</sup>, Y. Chen<sup>1</sup>, Z. Wu<sup>3</sup>, J. Zhu<sup>1,2</sup>, X. Wang<sup>1,2</sup>, D. Xi<sup>1,2</sup>, J. Zhao<sup>1</sup>  
<sup>1</sup>Huazhong University of Science and Technology, China; <sup>2</sup>Wuhan National Laboratory for Optoelectronics, China; <sup>3</sup>Chongqing University, China

**N49-258 FPGA Based Prototype for Image Reconstruction in a Mini Gamma Camera**

G. Saldana, U. Reyes, H. Salazar, O. Martinez, E. Moreno, R. Conde  
*Facultad de Ciencias Fisico-Matematicas BUAP, Mexico*

**N49-261 Design and Performance Test of Fast and High Efficient SiPM for MR Compatible PET Application**

C. Lee<sup>1</sup>, W. S. Sul<sup>2,3</sup>, H. Kim<sup>1</sup>, C. Kim<sup>1</sup>, W. G. Lee<sup>3</sup>, G. Cho<sup>1</sup>  
<sup>1</sup>KAIST, KOREA; <sup>2</sup>Dongguk University, KOREA; <sup>3</sup>National NanoFab Center, KOREA

**N49-264 Novel Design of 3D Axial PET Detector with a SiPM Array for a Small Animal Imaging**

H. Kim, C. Lee, C. Kim, G. Cho  
*KAIST(Korea Advanced Institute of Science and Technology), KOREA*

**N49-267 A Full-FOV Iterative Algorithm Applied to Pixelated Scintillation Crystal**

A. Fabbri<sup>1</sup>, V. Cencelli<sup>1</sup>, F. de Notaristefani<sup>1</sup>, R. Pani<sup>2</sup>, P. Bennati<sup>2</sup>, M. N. Cinti<sup>2</sup>, G. Moschini<sup>3</sup>, F. Navarra<sup>4</sup>, R. Pellegrini<sup>2</sup>, P. Boccaccio<sup>4</sup>  
<sup>1</sup>INFN - Dipartimento di Ingegneria Elettronica, Università degli Studi Roma Tre, Italy; <sup>2</sup>INFN - Department of Experimental Medicine, University, Italy; <sup>3</sup>INFN - Department of Physics, University of Bologna, Italy; <sup>4</sup>INFN - Laboratori Nazionali di Legnaro, Italy



**N49-270 Double-End Readout for SiPM-Matrices**

C. Parl, H. Larue, M. Streun, K. Ziemons

*Forschungszentrum Juelich, Germany***N49-273 Evaluation of a Time Based Readout Electronics with Discrete Components for PET Applications**X. Sun<sup>1</sup>, K. A. Lan<sup>1</sup>, C. Bircher<sup>1</sup>, Z. Deng<sup>2</sup>, Y. Liu<sup>2</sup>, Y. Shao<sup>1</sup><sup>1</sup>*The University of Texas MD Anderson Cancer Center, USA;* <sup>2</sup>*Tsinghua University, China***N49-276 Evaluation of a Time Based Readout ASIC for PET Applications**X. Sun<sup>1</sup>, K. A. Lan<sup>1</sup>, Z. Deng<sup>2</sup>, Y. Liu<sup>2</sup>, Y. Shao<sup>1</sup><sup>1</sup>*The University of Texas MD Anderson Cancer Center, USA;* <sup>2</sup>*Tsinghua University, China***N49-279 Performance of Photon-Counting and Energy-Integrating Semiconductor Detectors for Digital Breast Tomosynthesis**

M. E. Myronakis, D. G. Darambara

*Institute of Cancer Research, UK***N49-282 Development of Mini-PET Detector Based on Silicon Photomultiplier Arrays for Plant Imaging Applications**

C. Zorn, B. Kross, Y. Mack, J. McKisson, A. Weisenberger,

*Jefferson Laboratory, USA;* S. Majewski, A. Stolin, *West Virginia**University, USA;* C. Howell, A. Crowell, C. Reid, *Duke University,**USA;* M. Smith, *University of Maryland, USA***N49-285 Estimation of Measuring Energy Range of Newly Developed Si/CdTe Compton Camera for Nuclear Medicine Study**M. Yamaguchi<sup>1,2</sup>, T. Kamiya<sup>1</sup>, N. Kawachi<sup>1</sup>, N. Suzui<sup>1</sup>, S. Fujimaki<sup>1</sup>,H. Odaka<sup>2,3</sup>, S.-N. Ishikawa<sup>2,3</sup>, M. Kokubun<sup>2,3</sup>, S. Watanabe<sup>2,3</sup>,T. Takahashi<sup>2,3</sup>, H. Shimada<sup>4</sup>, K. Arakawa<sup>1,4</sup>, Y. Suzuki<sup>4</sup>, K. Torikai<sup>4</sup>,Y. Yoshida<sup>4</sup>, T. Nakano<sup>4</sup><sup>1</sup>*Japan Atomic Energy Agency, JAPAN;* <sup>2</sup>*Japan Aerospace Exploration**Agency, JAPAN;* <sup>3</sup>*University of Tokyo, JAPAN;* <sup>4</sup>*Gunma University,**JAPAN***N49-288 An Evaluation of Image Reconstruction Methods for the ProSPECTus Compton Camera**J. A. Sampson<sup>1</sup>, A. J. Boston<sup>1</sup>, H. C. Boston<sup>1</sup>, J. R. Cresswell<sup>1</sup>,L. J. Harkness<sup>1</sup>, D. S. Judson<sup>1</sup>, P. J. Nolan<sup>1</sup>, D. P. Scraggs<sup>1</sup>,I. Burrows<sup>2</sup>, J. Groves<sup>2</sup>, J. Headspith<sup>2</sup>, I. H. Lazarus<sup>2</sup>, J. Simpson<sup>2</sup>,W. E. Bimson<sup>1</sup>, G. J. Kemp<sup>1</sup>, D. Gould<sup>3</sup><sup>1</sup>*University of Liverpool, United Kingdom;* <sup>2</sup>*STFC Daresbury Laboratory,**United Kingdom;* <sup>3</sup>*Royal Liverpool University Hospital, United Kingdom***N49-291 Performance Study of Silicon Photomultipliers as Photon Detectors for TOF-PET**

R. Verheyden, S. Korpar, P. Krizan, R. Pestotnik, R. Dolenec

*Jozef Stefan Institute, Slovenia***N49-294 Evaluation of a commercial APD array (Avalanche PhotoDiode) for a readout detector in a hadrontherapy beam characterization application**

Y. Gonzalez Millan, C. A. Marin Tobon, J. Torres Pais,

E. J. Sanchis Peris, *University of Valencia, Spain;* M. Haguenaer,P. Pailleux, S. Chollet, *LLR, CNRS/IN2P3/Ecole polytechnique, France***N49-297 UV Response of a Transition Metal Oxide Diode**A. Subahi<sup>1</sup>, J. A. Griffiths<sup>1</sup>, L. Petaccia<sup>2</sup>, J. Boardman<sup>3</sup>, P. Moir-Riches<sup>3</sup>, G. J. Royle<sup>1</sup><sup>1</sup>*University College London, U.K.;* <sup>2</sup>*Elettra Sincrotron Source, Italy;*<sup>3</sup>*Atmos Technologies Ltd., U.K.***N49-300 Radiobiology with Cyclotron Proton Beams: a Viability Study**M. Cunha<sup>1</sup>, M. Pinto<sup>1</sup>, F. Alves<sup>2</sup>, P. Crespo<sup>3,2</sup>, R. Ferreira Marques<sup>1,3</sup><sup>1</sup>*University of Coimbra, Portugal;* <sup>2</sup>*Instituto Politécnico de Coimbra,**Portugal;* <sup>3</sup>*LIP - Laboratório de Instrumentação e Física Experimental de**Partículas, Portugal*



Thu, Nov. 4	07:30	08:00	08:30	09:00	09:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30
Ballroom A		N55: Radiation Imaging Detectors III		N60: Neutron Detectors and Instrumentation II		N63: Neutron Detectors and Instrumentation III														NR: NSS-RTSD - Semiconductor-based Neutron Detectors							
Ballroom B		M05: PET and SPECT Instrumentation		M07: New Imaging Techniques																	M10: PET and SPECT Reconstruction						
Ballroom C		M06: Image Processing and Evaluation Techniques		M08: Data Corrections for PET/MR Imaging																							
Ballroom E		N56: Analog and Digital Circuits IV				N64: Bio-medical Computing															N68: HEP Computing						
Ballroom F		N57: HEP & NP: Calorimeters and Muon Systems		N61: HEP & NP: Calorimeters II		N65: HEP & NP: Large Detectors and Test Facilities																					
Ballroom G		N58: Scintillators and Scintillation Detectors: Photodetectors I		N62: Scintillators and Scintillation Detectors: Photodetectors II		N66: Gaseous Detectors: Developments with Gas Electron Multipliers															N69: Gaseous Detectors: Applications in Particle Physics						
Room 301A				R11: CdZnTe Growth and Annealing																							
Room 301B								R12: CdMnTe																			
Room 301D				N59: Instrumentation for Medical and Biological Research II																	N67: Semiconductor Detectors: Silicon Pixel Detectors						
Room 301E																											

Thu, Nov. 4	07:30	08:00	08:30	09:00	09:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30
Lecture Hall		MIC Refresher Course																									
Room 200A																											
Room 200B																											
Room 200C																											
Room 200D																											
Room 200E																											
Exhibit Hall B																											
Off-Site Events																											

## NSS Oral Presentations

## N55: Radiation Imaging Detectors III

Thursday, Nov. 4 08:00-10:00 Ballroom A

Session Chair: Klaus P. Ziocck, *Oak Ridge National Laboratory, USA*

## N55-1 Results with a 32 Element Dual Mode Imager

N. Mascarenhas, J. Brennan, R. Cooper, M. Gerling, P. Marleau, S. Mrowka

*Sandia National Laboratories, USA*

## N55-3 An Imaging Neutron Spectrometer

J. M. Ryan<sup>1</sup>, C. Bancroft<sup>1</sup>, P. F. Blosser<sup>1</sup>, U. Bravar<sup>1</sup>, D. Fourquette<sup>2</sup>, C. Frost<sup>1</sup>, L. Larocque<sup>2</sup>, J. S. Legere<sup>1</sup>, M. L. McConnell<sup>1</sup>, G. Ritter<sup>2</sup>, G. Wassick<sup>2</sup>, J. Wood<sup>1</sup>, R. S. Woolf<sup>1</sup><sup>1</sup>University of New Hampshire, USA; <sup>2</sup>Michigan Aerospace Corp., USA

## N55-4 Results from the Coded Aperture Neutron Imaging System

P. A. Marleau, J. Brennan, E. Brubaker, J. Steele

*Sandia National Laboratories, USA*

## N55-5 Passive and Active Coded-Aperture Imaging of Fission-Spectrum Neutron Sources

P. A. Hausladen, M. A. Blackston, *Oak Ridge National Laboratory, United States*; D. L. Chichester, *Idaho National Laboratory, United States*

## N55-6 Neutron Imaging Using the Anisotropic Response of Crystalline Organic Scintillators

E. Brubaker, J. Steele

*Sandia National Laboratories, CA, USA*

## N55-7 A Study on the Quantitative Three Dimensional Neutron Dark Field Imaging

S. W. Lee<sup>1</sup>, J. Kim<sup>1,2</sup>, J. Kim<sup>1,3</sup>, M. Moon<sup>1</sup><sup>1</sup>Korea Atomic Energy Research Institute, Republic of Korea; <sup>2</sup>Korea Advanced Institute of Science and Technology, Republic of Korea; <sup>3</sup>Pusan National University, Republic of Korea

## N56: Analog and Digital Circuits IV

Thursday, Nov. 4 08:00-10:00 Ballroom E

Session Chairs: Chuck L. Britton, *Oak Ridge National Lab, USA*  
Valentin T. Jordanov, *Yantel, LLC, USA*

## N56-1 An ASIC for SiPM Readout

D. Meier, S. Mikkelsen, J. Talebi, S. Azman, G. Maehlum, *Gamma Medica - Ideas (Norway) AS, Norway*; B. E. Patt, *Gamma Medica - Ideas, Inc., USA*

## N56-2 Front-end ASIC for a Liquid Argon TPC

G. De Geronimo, S. Li, N. Nambiar, E. Vernon, H. Chen, F. Lanni, D. Makowiecki, V. Radeka, S. Rescia, C. Thorn, B. Yu  
*Brookhaven National Laboratory, usa*N56-3 A 15  $\mu$ W 12-Bit Dynamic Range Charge Measuring Front-End in 0.13  $\mu$ m CMOST. Kugathasan<sup>1,2</sup>, A. Rivetti<sup>2</sup>, G. Mazza<sup>2</sup>, L. Toscano<sup>2</sup><sup>1</sup>Università di Torino, Italy; <sup>2</sup>INFN Sezione di Torino, Italy

## N56-4 FPDR90 a Low Noise, Fast Pixel Readout Chip in 90 nm CMOS

R. Szczygiel, P. Grybos, P. Maj

*AGH University of Science and Technology, Poland*

## N56-5 HARDROC2, Readout Chip of the Digital Hadronic Calorimeter of ILC

N. Seguin-moreau, C. de La TAILLE, F. Dulucq, G. Martin-chassard  
*OMEGA/LAL ORSAY/IN2P3, FRANCE*

## N56-6 Development of an 8-Channel Time Based Readout ASIC for PET Applications

Z. Deng<sup>1,2</sup>, A. K. Lan<sup>3</sup>, X. Sun<sup>3</sup>, Y. Liu<sup>1,2</sup>, Y. Shao<sup>3</sup><sup>1</sup>Tsinghua University, China; <sup>2</sup>Ministry of Education, China; <sup>3</sup>The University of Texas M.D. Anderson Cancer Center, USA

## N56-7 MAROC3: Multi-Anode ReadOut Chip for MaPMTs

S. Blin, P. Barrillon, F. Dulucq, C. de La TAILLE

*CNRS / IN2P3, France*

## N57: High Energy and Nuclear Physics Instrumentation: Calorimeters and Muon Systems

Thursday, Nov. 4 08:00-10:00 Ballroom F

Session Chair: Jaehoon Yu, *Univrsity of Texas at Arlington, USA*

## N57-1 Performance of the CMS Electromagnetic Calorimeter in pp Collisions

S. Argiro, *University of Torino and INFN, Italy*

On behalf of the CMS Ecal Collaboration

## N57-2 Performance of the ATLAS Liquid Argon Calorimeter at the LHC

G. F. Tartarelli, *INFN - Sezione di Milano, Milano (Italy),**Italy*; L. Hervás, *CERN, Switzerland*; S. Menke, *MPI, germany*

## N57-3 Direct Coupling of SiPMs to Scintillator Tiles for Imaging Calorimetry and Triggering

F. Simon, C. Soldner, *Max-Planck-Institut fuer Physik,**Germany*; C. Joram, *CERN, Switzerland*

## N57-4 Use of Flat Panel Microchannel Photomultipliers in Sampling Calorimeters with Timing

H. J. Frisch, *University of Chicago, IL*

On behalf of the LAPPD

## N57-5 "Domino Ring Sampler (DRS) Performances in Dual-Readout Calorimetry"

F. Scuri, *I.N.F.N. Sezione di Pisa, Italy*

On behalf of the DREAM Collaboration

## N57-6 A Scintillator Based Muon System with SiPM Readout for the SuperB Detector

G. Cibinetto, *University of Ferrara - INFN, Italy*

On behalf of the SuperB IFR group

## N57-7 Operation and Calibration in T2K scintillator-based Detector

F. Retiere, *TRIUMF, Canada*

On behalf of the T2K collaboration

## N58: Scintillators and Scintillation Detectors: Photodetectors I

Thursday, Nov. 4 08:00-10:00 Ballroom G

Session Chairs: Dennis R. Schaart, *Delft University of Technology, Netherlands*Sergey Vinogradov, *Amplification Technologies, Russian Federation*

**N58-1 The Digital Silicon Photomultiplier Prototype - System Architecture and Performance Evaluation**

T. Frach, G. Prescher, C. Degenhardt, B. Zwaans, R. de Gruyter, A. Schmitz, R. Ballizany  
*Philips Digital Photon Counting, Germany*

**N58-2 Time Resolution of Scintillation Detectors Based on SiPM in Comparison to Photomultipliers**

T. Szczesniak, M. Moszynski, M. Grodzicka, D. Wolski, M. Szawlowski, L. Swiderski, *Soltan Institute for Nuclear Studies, Poland*; M. Kapusta, *ICx Technologies GmbH, Germany*

**N58-3 Accurate Measurements of the Rise and Decay Times of Fast Scintillators with Solid State Photon Counters**

S. Seifert<sup>1</sup>, L. J. H. Steenbergen<sup>1</sup>, H. T. van Dam<sup>1</sup>, R. Vinke<sup>2</sup>, P. Dendooven<sup>2</sup>, H. Loehner<sup>2</sup>, F. J. Beekman<sup>1,3</sup>, P. Dorenbos<sup>1</sup>, E. van der Kolk<sup>1</sup>, D. R. Schaart<sup>1</sup>  
<sup>1</sup>*Delft University of Technology, Delft, The Netherlands*; <sup>2</sup>*Kernfysisch Versnellend Instituut (KVI), The Netherlands*; <sup>3</sup>*University Medical Centre Utrecht, The Netherlands*

**N58-4 New UV-Enhanced, Ultra-Low Noise Silicon Avalanche Photodiode for Radiation Detection and Medical Imaging**

C. M. Pepin<sup>1</sup>, M. Bergeron<sup>1</sup>, J. Cadorette<sup>1</sup>, J.-F. Beaudoin<sup>1</sup>, X. Jacques-Bedard<sup>2</sup>, M. Couture<sup>2</sup>, H. Dauter<sup>2</sup>, R. Lecomte<sup>1</sup>  
<sup>1</sup>*Universite de Sherbrooke, Canada*; <sup>2</sup>*PerkinElmer Optoelectronics, Canada*

**N58-5 Fabrication of Single Photon Avalanche Photodiode Arrays for Scintillator Readout**

P. J. Barton, D. K. Wehe, *University of Michigan, USA*

**N58-6 Validation of a Monte-Carlo Based SiPM Model**

J. Pulko<sup>1</sup>, F. Schneider<sup>1</sup>, D. Renker<sup>2</sup>, S. Ziegler<sup>1</sup>  
<sup>1</sup>*Nuklearmedizinische Klinik und Poliklinik, Klinikum rechts der Isar, Technische Universitaet Muenchen, Germany*; <sup>2</sup>*Paul Scherrer Institute, Switzerland*

**N58-7 Development of a Simulation Tool to Predict the Behavior of a SiPM Detector Coupled to a Scintillation Crystal**

D. V. Liksonov<sup>1</sup>, J. Chavanelle<sup>2</sup>, B. Barbier<sup>1</sup>  
<sup>1</sup>*Imacisio, France*; <sup>2</sup>*Franche-Comte University, France*

**N59: Instrumentation for Medical and Biological Research II**

Thursday, Nov. 4 08:00-10:00 301D & 301E

Session Chairs: Youngho Seo, *University of California, San Francisco, USA*  
 Zhye Yin, *GE Global Research, USA*

**N59-1 Compact Positron-Beta Particle Imager for Plant Biology**

A. G. Weisenberger<sup>1</sup>, A. V. Stolin<sup>2</sup>, B. J. Kross<sup>1</sup>, S. Majewski<sup>2</sup>, J. E. McKisson<sup>1</sup>, C. R. Howell<sup>3,4</sup>, A. S. Crowell<sup>3,4</sup>, C. D. Reid<sup>3</sup>  
<sup>1</sup>*Thomas Jefferson National Accelerator Facility, USA*; <sup>2</sup>*West Virginia University, USA*; <sup>3</sup>*Duke University, USA*; <sup>4</sup>*Triangle University Nuclear Laboratory, USA*

**N59-2 Report on the MADEIRA PET Probe**

A. Studen<sup>1</sup>, E. Ches<sup>2</sup>, V. Cindro<sup>1</sup>, N. H. Clinthorne<sup>3</sup>, E. Cochran<sup>2</sup>, B. Grosicar<sup>1</sup>, K. Honscheid<sup>2</sup>, S. S. Huh<sup>3</sup>, H. Kagan<sup>2</sup>, C. Lacasta<sup>4</sup>, G. Llosa<sup>4</sup>, V. Linhart<sup>4</sup>, M. Mikuz<sup>1</sup>, V. Stankova<sup>4</sup>, P. Weilhammer<sup>3</sup>, D. Zontar<sup>1</sup>  
<sup>1</sup>*Jozef Stefan Institute, Slovenia*; <sup>2</sup>*The Ohio State University, USA*; <sup>3</sup>*The University of Michigan, USA*; <sup>4</sup>*IFIC/CSIC-UVEG, Spain*

**N59-3 Initial Implementation of LYSO-PSPMT Block Detector with An All Digital DAQ System**

Q. Xie<sup>1,2</sup>, Y. Chen<sup>1</sup>, J. Zhu<sup>1,2</sup>, X. Wang<sup>1,2</sup>, N. Guo<sup>1,2</sup>, M. Niu<sup>1,2</sup>, Z. Wu<sup>1,2</sup>, D. Xi<sup>1,2</sup>, P. Xiao<sup>2,1</sup>, J. Gao<sup>1</sup>, C.-T. Chen<sup>3</sup>, Y. Wang<sup>1</sup>, C.-M. Kao<sup>3</sup>  
<sup>1</sup>*Huazhong University of Science and Technology, China*; <sup>2</sup>*Wuhan National Laboratory for Optoelectronics, China*; <sup>3</sup>*The University of Chicago, USA*

**N59-4 Performance Study of Neural Network Position Estimators for the Monolithic Scintillator PET Detector Modules**

D. Junwei, W. Yonggang, Z. Lijun  
*University of Science and Technology of China, China*

**N59-5 Multiplexing Requirements for MPPC-Based TOF PET Detectors**

S. Dolinsky, S. Zelakiewicz, C. Kim  
*GE Global Research, USA*

**N59-6 Improved LabPET Detectors Using Lu1.8Gd0.2SiO5:Ce (LGSO) Scintillator Blocks**

M. Bergeron<sup>1</sup>, C. M. Pepin<sup>1</sup>, J. Cadorette<sup>1</sup>, J.-F. Beaudoin<sup>1</sup>, M.-A. Tetrault<sup>1</sup>, M. Davies<sup>2</sup>, H. Dauter<sup>2</sup>, P. Deschamps<sup>2</sup>, H. Ishibashi<sup>3</sup>, Y. Kurata<sup>3</sup>, R. Lecomte<sup>1</sup>  
<sup>1</sup>*Universite de Sherbrooke, Canada*; <sup>2</sup>*PerkinElmer Optoelectronics, Canada*; <sup>3</sup>*Hitachi Chemical Co, Japan*

**N59-7 Liquid Xenon Detectors for Positron Emission Tomography**

A. Miceli<sup>1</sup>, P. Amaudruz<sup>1</sup>, F. Benard<sup>2</sup>, D. A. Bryman<sup>3</sup>, C. Clements<sup>3</sup>, J. Glistler<sup>1</sup>, L. Kurchaninov<sup>1</sup>, F. Retiere<sup>1</sup>, T. Ruth<sup>1</sup>, V. Sossi<sup>3</sup>, A. Stoessl<sup>3</sup>, H. Zhu<sup>3</sup>  
<sup>1</sup>*triumf, canada*; <sup>2</sup>*BC Cancer Research, canada*; <sup>3</sup>*University of British Columbia, Canada*

**N60: Neutron Detectors and Instrumentation II**

Thursday, Nov. 4 10:30-12:00 Ballroom A

Session Chairs: Sara Pozzi, *University of Michigan, USA*  
 Jiri Vacik, *Nuclear Physics Institute, Academy of Sciences of the Czech Republic, Czech Republic*

**N60-1 Development of a Neutron-Sensitive Anger Camera for Neutron Scattering Instruments**

J. D. Richards, R. G. Cooper, C. Donahue, T. Visscher  
*SNS/ORNL, USA*

**N60-2 A Structured Organic Scintillator for Neutron Imaging**

K. J. Riley<sup>1</sup>, L. Ovechkina<sup>1</sup>, S. Palamakumbura<sup>1</sup>, Z. Bell<sup>2</sup>, S. Miller<sup>1</sup>, V. V. Nagarkar<sup>1</sup>  
<sup>1</sup>*Radiation Monitoring Devices, Inc., USA*; <sup>2</sup>*Oak Ridge National Laboratory, USA*

**N60-3 A Fully-Automated Liquid-Moderated Neutron Spectrometer System**

J. P. Archambault, P. R. B. Saull  
*National Research Council Canada, Canada*

**N60-4 Initial Performance of Large Area Neutron Imager Based on Boron Coated Straws**

J. L. Lacy, PhD, A. Athanasiades, PhD, C. Martin, L. Sun, PhD, R. Nguyen  
*Proportional Technologies, Inc, USA*

**N60-5 A Systematic Study of Carborane-Loaded Organic Scintillators for the Detection of Thermal Neutrons**

Z. Chang, *South Carolina State University, USA*; A. Green, M. Williamson, G. Schweitzer, L. Miller, *The University of Tennessee, USA*

**N61: High Energy and Nuclear Physics Instrumentation: Calorimeters II**

Thursday, Nov. 4 10:30-12:00 Ballroom F

Session Chairs: Ingrid-Maria Gregor, *DESY, Germany*  
Patrick J. Le Du, *IPNL, IN2P3, France*

**N61-1 Particle Showers in an Imaging Hadronic Calorimeter**

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

**N61-2 Highly Granular Electromagnetic Calorimetry for a Future Linear Collider: Test Beam Results**

D. Jeans, *Laboratoire Leprince Ringuet, Ecole polytechnique, France*  
On behalf of the CALICE collaboration

**N61-3 The Scintillator-Strip Electromagnetic Calorimeter for the Linear Collider Experiment**

S. Uozumi, *Kyungpook National University, Korea*  
On behalf of the CALICE collaboration

**N61-4 Construction of a Technological Semi-Digital Hadronic Calorimeter Prototype for ILC**

I. B. Laktineh, *IPNL-UCBL-IN2P3, France*  
On behalf of the CALICE collaboration

**N61-5 Application of Large Scale Gas Electron Multiplier Technology to Digital Hadron Calorimetry**

A. P. White<sup>1</sup>, E. Baldelomar<sup>1</sup>, K. Park<sup>2</sup>, M. Sosebee<sup>1</sup>, J. Yu<sup>1</sup>, S. Park<sup>1</sup>  
<sup>1</sup>*University of Texas at Arlington, USA*; <sup>2</sup>*KAERI, Korea*

**N62: Scintillators and Scintillation Detectors: Photodetectors II**

Thursday, Nov. 4 10:30-12:00 Ballroom G

Session Chairs: Chuck Melcher, *University of Tennessee, USA*  
Kei Kamada, *Furukawa Co., Ltd., Japan*

**N62-1 Characterization of SiPMs with Bulk Integrated Quench Resistors**

J. Ninkovic, L. Andricek, C. Jendrysyk, G. Liemann, H. G. Moser, R. Richter, *Max Planck Institute for Physics - Semiconductor Laboratory, Germany*; G. Lutz, *pnSensor GmbH, Germany*; F. Schopper, *Max-Planck-Institut for extraterrestrial Physics - Semiconductor Laboratory, Germany*

**N62-2 Timing Performance of 4x4mm<sup>2</sup> SiPMs with Different Cell Layout Coupled to LYSO Scintillator**

C. Piemonte, M. Melchiorri, A. Piazza, A. Tarolli, N. Zorzi, *FBK, Italy*; V. Schulz, T. Solf, *Philips Research Europe, Germany*

**N62-3 Cryogenic CMOS Avalanche Photodiodes**

X. J. Chen<sup>1</sup>, E. B. Johnson<sup>1</sup>, R. Miskimen<sup>2</sup>, D. Von Maluski<sup>2</sup>, C. J. Staples<sup>1</sup>, F. Augustine<sup>3</sup>, J. F. Christian<sup>1</sup>  
<sup>1</sup>*Radiation Monitoring Devices, Inc., U.S.A.*; <sup>2</sup>*University of Massachusetts, Amherst, U.S.A.*; <sup>3</sup>*Augustine Engineering, U.S.A.*

**N62-4 Analysis and First-Order Correction of Photomultiplier Tubes Signal Saturation Effects for Improved Estimation of Radiation Energy Interactions in Lanthanum Bromide Scintillators**

N. Blasi<sup>1</sup>, S. Brambilla<sup>1</sup>, A. Camplani<sup>2,1</sup>, C. Boiano<sup>1</sup>, F. Camera<sup>2,1</sup>, F. L. Crespi<sup>2,1</sup>, A. Giaz<sup>2,1</sup>, B. Million<sup>1</sup>, R. Nicolini<sup>2,1</sup>, L. Pellegrini<sup>2,1</sup>, S. Riboldi<sup>2,1</sup>, O. Wieland<sup>1</sup>  
<sup>1</sup>*Istituto Nazionale di Fisica Nucleare, Italy*; <sup>2</sup>*Universita' degli Studi di Milano, Italy*

**N62-5 Growth and Characterization of Visible and UV Photocathodes**

K. Attenkofer<sup>1</sup>, B. Adams<sup>1</sup>, K. Broughton<sup>1,2</sup>, J. Buckley<sup>3</sup>, M. Choller<sup>1,4</sup>, R. Dowdy<sup>5</sup>, H. Frisch<sup>1,4</sup>, E. Indacochea<sup>2</sup>, Z. Insepov<sup>1</sup>, S. Jokela<sup>1,4</sup>, S. W. Lee<sup>1</sup>, D. Leopold<sup>3</sup>, X. Li<sup>5</sup>, A. Paramonov<sup>1,4</sup>, S. Ross<sup>1</sup>, O. Siegmund<sup>6</sup>, A. Tremsin<sup>6</sup>, I. Vervovkin<sup>1</sup>, H.-H. Wang<sup>1</sup>, M. Wetstein<sup>1,4</sup>, Z. Yusof<sup>1</sup>  
<sup>1</sup>*Argonne National Laboratory, XSD, USA*; <sup>2</sup>*University of Illinois Chicago, USA*; <sup>3</sup>*Washington University, USA*; <sup>4</sup>*University of Chicago, USA*; <sup>5</sup>*University of Illinois Urbana/Champaign, USA*; <sup>6</sup>*Space Science Laboratory UC Berkeley, USA*

**N63: Neutron Detectors and Instrumentation III**

Thursday, Nov. 4 13:30-15:30 Ballroom A

Session Chairs: Zane W. Bell, *Oak Ridge National Laboratory, USA*  
Raulf M. Polichar, *SAIC*,

**N63-1 Combined Composite Scintillation Detector for Separate Measurements of Fast and Thermal Neutrons**

N. Z. Galunov, B. V. Grinyov, N. L. Karavaeva, E. V. Martynenko, O. A. Tarasenko, Y. V. Gerasymov, O. T. Sidletskiy  
*Institute for Scintillation Materials, National Ac. Science of Ukraine, Ukraine*

**N63-2 Investigation of Large LGB Detectors for Fast and Thermal Neutron Detection**

P. Nelson, *Naval Postgraduate School, USA*; K. Kazkaz, N. Bowden, *Lawrence Livermore National Laboratory, USA*

**N63-3 Lithium Glass Scintillator Neutron Detector as an Improved Alternative to the Industry Standard 3He Proportional Counter**

V. Popov, P. Degtiarenko  
*Thomas Jefferson National Accelerator Facility, USA*

**N63-4 Neutron Detector Designs for Detecting Fission Neutrons in Intense Pulsed Environments**

S. B. Swanekamp, F. C. Young, *Naval Research Laboratory (L3 Contractor), USA*; S. L. Jackson, J. P. Apruzese, *Naval Research Laboratory, USA*

**N63-5 Neutron Response of Rare-Earth-Doped <sup>6</sup>LiF/CaF<sub>2</sub> Eutectic Composites with the Ordered Lamellar Structure**

N. Kawaguchi<sup>1,2</sup>, K. Fukuda<sup>1</sup>, T. Yanagida<sup>2</sup>, Y. Fujimoto<sup>2</sup>, Y. Yokota<sup>2</sup>, K. Watanabe<sup>3</sup>, A. Yamazaki<sup>3</sup>, T. Suyama<sup>1</sup>, A. Yoshikawa<sup>2</sup>  
<sup>1</sup>*Tokuyama Corporation, Japan*; <sup>2</sup>*Tohoku University, Japan*; <sup>3</sup>*Nagoya University, Japan*

**N63-6 Neutron Detection by Measuring Capture Gammas in a Calorimetric Approach**

C.-M. Herbach<sup>1</sup>, G. Pausch<sup>1</sup>, A. Kreuels<sup>1</sup>, Y. Kong<sup>1</sup>, R. Lentering<sup>1</sup>, C. Plettner<sup>1</sup>, K. Roemer<sup>1</sup>, F. Scherwinski<sup>1</sup>, P. Schotanus<sup>2</sup>, J. Stein<sup>1</sup>, N. Teofilov<sup>1</sup>, T. Wilpert<sup>3</sup>

<sup>1</sup>ICx Technologies GmbH, Germany; <sup>2</sup>SCIONIX Holland B.V., The Netherlands; <sup>3</sup>Helmholtz-Zentrum Berlin, Germany

### N63-7 Polymer Composite Thermal Neutron Detector

I. Sen, A. N. Mabe, A. Green, D. Penumadu, G. Schweitzer, K. Thomas, L. Miller  
The University of Tennessee (USA), USA

## N64: Scientific Simulation and Computing: Bio-medical Computing

Thursday, Nov. 4 13:30-15:30 Ballroom E

Session Chairs: Gabriela Hoff, *Pontifical Catholic University in Rio Grande do Sul, Brazil*  
Ernesto Lamanna, *Magna Graecia University Cz & INFN Gruppo Collegato Cs, Italy*

### N64-1 Estimation of Influence of Material Assignment in CT Data for Hadron Therapy Using GEANT4

T. Aso, A. Taniuchi, *Toyama National College of Technology, Japan*; T. Yamashita, T. Akagi, *Hyogo Ion Beam Medical Center, Japan*; C. Omachi, T. Sasaki, *High Energy Accelerator Research Organization, Japan*

### N64-2 Dosimetric Study in the Human Head for CT Investigation of the Inner Ear Using the Geant4 Toolkit

E. Lamanna, A. S. Fiorillo, A. Gallo, L. Belmonte  
*Magna Graecia University Cz & INFN Gruppo Collegato Cs, Italy*

### N64-3 A Dedicated Processor for Monte Carlo Computation in Radiotherapy

S. Siddhanta<sup>1,2</sup>, V. Fanti<sup>1,2</sup>, G. R. Fois<sup>1,2</sup>, R. Marzeddu<sup>1,2</sup>, C. Pili<sup>1,2</sup>, P. Randaccio<sup>1,2</sup>, J. Spiga<sup>1,2</sup>, A. Szostak<sup>1,2</sup>  
<sup>1</sup>INFN, Italy; <sup>2</sup>University of Cagliari, Italy

### N64-4 Acceleration of PET Monte Carlo Simulations Using the Graphics Hardware Ray Tracing Engine

Z. Wang, P. D. Olcott, C. S. Levin, *Stanford University, US*

### N64-5 DICOM-RT Extension Support of Visualization Tool for Radiotherapy Simulation

A. Kimura, *Ashikaga Institute of Technology, Japan*; T. Yamashita, T. Akagi, *Hyogo Ion Beam Medical Center, Japan*; T. Sasaki, *High Energy Accelerator Research Organization, Japan*; Y. Tatsumi, K. Hasegawa, S. Tanaka, *Ritsumeikan University, Japan*

### N64-6 Simulation of Brachytherapy Sources Inserted in Anthropomorphic Voxel Models Using Geant4.

M. C. Martins<sup>1</sup>, M. Begalli<sup>2</sup>, P. P. Queiroz-Filho<sup>1</sup>, D. Souza-Santos<sup>1</sup>  
<sup>1</sup>Institute for Radiation Protection and Dosimetry, Brazil; <sup>2</sup>State University of Rio de Janeiro, Brazil

### N64-7 Geant4 Dosimetric Calculations of an Acrylic Phantom for Quality Audits in High Dose Rate Brachytherapy

V. G. L. Alves, *National Institute for Cancer, Brazil*; P. P. Queiroz Filho, D. Souza-Santos, *Institute for Radioprotection and Dosimetry, Brazil*; M. Begalli, *State University of Rio de Janeiro, Brazil*

## N65: High Energy and Nuclear Physics Instrumentation: Large Detectors and Test Facilities

Thursday, Nov. 4 13:30-15:30 Ballroom F

Session Chair: Dmitri Denisov, *Fermi National Accelerator Laboratory, USA*

### N65-1 The LHCb Detector Status and Performance

E. P. Thomas, *CERN, CH*  
On behalf of the LHCb collaboration

### N65-2 The TOTEM Detector at LHC

E. Radermacher, *CERN, Switzerland*

### N65-3 HALO: the Helium And Lead Observatory

M. A. Schumaker, *Laurentian University/SNOLAB, Canada*  
On behalf of the HALO Collaboration

### N65-4 The MiniCLEAN Single-Phase Noble Liquid Dark Matter Experiment

M. C. Akashi-Ronquest, *Los Alamos National Laboratory, US*  
On behalf of the DEAP/CLEAN Collaboration

### N65-5 A New Low-Momentum Beamline for the Test Beam Facility at Fermilab

A. K. Soha, *Fermilab, USA*

### N65-6 The EUDET Telescope - the Final Telescope with Fully Digital Readout

I.-M. Gregor, *DESY, Germany*  
On behalf of the EUDET JRA1 Group

### N65-7 Development of Picosecond Time of Flight Systems in Meson Test Beam Facility at Fermilab

A. I. Ronzhin, M. Albrow, M. Demarteau, S. Los, S. Pronko, E. Ramberg, *Fermi National Accelerator Laboratory, USA*; A. Zatserklyaniy, *University of Puerto Rico, USA*

## N66: Gaseous Detectors: Developments with Gas Electron Multipliers

Thursday, Nov. 4 13:30-15:30 Ballroom G

Session Chairs: Christoph Ilgner, *CERN, Switzerland*  
Harry van der Graaf, *NIKHEF, Netherlands*

### N66-1 Advances on the Cylindrical-GEM Project for the KLOE-2 Inner Tracker

A. Balla<sup>1</sup>, G. Bencivenni<sup>1</sup>, M. Capodiferro<sup>2</sup>, S. Cerioni<sup>1</sup>, P. Ciambrone<sup>1</sup>, E. De Lucia<sup>1</sup>, G. De Robertis<sup>3</sup>, A. Di Domenico<sup>2</sup>, D. Domenici<sup>1</sup>, J. Dong<sup>1</sup>, G. Felici<sup>1</sup>, M. Gatta<sup>1</sup>, M. Jacewicz<sup>1</sup>, N. Lacalamita<sup>3</sup>, S. Lauciani<sup>1</sup>, R. Liuzzi<sup>3</sup>, F. Loddo<sup>3</sup>, M. Mongelli<sup>3</sup>, G. Morello<sup>4</sup>, V. Patera<sup>1</sup>, A. Pelosi<sup>2</sup>, M. Pistilli<sup>1</sup>, L. Quintieri<sup>1</sup>, A. Ranieri<sup>3</sup>, M. Schioppa<sup>4</sup>, E. Tshadadze<sup>1</sup>, V. Valentino<sup>3</sup>, A. Budano<sup>5</sup>, P. Branchini<sup>5</sup>

<sup>1</sup>Laboratori Nazionali di Frascati - INFN, Italy; <sup>2</sup>Dipartimento di Fisica, Italy; <sup>3</sup>INFN Sezione di Bari, Italy; <sup>4</sup>INFN gruppo collegato di Cosenza, Italy; <sup>5</sup>INFN Sezione di Roma 3, Italy

### N66-2 Development of Gas Electron Multipliers with Resistive Kapton Electrodes

A. Yoshikawa<sup>1,2</sup>, A. Nukariya<sup>3</sup>, H. Hamagaki<sup>3</sup>, T. Tamagawa<sup>1,2</sup>, A. Hayato<sup>1</sup>, T. Gunji<sup>3</sup>, R. Akimoto<sup>3</sup>, S. Hayashi<sup>3</sup>, T. Iwahashi<sup>1,2</sup>, F. Asami<sup>1,2</sup>, A. Ochi<sup>4</sup>, R. D. Oliveria<sup>5</sup>  
<sup>1</sup>RIKEN, Japan; <sup>2</sup>Tokyo Univ. of Sci., Japan; <sup>3</sup>CNS, Univ. of Tokyo, Japan; <sup>4</sup>Kobe Univ., Japan; <sup>5</sup>CERN, Switzerland

### N66-3 First Results from Spherical GEMs

S. Duarte Pinto<sup>1,2</sup>, I. C. Brock<sup>2</sup>, E. David<sup>1</sup>, R. de Oliveira<sup>1</sup>, L. Ropelewski<sup>1</sup>, M. van Stenis<sup>1</sup>, H. Taureg<sup>1</sup>  
<sup>1</sup>CERN, Switzerland; <sup>2</sup>Physikalisches Institut, Germany



**N66-4 Development of Large Scale Gas Electron Multiplier (GEM) Chambers**

J. Yu<sup>1</sup>, E. Baldelomar<sup>1</sup>, K. J. Park<sup>2</sup>, S. Park<sup>1</sup>, M. Sosebee<sup>1</sup>, A. P. White<sup>1</sup>  
<sup>1</sup>University of Texas at Arlington, USA; <sup>2</sup>Korea Atomic Energy Research Institute, South Korea

**N66-5 A New Glass GEM**

H. Takahashi, T. Fujiwara, Y. Mitsuya, S. Hatakeyama, M. Ohno, N. Iyomoto  
 The University of Tokyo, JAPAN

**N66-6 Development of a Neutrino Tracking Detector Using GEM Avalanche Light Production in Neon**

Y. Li<sup>1</sup>, V. Jorjadze<sup>1</sup>, C. Thorn<sup>2</sup>, R. Galea<sup>3</sup>, T. Liu<sup>1</sup>, P. Rehak<sup>2</sup>, J. Sondericker<sup>1</sup>, R. Stroynowski<sup>1</sup>, V. Tcherniatine<sup>2</sup>, W. J. Willis<sup>3</sup>, J. Ye<sup>1</sup>  
<sup>1</sup>Southern Methodist University, USA; <sup>2</sup>Brookhaven National Laboratory, USA; <sup>3</sup>Columbia University, USA

**N66-7 Development of Time Projection Chamber Using Gas Electron Multiplier for Use as an Active Target**

R. Akimoto, S. Ota, S. Michimasa, T. Gunji, H. Yamaguchi, T. Hashimoto, H. Tokieda, T. Tsuji, S. Kawase, H. Hamagaki, T. Uesaka, S. Kubono, University of Tokyo, Japan; T. Isobe, RIKEN (The institute of physical and chemical research), Japan; T. Kawabata, Kyoto University, Japan; A. Ozawa, H. Suzuki, D. Nagae, T. Moriguchi, Y. Ito, Y. Ishibashi, H. Ooishi, Y. Abe, University of Tsukuba, Japan

**N67: Semiconductor Detectors: Silicon Pixel Detectors**

Thursday, Nov. 4 13:30-15:30 301D & 301E

Session Chair: Marc Christophersen, U.S. Naval Research Laboratory, USA

**N67-1 Recent Progress in Development of SOI Pixel Detectors**

T. Miyoshi, Y. Arai, R. Ichimiya, Y. Ikemoto, High Energy Accelerator Research Organization, Japan; A. Takeda, D. Nio, Graduate University for Advanced Studies (SOKENDAI), Japan; K. Hanagaki, J. Uchida, Osaka University, Japan; K. Hara, K. Shinsho, K. Koike, University of Tsukuba, Japan; Y. Onuki, Y. Ono, Tohoku University, Japan

**N67-2 SOI Detector with Drift Field due to Majority Carrier Flow - an Alternative to Biasing in Depletion**

M. Trimpl, G. Deptuch, R. Yarema  
 Fermi National Laboratory, USA

**N67-3 Second Generation Monolithic Full-Depletion Radiation Sensor with Integrated CMOS Circuitry**

J. D. Segal, C. J. Kenney, SLAC National Accelerator Laboratory, USA; S. I. Parker, University of Hawaii, USA; C. H. Aw, UOB Venture Management, Singapore; W. J. Snoeys, CERN, Switzerland; B. Wooley, J. Plummer, Stanford University, USA

**N67-4 Flexible Monolithic Active Pixel Sensors Embedded in Ultra Thin Polymer Film**

W. Dulinski<sup>1</sup>, J. Baudot<sup>1</sup>, N. Chon-Sen<sup>1</sup>, M. Deveaux<sup>2</sup>, M. Goffe<sup>1</sup>, K. Minoglou<sup>3</sup>, P. De Moor<sup>3</sup>, C. Mntz<sup>2</sup>, T. Sterken<sup>4</sup>, J. Stroth<sup>4</sup>, J. Vanfleteren<sup>3</sup>, M. Winter<sup>1</sup>  
<sup>1</sup>IPHC/IIN2P3/CNRS, France; <sup>2</sup>Goethe University, Germany; <sup>3</sup>IMEC, Belgium; <sup>4</sup>University of Gent, Belgium

**N67-5 Thin Pixel Development for the Layer0 of the SuperB Silicon Vertex Tracker**

G. Casarosa, Universita' di Pisa, Italy  
 On behalf of the Super B Group

**N67-6 Measurements of Charge Transfer Inefficiencies in Highly Irradiated CCDs with High-Speed Column Parallel Readout**

A. Sopczak, Lancaster University, UK

**N67-7 Particle Detection with PNCCDs**

R. Andritschke<sup>1,2</sup>, N. Meidinger<sup>1,2</sup>, J. Elbs<sup>1,2</sup>, A. Ziegler<sup>1,2</sup>, R. Hartmann<sup>3</sup>, P. Holl<sup>3</sup>, L. Strueder<sup>1,2</sup>, H. Soltan<sup>3</sup>, F. Schopper<sup>1,2</sup>, N. Kimmel<sup>1,2</sup>, S. Ebermayer<sup>1,2</sup>, G. Schaechner<sup>1,2</sup>, O. Haelker<sup>1,2</sup>, S. Herrmann<sup>1,2</sup>, J. Reiffers<sup>1,2</sup>, W. Assmann<sup>4</sup>, S. Reinhardt<sup>4</sup>  
<sup>1</sup>Max-Planck-Institut Halbleiterlabor, Germany; <sup>2</sup>Max-Planck-Institut fuer extraterrestrische Physik, Germany; <sup>3</sup>pnSensor GmbH, Germany; <sup>4</sup>Ludwig-Maximilians-Universitaet Muenchen, Germany

**NR: NSS/RTSD Joint Session - Semiconductor-based Neutron Detectors**

Thursday, Nov. 4 16:00-18:00 Ballroom A

Session Chairs: Rebecca J. Nikolic, Lawrence Livermore National Lab., USA  
 Ralf Engels, Forschungszentrum Juelich GmbH, Germany

**NR-1 High Efficiency Dual-Integrated Microstructured Semiconductor Neutron Detector**

S. L. Bellinger, R. G. Fronk, W. J. McNeil, T. J. Sobering, D. S. McGregor  
 Kansas State University, USA

**NR-2  $\gamma$ -Transparency Tests of a CMOS Pixel Detector for a Future Electronic Fast Neutron Dosimeter**

M. Vanstalle, D. Husson, S. Higuieret, M. Trocme, E. Baussan, T. D. Le, A.-M. Nourreddine  
 IPHC, France

**NR-3 6 Li Based Thermal Neutron Scintillators Using Electrospun Nano Fiber Mats**

S. A. Young, I. Sen, D. Penumadu  
 The University of Tennessee (USA), USA

**NR-4 Effect of Semiconducting BC Layer with Various Thicknesses for Optimum Efficiency in Thermal Neutron Detection**

N. Hong, S. Adenwalla, University of Nebraska-Lincoln, USA

**NR-6 (invited) Microstructured Semiconductor Neutron Detectors**

D. S. McGregor, J. K. Shultis, S. L. Bellinger, W. J. McNeil, C. J. Solomon  
 Kansas State University, USA

**N68: Scientific Simulation and Computing: HEP Computing**

Thursday, Nov. 4 16:00-18:00 Ballroom E

Session Chairs: Maria Grazia Pia, INFN Genova, Italy  
 Douglas Wright, Lawrence Livermore National Laboratory, USA

**N68-1 (invited) The LHC Control System**

E. Hatziangeli, CERN, Switzerland  
 On behalf of the CERN Beams Controls (BE/CO) group

**N68-2 (invited) The Online Software of the LHC Experiments at CERN**

G. Lehmann Miotto, CERN, Switzerland

**N68-3 Scalability and the Real World: Lessons Learned Optimizing ATLAS Reconstruction and Simulation Performance on Multicore CPUs.**

M. Tatar<sup>1</sup>, S. Binet<sup>2</sup>, P. Calafiura<sup>1</sup>, K. Jackson<sup>1</sup>, W. Lavrijsen<sup>1</sup>, C. Leggett<sup>1</sup>, D. Levinthal<sup>3</sup>, Y. Yao<sup>1</sup>

<sup>1</sup>Lawrence Berkeley National Laboratory, USA; <sup>2</sup>Laboratoire de l'Accelérateur Lineaire, Université Paris-Sud XI, France; <sup>3</sup>Intel Corporation, USA

**N68-4 Totem Experiment Online Software Chain: the Role of the Firmware in the Totem Scientific Computation**

F. S. Cafagna, INFN, Bari section, Italy

On behalf of the TOTEM Collaboration

**N68-5 Automatic Deployment of a ATLAS Tier3 Cluster**

Y. Yao, Lawrence Berkeley National Laboratory, USA; D. Benjamin, Duke University, USA; R. Yoshida, Argonne National Laboratory, USA

**N68-6 Software Tools for Linear Collider Detector R&D**

F. Gaede, S. Aplin, DESY, Germany

**N69: Gaseous Detectors: Applications in Particle Physics**

Thursday, Nov. 4 16:00-18:00 Ballroom G

Session Chairs: Rachel M. Avramidou, *National Technical University of Athens, Greece*

Serge Duarte Pinto, *CERN, Switzerland*

**N69-1 (invited) Construction of first Full-Size MPGD-Based**

**Prototype for CMS high eta muon system**

D. Abbaneo<sup>1</sup>, S. Bally<sup>1</sup>, H. Postema<sup>1</sup>, A. Conde Garcia<sup>1</sup>, J.-P. Chatelain<sup>1</sup>, G. Faber<sup>1</sup>, L. Ropelewski<sup>1</sup>, S. Duarte Pinto<sup>1</sup>, G. Croci<sup>1</sup>, M. Alfonsi<sup>1</sup>, M. Van Stenis<sup>1</sup>, A. Sharma<sup>1</sup>, S. Colfranceschi<sup>1,2</sup>, S. Bianco<sup>3</sup>, L. Benussi<sup>3</sup>, F. Fabbri<sup>3</sup>, D. Piccolo<sup>3</sup>, G. Saviano<sup>3,2</sup>, A. Marinov<sup>1,4</sup>, M. Tytgat<sup>4</sup>, N. Zaganidis<sup>4</sup>, M. Hohlmann<sup>5</sup>, K. Gnanve<sup>5</sup>, N. Turini<sup>6</sup>, E. Oliveri<sup>6</sup>, G. Magazzu<sup>6</sup>, Y. Ban<sup>7</sup>, H. Teng<sup>7</sup>, J. Cai<sup>7</sup>

<sup>1</sup>CERN, Switzerland; <sup>2</sup>also at Sapienza Università di Roma - Facoltà Ingegneria, Italy; <sup>3</sup>Laboratori Nazionali di Frascati dell'INFN, Italy; <sup>4</sup>Universiteit Gent, Belgium; <sup>5</sup>Florida Institute of Technology, United States of America; <sup>6</sup>Università Degli Studi di Siena, Italy; <sup>7</sup>Peking University, China

**N69-2 The Straw Detector for the NA62 Rare Kaon Decay Experiment**

H. Danielsson, CERN, Switzerland

On behalf of the NA62 Collaboration

**N69-3 Performance of the ATLAS Transition Radiation Tracker with Cosmic Rays and First High Energy Collisions at LHC**

J. D. Degenhardt, University of Pennsylvania, USA

On behalf of the ATLAS TRT Collaboration

**N69-4 Performance of Fast High-Resolution Muon Drift Tube Chambers for LHC Upgrades**

B. Bittner, J. Dubbert, S. Horvat, O. Kortner, H. Kroha, R. Richter, *Max-Planck-Institut fuer Physik, Germany*; S. Adomeit, O. Biebel, A. Engl, R. Hertenberger, F. Legger, F. Rauscher, A. Zibell, *Ludwig-Maximilians-University Munich, Germany*

**N69-5 A Study of the Performance of the Gas Transmission Monitor of the PHENIX Hadron Blind Detector**

B. Azmoun, C. Woody, S. Stoll, R. Pisani

*Brookhaven National Laboratory, USA*

**N69-6 New Pixelized Micromegas Detector with Low Discharge Rate for the COMPASS Experiment**

D. Neyret, CEA Saclay, France

On behalf of the COMPASS and CLAS12 Micromegas groups

## MIC Oral Presentations

## M05: PET and SPECT Instrumentation

Thursday, Nov. 4 08:30-10:00 Ballroom B

Session Chairs: Maurizio Conti, *Siemens, USA*  
Benjamin M. W. Tsui, *Johns Hopkins University, USA***M05-1 (08:30) An Interchangeable Slit Collimator System for Adaptive Imaging in C-SPECT**M. Rozler, H. Sabet, H. Liang, Y. Li, W. Chang  
*Rush University Medical Center, USA***M05-2 (08:45) Point Spread Function Optimization for Parallel Hole SPECT**A. Bousse<sup>1</sup>, N. Fuin<sup>1</sup>, K. Erlandsson<sup>1</sup>, S. Pedemonte<sup>2</sup>, S. Ourselin<sup>2</sup>, S. Arridge<sup>2</sup>, B. Hutton<sup>1</sup>  
<sup>1</sup>*Institute of Nuclear Medicine, UCL, UK;* <sup>2</sup>*Centre for Medical Image Computing, UCL, UK***M05-3 (09:00) Truncated Pinhole SPECT: Sufficient Sampling Criteria and Applications**J. Lin, S. R. Meikle, *University of Sydney, Australia***M05-4 (09:15) Regional SPECT Imaging Using Sampling Principles and Multiple Pinholes**J. E. Bowsher, J. R. Roper, S. Yan, F.-F. Yin  
*Duke University Medical Center, USA***M05-5 (09:30) A Small Prototype for a Proof-of-Concept of OpenPET Imaging**T. Yamaya<sup>1</sup>, E. Yoshida<sup>1</sup>, S. Kinouchi<sup>2,1</sup>, M. Suga<sup>2</sup>, S. Sato<sup>1</sup>, T. Inaniwa<sup>1</sup>, Y. Nakajima<sup>3</sup>, D. Kokuryo<sup>1</sup>, I. Aoki<sup>1</sup>, A. Tsuji<sup>1</sup>, T. Mitsuhashi<sup>1</sup>, H. Wakizaka<sup>1</sup>, H. Tashima<sup>1</sup>, F. Nishikido<sup>1</sup>, N. Inadama<sup>1</sup>, H. Murayama<sup>1</sup>  
<sup>1</sup>*National Institute of Radiological Sciences, Japan;* <sup>2</sup>*Chiba University, Japan;* <sup>3</sup>*Tokyo Institute of Technology, Japan***M05-6 (09:45) Development of a Prototype DOI-TOF-PET Scanner**M. Nakazawa, J. Ohi, H. Tonami, Y. Yamada, T. Furumiya, M. Furuta, T. Tsuda, M. Sato, Y. Yamakawa, N. Hashizume, A. Akazawa, K. Kitamura  
*Technology Research Laboratory, Shimadzu Corporation, Japan*

## M06: Image Processing and Evaluation Techniques

Thursday, Nov. 4 08:30-10:00 Ballroom C

Session Chairs: Dimitris Visvikis, *U650 INSERM, France*  
Dan J. Kadmas, *University of Utah, USA***M06-1 (08:30) A Bootstrap Method for a Totally Non-Invasive Image-Derived Input Function and Pharmacokinetic Parameters Estimation in 18F-FDG PET Images of the Human Brain**S. de Gavriloff, R. Maroy, R. Trebossen  
*CEA/I2BM/ISHF, France***M06-2 (08:45) An Automated Approach to Tumor ROI Definition for Routine Implementation of Spatial Heterogeneity Analysis in PET-FDG Studies of Sarcoma.**E. O'Sullivan, E. Wolsztynski, J. N. O'Sullivan, *University College Cork, Ireland;* E. Conrad, J. F. Eary, *University of Washington, USA***M06-3 (09:00) Iterative Automatic Segmentation in Cardiac PET Based on TAC Correlation: Preliminary Results**J. M. Mateos-Perez<sup>1</sup>, C. Garcia-Villalba<sup>1</sup>, M. Dae<sup>2</sup>, M. Abella<sup>1</sup>, M. Desco<sup>1,3,4</sup>, J. J. Vaquero<sup>1</sup>  
<sup>1</sup>*Hospital General Universitario Gregorio Marañon, Spain;* <sup>2</sup>*University of California San Francisco, USA;* <sup>3</sup>*Instituto de Salud Carlos III, Spain;* <sup>4</sup>*Universidad Carlos III, Spain***M06-4 (09:15) Task-Oriented and Study-Dependent Optimization of 3D and Fully 4D Reconstruction Parameters for [18F]FDG Imaging**P. Gravel, J. Verhaeghe, A. J. Reader  
*Montreal Neurological Institute, McGill University, Canada***M06-5 (09:30) Organ Concentration Quantification for Small Animal PET Images by Registration with a Statistical Mouse Atlas**H. Wang, D. B. Stout, A. F. Chatziioannou  
*Crump Institute of Molecular Imaging, David Geffen School of Medicine, UCLA, U.S.A.***M06-6 (09:45) Estimation of Trained-Observer Performance with Known Difference of Class Means**A. Wunderlich, F. Noo, *University of Utah, USA*

## M07: New Imaging Techniques

Thursday, Nov. 4 10:30-12:00 Ballroom B

Session Chairs: Paul Vaska, *Brookhaven National Laboratory, USA*  
Yuan-Chuan Tai, *Washington University in St. Louis, USA***M07-1 (10:30) Spatial Resolution Limitation of Multiple Coincidences Compton Camera**A. Andreyev<sup>1</sup>, A. Sitek<sup>2</sup>, A. Celler<sup>1</sup>  
<sup>1</sup>*University of British Columbia, Canada;* <sup>2</sup>*Harvard Medical School and Brigham and Women's Hospital, USA***M07-2 (10:45) Applications of the HICAM Gamma Camera**P. Busca<sup>1,2</sup>, C. Fiorini<sup>1,2</sup>, R. Peloso<sup>1,2</sup>, A. Gola<sup>1,2</sup>, A. Abba<sup>1,2</sup>, C. Bianchi<sup>3</sup>, G. L. Poli<sup>3</sup>, U. Guerra<sup>3</sup>, B. F. Hutton<sup>4</sup>, K. Erlandsson<sup>4</sup>, L. Ottobri<sup>5</sup>, C. Martelli<sup>5</sup>, G. Lucignani<sup>5</sup>  
<sup>1</sup>*Politecnico di Milano, Italy;* <sup>2</sup>*INFN, Italy;* <sup>3</sup>*Ospedali Riuniti di Bergamo, Italy;* <sup>4</sup>*University College London, Italy;* <sup>5</sup>*Universita' degli Studi di Milano, Italy***M07-3 (11:00) Feasibility Study of a Dual-Isotope PET Technique**A. Andreyev, A. Celler  
*University of British Columbia, Canada***M07-4 (11:15) Acquisition Model for Iterative Reconstruction of Navigated Beta-Probe Surface Images**D. I. Shakir, N. Navab, S. I. Ziegler  
*Technische Universitaet Muenchen, Germany***M07-5 (11:30) Dual-Energy X-Ray Imaging by Simultaneous Integration and Campbell Readout**E. Roessl, A. Thran, G. Martens, T. Istel, R. Proksa, *Philips Research Europe - Hamburg, Germany;* J.-P. Schlomka, *Philips Research Europe - Aachen, Germany***M07-6 (11:45) Fast Magnetic Resonance Spectroscopic Imaging Using Echo-Time Optimization**W. Deng, S. Reeves, *Auburn University, USA;* D. B. Twieg, *The University of Alabama at Birmingham, USA*

**M08: Data Corrections for PET/MR Imaging**

Thursday, Nov. 4 10:30-12:00 Ballroom C

Session Chairs: Paul K. Marsden, *King's College London, England, United Kingdom*  
 Timothy G. Turkington, *Duke University Medical Center, USA*

**M08-1 (10:30) MR-Based Attenuation Correction for Whole-Body PET/MR System**

Z. Hu<sup>1</sup>, S. Renisch<sup>2</sup>, B. Schweizer<sup>2</sup>, N. Ojha<sup>1</sup>, V. Schulz<sup>2</sup>, I. Torres<sup>3</sup>, T. Guo<sup>1</sup>, C.-H. Tung<sup>1</sup>, J. Kaste<sup>1</sup>, P. Maniowski<sup>1</sup>, L. Shao<sup>1</sup>  
<sup>1</sup>Philips Medical Systems, USA; <sup>2</sup>Philips Research, Germany; <sup>3</sup>Aachen University, Germany

**M08-2 (10:45) Correction of Truncation Artifacts in Simultaneous Whole-Body PET/MR with an Active Model of the Patient Arms**  
 G. Delso, R. Kraus, A. Martinez-Moeller, R. A. Bundschuh, S. G. Nekolla, S. I. Ziegler  
 TU Muenchen, Germany

**M08-3 (11:00) Completion of a Truncated Attenuation Image from the Attenuated PET Emission Data**

J. Nuyts<sup>1</sup>, C. Michel<sup>2</sup>, M. Fenchel<sup>3</sup>, G. Bal<sup>2</sup>, C. Watson<sup>2</sup>  
<sup>1</sup>K.U.Leuven, Belgium; <sup>2</sup>Siemens Medical Solutions, USA; <sup>3</sup>Siemens AG, Germany

**M08-4 (11:15) Comparative Quantitative Evaluation of MR-Based Attenuation Correction Methods in Combined Brain PET/MR**

F. Mantlik<sup>1,2</sup>, M. Hofmann<sup>1,2,3</sup>, I. Bezrukov<sup>1,2</sup>, A. Kolb<sup>1</sup>, T. Beyer<sup>4</sup>, M. Reimold<sup>5</sup>, B. J. Pichler<sup>1</sup>, B. Schoelkopf<sup>2</sup>  
<sup>1</sup>Dept. of Radiology, Eberhard Karls University, Germany; <sup>2</sup>Max-Planck-Institute for Biological Cybernetics, Germany; <sup>3</sup>University of Oxford, United Kingdom; <sup>4</sup>cmi-experts GmbH, Switzerland; <sup>5</sup>Eberhard Karls University, Germany

**M08-5 (11:30) Improved Lesion Detection with B-Spline Nonrigid Motion Correction in Simultaneous PET/MR**

S. Y. Chun<sup>1,2</sup>, T. Reese<sup>1,2</sup>, B. Guerin<sup>1,2</sup>, X. Zhu<sup>1,2</sup>, C. Catana<sup>1,2</sup>, G. El Fakhri<sup>1,2</sup>  
<sup>1</sup>Massachusetts General Hospital, USA; <sup>2</sup>Harvard Medical School, USA

**M08-6 (11:45) The Observation and Correction of Positron Range for PET-Insert Scanner**

C.-C. Liu, M. Judenhofer, A. Kolb, B. J. Pichler  
 Laboratory for Preclinical Imaging and Imaging Technology of the Werner Siemens-Foundation, Eberhard Karls University of Tuebingen, Germany

**M09: MIC Posters 1**

Thursday, Nov. 4 13:30-15:30 Exhibit Hall B

See listings in the MIC Poster section.

**M10: PET and SPECT Reconstruction**

Thursday, Nov. 4 16:00-18:00 Ballroom B&amp;C

Session Chairs: Grant T. Gullberg, *Lawrence Berkeley National Laboratory, USA*  
 Adam M. Alessio, *University of Washington, USA*

**M10-1 (16:00) Ultrafast Preconditioned Conjugate Gradient OSEM Algorithm for Fully 3D PET Reconstruction**

I. Hong<sup>1,2</sup>, Z. Burbar<sup>2</sup>, C. Michel<sup>2</sup>, R. Leahy<sup>3</sup>

<sup>1</sup>Korea Polytechnic University, Korea; <sup>2</sup>Siemens Medical Solutions, USA; <sup>3</sup>USC, USA

**M10-2 (16:15) Ultra Fast 3-D PET Image Reconstruction Using Highly Compressed, Memory-Resident System Matrices with Optimised SIMD Access Patterns**

J. J. Scheins, L. Tellmann, C. Weirich, E. Rota Kops, H. Herzog  
 Institute of Neuroscience and Medicine, INM-4, Germany

**M10-3 (16:30) Parallel Algorithm and Hybrid Regularization for Dynamic PET Reconstruction**

N. Pustelnik, C. Chauv, J.-C. Pesquet, *Laboratoire d'Informatique Gaspard Monge, France*; C. Comtat, *Service Hospitalier Frederic Joliot, France*

**M10-4 (16:45) EM Reconstruction with Multiple Time Dependences**

S. D. Metzler, S. Matej, J. S. Karp  
 University of Pennsylvania, USA

**M10-5 (17:00) Direct Reconstruction of Nonlinear Parametric Images for Dynamic PET Using Nested Optimization Transfer**

G. Wang, J. Qi, *University of California, Davis, USA*

**M10-6 (17:15) Direct Reconstruction of Parametric Images Using Any Spatiotemporal 4D Image Based Model and Maximum Likelihood Expectation Maximisation**

J. C. Matthews, G. I. Angelis, F. A. Kotasidis, P. J. Markiewicz,  
 University of Manchester, UK; A. J. Reader, *McGill University, Canada*

**M10-7 (17:30) Direct Reconstruction of Linear Kinetic Parameters from Dynamic PET Data Using an Anatomical Boundary-Guided Level Set Prior**

J. Cheng-Liao, G. Wang, J. Qi  
 University of California, Davis, USA

**M10-8 (17:45) Develop and Evaluation of an Improved Reconstruction Method for Y-90 Bremsstrahlung SPECT**

X. Rong<sup>1</sup>, Y. Du<sup>1</sup>, M. Ljungberg<sup>2</sup>, E. C. Frey<sup>1</sup>  
<sup>1</sup>Johns Hopkins University, USA; <sup>2</sup>Lund University, Sweden

## RTSD Oral Presentations

## R11: CdZnTe Growth and Annealing

Thursday, Nov. 4 08:30-09:55 301A &amp; 301B

Session Chair: Martine C. Duff, *Savannah River National Lab, USA***R11-1 (08:30, invited) Excess Tellurium and Impurities in CdTe and CZT Grown by CTHM**R. Dhar, J.-N. Beaudry, F. Belanger, *5N Plus Inc., Canada***R11-2 (08:50, invited) Growth and Characterization of CZT Crystals by the Vertical Bridgman Method for X-Ray Detector Applications.**A. Zappettini, L. Marchini, M. Zha, N. Zambelli, D. Calestani, L. Zanotti, R. Mosca, E. Gombia, *IMEM-CNR, Italy*; M. Zanichelli, M. Pavesi, *University of Parma, Italy*; N. Auricchio, E. Caroli, *INFN-IASF, Italy***R11-3 (09:10) Effects of Thermal Annealing on Cadmium Zinc Telluride (CZT) Crystals**G. Yang<sup>1</sup>, A. E. Bolotnikov<sup>1</sup>, P. M. Fochuk<sup>2</sup>, K. H. Kim<sup>1</sup>, G. Camarda<sup>1</sup>, Y. Cui<sup>1</sup>, A. Hossain<sup>1</sup>, R. Gul<sup>1</sup>, L. Xu<sup>3</sup>, J. Suh<sup>4</sup>, R. B. James<sup>1</sup><sup>1</sup>Brookhaven National Laboratory, USA; <sup>2</sup>Chernivtsi National University, Ukraine; <sup>3</sup>Northwestern Polytechnical University, China;<sup>4</sup>Korea University, Korea**R11-4 (09:25) Annealing Effects on Point Defects in CdZnTe Crystals Grown by the Bridgman Method**

R. Gul, A. E. Bolotnikov, G. S. Camarda, A. Hossain, K. Kim, G. Yang, R. B. James

*Brookhaven National Lab, USA***R11-5 (09:40) Effects of Surface Morphology on CZT Detectors Studied by I-V and Cathode Luminescence**J. D. Crocco<sup>1</sup>, F. Dierre<sup>1</sup>, H. Bensalah<sup>1</sup>, Q. Zheng<sup>1</sup>, P. Hidalgo<sup>2</sup>, J. Piqueras<sup>2</sup>, E. Dieguez<sup>1</sup><sup>1</sup>Crystal Growth Laboratory, University Autònoma, Spain; <sup>2</sup>University Complutense, Spain

## R12: CdMnTe

Thursday, Nov. 4 10:30-11:05 301A &amp; 301B

Session Chair: Eugenio Perillo, *Dept. of Physics, University of Napoli, Italy, Italy***R12-1 (10:30, invited) Studies of (Cd, Mn)Te Crystals as a Material for X- and Gamma Ray Detectors: Where We Are ?**A. Mycielski<sup>1</sup>, M. Witkowska-Baran<sup>1</sup>, D. M. Kochanowska<sup>1</sup>, A. Szadkowski<sup>1</sup>, B. Witkowska<sup>1</sup>, W. Kaliszek<sup>1</sup>, B. Kowalski<sup>1</sup>, A. Reszka<sup>1</sup>, R. Jakiela<sup>1</sup>, V. Domukhovski<sup>1</sup>, T. Wojtowicz<sup>1</sup>, M. Wiater<sup>1</sup>, M. Wegrzycki<sup>2</sup>, L. Kilański<sup>1</sup><sup>1</sup>Institute of Physics, Polish Academy of Sciences, Poland; <sup>2</sup>Institute of Electron Technology, Poland**R12-2 (10:50) The Role of Indium in the Electrical Compensation of CdMnTe Crystals**K. Kim, A. E. Bolotnikov, G. S. Camarda, R. Gul, A. Hossain, G. Yang, Y. Cui, R. B. James, *Brookhaven National Laboratory, USA*; J. Suh, J. Hong, *Korea University, Republic of Korea*

## R14: RTSD Poster II (Repeat of R05)

Thursday, Nov. 4 14:00-15:15 Exhibition Hall B

See listings in the RTSD Poster section.

## NR: NSS/RTSD Joint Session - Semiconductor-based Neutron Detectors

Thursday, Nov. 4 16:00-18:00 Ballroom A

See listings in the NSS section.



## MIC Poster Presentations

## M09: MIC Posters 1

Thursday, Nov. 4 13:30-15:30 Exhibit Hall B

Session Chairs: Mohammad Dawood, *University of Münster, Germany*  
Martin S. Judenhofer, *University of Tuebingen - Laboratory for Preclinical Imaging and Imaging Technologies, Germany*

**M09-1 Energy Bin Optimization for K-Edge Imaging in Photon-Counting Spectral CT**

L. Greenberg, D. Rubin, B. Rosner, G. Naveh, R. Levinson, S. Rosenberg, S. Maoz, J. Kuksin, O. Pinhasi, J. Arenson  
*GE Healthcare, Israel*

**M09-6 Microfluidic Beta and Conversion Electron Detector for Preclinical Pharmacokinetic Studies with PET and SPECT Radiotracers**

L. Convert, F. Girard-Baril, V. Aimez, P. Charette, R. Lecomte  
*Université de Sherbrooke, Canada*

**M09-11 Energy and Spatial Resolution for Single X Rays Detection with a Highly Segmented CsI(Tl) Cristal Coupled with a Back-Thinned CMOS Sensor**

M. Baachalany, J. Baudot, W. Dulinski  
*IPHC - Université de Strasbourg, France*

**M09-16 Controlling the Morphology of Ce-Doped Lu<sub>2</sub>SiO<sub>5</sub> Powders by Technological Parameters**

A. M. Grezer, E. Zych, *University of Wroclaw, Poland*

**M09-21 Optimization of Readout Electronics for a DOI-Encoding Detector for Simultaneous PET/MRI Imaging**

Y. Wu, Y. Yang, S. R. Cherry, *UC Davis, USA*

**M09-26 Digital Discriminator and Time-to-Digital Converter with Interleaved Analog-to-Digital Converters**

P. Hansen, *Siemens Molecular Imaging, USA*

**M09-31 Novel Multiplexer to Enable Multiple-Module Imaging with Adjustable High Spatial Resolution and Predetermined Display Bandwidth for Array Medical Imaging Systems**

P. Sharma, A. H. Titus, B. Qu, Y. Huang, A. K. Gilcrist, A. N. Cartwright, S. Rudin, D. R. Bednarek, W. Wang  
*University at Buffalo, SUNY, United States*

**M09-36 A New Daily Detector Uniformity Quality Control Methodology for Cardiac SPECT Using Solid-State Detectors**

C. Bai, R. Conwell, *Diginad Corporation, USA*

**M09-41 Direct Estimation of Regional Kinetic Parameter Distributions from PET Sinograms and Correction of Statistical Estimation Error Distributions**

H. Polonen, J. A. Niemi, U. Ruotsalainen  
*Tampere University of Technology, Finland*

**M09-46 Characterization of a Detector Head Based on Continuous LaBr<sub>3</sub> Crystals and SiPM Arrays for Dose Monitoring in Hadron Therapy**

G. Llosa, J. Barrio, C. Lacasta, *Instituto de Fisica Corpuscular (IFIC/CSIC-UV-VEG), Spain*; S. Callier, C. de La TAILLE, L. Raux, *Laboratoire de l'Accelérateur Lineaire, France*

**M09-51 Characterization of 4 X 4 Arrays of Solid-State Photomultipliers for PET Detectors with Finely Pixelated Crystal Arrays**

E. Roncali<sup>1</sup>, J. P. Schmall<sup>1</sup>, Y. Wu<sup>1</sup>, C. Stapels<sup>2</sup>, J. Christian<sup>2</sup>, P. Dokhale<sup>2</sup>, K. Shah<sup>2</sup>, S. R. Cherry<sup>1</sup>  
<sup>1</sup>*University of California-Davis, USA*; <sup>2</sup>*Radiation Monitoring Devices Inc., USA*

**M09-56 Restoring Energy Resolution and Uniformity of Signal Asymmetry in PET Detectors with Scintillators Having High Surface Roughness and High Aspect Ratio**

F. Taghibakhsh<sup>1,2</sup>, J. A. Rowlands<sup>1,2</sup>  
<sup>1</sup>*University of Toronto, Canada*; <sup>2</sup>*Thunder Bay Research Institute, Canada*

**M09-61 Key Physical Factors for DoI-Compensated ToF PET: Understanding Scintillation-Photodetector Features**

Y. C. Spanoudaki, C. S. Levin  
*Stanford University & Molecular Imaging Program at Stanford (MIPS), USA*

**M09-66 A Study of Transit Time Variation Correction in the PMT with a Gain Programmable Voltage Divider for the TOF PET**

C. Wang, H. Li, S. An, Y. Zhang, H. Baghaei, R. A. Ramirez, S. Liu, W.-H. Wong  
*University of Texas, MD Anderson Cancer Center, USA*

**M09-71 First Performance Studies of a Prototype SiPM PET Scanner**

F. R. Schneider<sup>1</sup>, A. B. Mann<sup>2</sup>, I. Konorov<sup>2</sup>, S. Paul<sup>2</sup>, G. Delso<sup>1</sup>, J. Pulko<sup>1</sup>, S. I. Ziegler<sup>1</sup>  
<sup>1</sup>*Technische Universität München, Klinikum rechts der Isar, Nuklearmedizinische Klinik und Poliklinik, Germany*; <sup>2</sup>*Technische Universität München, Germany*

**M09-76 Non-Invasive Determination of Input Function using Wrist PET Scanner**

B. Ravindranath<sup>1</sup>, S. Junnarkar<sup>2</sup>, S. Stoll<sup>2</sup>, M. L. Purschke<sup>2</sup>, S. H. Maramraju<sup>1</sup>, P. Vaska<sup>2</sup>, C. Woody<sup>2</sup>, D. Schlyer<sup>2</sup>  
<sup>1</sup>*Stony Brook University, USA*; <sup>2</sup>*Brookhaven National Laboratory, USA*

**M09-81 Investigating a re-configurable PET system design concept**

C.-M. Kao, H. Kim, C.-T. Chen

*The University of Chicago, USA*

**M09-86 Scatter Fraction Performance Tests for Positron Imaging System with Dual Plane Geometry**

Y.-C. Ni, T.-H. Tsai, M.-L. Jan, Z.-K. Lin, S.-J. Yu, F.-P. Tseng, S.-L. Hsu  
*Institute of Nuclear Energy Research, Taiwan*

**M09-91 Theoretical Yields for Radioactive Isotopes Production for Proton Induced Reactions on Natural and Enriched Molybdenum Targets**

A. M. Celler, *University of British Columbia, Canada*  
On behalf of the Tc-99m Network

**M09-96 Development of SPECT Imaging Capability on LabPET-8**

R. Yao<sup>1</sup>, J.-F. Beaudoin<sup>2</sup>, J. Cadorette<sup>3</sup>, Z. Cao<sup>2</sup>, X. Deng<sup>1</sup>, T. Ma<sup>4</sup>, R. Lecomte<sup>2</sup>  
<sup>1</sup>*State University of New York at Buffalo, USA*; <sup>2</sup>*Université de Sherbrooke, Canada*; <sup>3</sup>*Gamma Medica Ideas (GM-I), Inc., Canada*; <sup>4</sup>*Tsinghua University, China*

**M09-101 SPECT Imaging Using Single Isotope Corrections**

O. Amir, M. Kogan, L. Beilin, *GE Healthcare, Israel*

**M09-106 CZT Detector Configuration Impact on SPECT Image Quality**

K. Wangerin, Y. Du, E. Asma, J. Uribe, F. Jansen, R. Manjeshwar  
*GE Global Research Center, USA*

**M09-111 Evaluation of a 25-511keV List Mode Readout System for a Large Field-of-View Gamma Camera**

J. L. Villena<sup>1</sup>, G. Tapias<sup>1</sup>, R. Kreuger<sup>1</sup>, F. J. Beekman<sup>1,2,3</sup>  
<sup>1</sup>Section of Radiation Detection and Medical Imaging, Applied Sciences, Delft University of Technology, The Netherlands; <sup>2</sup>Image Sciences Institute and Rudolf Magnus Institute, University Medical Center Utrecht, The Netherlands; <sup>3</sup>Molecular Imaging Laboratories, The Netherlands

**M09-116 Whole-Body PET-MR Imaging System Initial Calibration Results**

J. J. Griesmer, J. Futey, N. Ojha, M. Morich  
*Philips Healthcare, USA*

**M09-121 Attenuation Correction of the Head Coils in MR-BrainPET Scanners**

E. Rota Kops, L. Tellmann, J. Scheins, C. Weirich, N. J. Shah, H. Herzog  
*Research Center Juelich, Germany*

**M09-126 Cardiac and Respiratory Gating for a Small Animal CT/SPECT System**

D. J. Pole, K. Popovic, M. B. Williams  
*University of Virginia, United States*

**M09-131 Performance of Reconstruction and Processing Techniques for Dense Full-Spectrum X-Ray CT**

B. J. Gonzales, D. Lalush  
*North Carolina State University, USA*

**M09-136 Comparing CT Reconstruction Algorithms Regarding Cone-Beam Artifacts Performance**

C. Maass<sup>1</sup>, F. Dennerlein<sup>2</sup>, F. Noo<sup>3</sup>, M. Kachelriess<sup>1</sup>  
<sup>1</sup>Institute of Medical Physics, Germany; <sup>2</sup>Siemens AG, Germany; <sup>3</sup>University of Utah, USA

**M09-141 Optimization of a Contrast Enhanced Micro-CT in a Hybrid Fluorescence / X-Ray Tomography System for Small Animal Imaging**

M. Brambilla<sup>1</sup>, V. Rebuffel<sup>1</sup>, M. Mronz<sup>2</sup>, H. Bruenner<sup>2,3</sup>  
<sup>1</sup>CEA, LETI, France; <sup>2</sup>CT Imaging GmbH, Germany; <sup>3</sup>University of Erlangen-Nuremberg, Germany

**M09-146 Direct Measurement of Mammographic X-Ray Spectra with a Digital CdTe Detection System**

L. Abbene<sup>1</sup>, G. Gerardi<sup>1</sup>, S. Del Sordo<sup>2</sup>, F. Principato<sup>1</sup>, G. Raso<sup>1</sup>  
<sup>1</sup>Dipartimento di Fisica e Tecnologie Relative, Università di Palermo, Italy; <sup>2</sup>INAF/IASF, Italy

**M09-151 Linear Coil Array Simulation-Based Evaluation of Filtering and Polynomial Fit Effect According to the Spatial Resolution for Sensitivity Map Using SENSE Reconstruction**

D. H. Lee<sup>1</sup>, C. P. Hong<sup>1</sup>, M. W. Lee<sup>2</sup>, S. H. Kim<sup>2</sup>, B. S. Han<sup>1</sup>  
<sup>1</sup>Yonsei University, Korea; <sup>2</sup>Advanced Imaging Laboratory Cooperation, Korea

**M09-156 Dose Reduction in Time-of-Flight 82Rb-PET Cardiac Imaging**

P. Olivier, J. A. Kolthammer  
*PHILIPS HEALTHCARE, UNITED STATES*

**M09-161 CZT Based Molecular Imaging System for Breast and Small Organs**

I. M. Blevis, E. Engelberg, N. Wartski, T. Rafaeli, O. Zak  
*General Electric Healthcare, Israel*

**M09-166 Low dose X-ray phase contrast imaging sensitive to phase effects in 2-D**

F. Krejci, J. Jakubek, M. Kroupa  
*Czech Technical University in Prague, Czech Republic*

**M09-171 Thermal Regulation for a Imm<sup>3</sup> Resolution PET Camera Based on Avalanche Photodiodes: Design, Simulation and Experimental Verification**

J. Zhai<sup>1,2</sup>, A. Vandenbroucke<sup>2</sup>, C. S. Levin<sup>2,1</sup>  
<sup>1</sup>Stanford University, US; <sup>2</sup>Stanford School of Medicine, US

**M09-176 Spatial Resolution Performance Evaluation of a Monolithic Crystal PET Detector with Cramer-Rao Lower Bound**

X. Li, W. C. J. Hunter, T. K. Lewellen, R. S. Miyaoaka  
*University of Washington, USA*

**M09-181 Properties of a CdTe Medipix Hexa Detector Designed for Small Animal Imaging**

T. Koenig<sup>1</sup>, A. Zwerger<sup>2</sup>, P. Schuenke<sup>1</sup>, M. Zuber<sup>1</sup>, M. Steinke<sup>1</sup>, S. Nill<sup>1</sup>, A. Fauler<sup>2</sup>, M. Fiederle<sup>2</sup>, U. Oelfke<sup>1</sup>  
<sup>1</sup>German Cancer Research Center, Germany; <sup>2</sup>Freiburg Materials Research Center, Germany

**M09-186 Characterization of low energy Lu background on continuous LYSO blocks**

C. Lois<sup>1</sup>, P. Aguiar<sup>2</sup>, B. Couce<sup>1</sup>, A. Iglesias<sup>1</sup>  
<sup>1</sup>Universidad de Santiago de Compostela. Espaa, Spain; <sup>2</sup>Fundacion IDICHUS, Complejo Hospitalario Universitario de Santiago de Compostela, Spain

**M09-191 A Positron Projection Imager for Whole-Body Mouse Imaging**

J. Seidel<sup>1,2</sup>, W. Xi<sup>1,2</sup>, J. Kakareka<sup>3</sup>, T. Pohida<sup>3</sup>, M. V. Green<sup>1,2</sup>, P. L. Choyke<sup>1</sup>  
<sup>1</sup>National Cancer Institute/NIH, USA; <sup>2</sup>SAIC-Frederick, USA; <sup>3</sup>CIT/NIH, USA

**M09-196 Development of a pixelated GSO gamma camera system with parallel hole collimators for single photon imaging**

S. Yamamoto, Kobe City College of Technology, Japan; H. Watabe, M. Imaizumi, E. Shimosegawa, J. Hatazawa, Osaka University Graduate School of Medicine, Japan

**M09-201 Development of a Simplified Readout for a Compact Gamma Camera Based on 2x2 H8500 Multi-Anode PSPMT Array**

Y. Qi, M. Liu, C. Zhao, J. Song, Shanghai Institute of Applied Physics, China; H. Zhang, Deer Valley Cancer Center, USA

**M09-206 A Multi-Wire Proportional Counter for Measurement of Positron-Emitting Radionuclides During on-Line Blood Sampling**

H. T. Sipila, Turku University Hospital, Finland; A. Roivainen, University of Turku, Finland; S.-J. Heselius, Abo Akademi University, Finland

**M09-211 Comparison of the Quantification Accuracy and the Partial Volume Effect of Three State-of-the-Art Small Animal PET Scanners: the microPET Focus 120, the Inveon Dedicated PET and the Inveon MultiModality PET/CT Scanner**

J. G. Mannheim<sup>1</sup>, M. S. Judenhofer<sup>1</sup>, J. Tillmanns<sup>2</sup>, T. Kull<sup>3</sup>, S. N. Reske<sup>3</sup>, D. Stiller<sup>2</sup>, B. J. Pichler<sup>1</sup>

<sup>1</sup>Laboratory for Preclinical Imaging and Imaging Technology of the Werner Siemens-Foundation, University of Tuebingen, Germany; <sup>2</sup>Drug Discovery Support, Boehringer Ingelheim Pharma GmbH & Co. KG, Germany; <sup>3</sup>University of Ulm, Germany

**M09-216 Characterization of Image Quality as a Function of Reconstruction Algorithms and Parameter Settings in a Siemens Inveon Small-Animal PET Scanner Using the NEMA NU 4-2008 Standards**

E. P. Visser<sup>1</sup>, J. A. Disselhorst<sup>1</sup>, M. G. J. T. B. van Lier<sup>2</sup>, P. Laverman<sup>1</sup>, G. M. De Jong<sup>1</sup>, W. J. G. Oyen<sup>1</sup>, O. C. Boerman<sup>1</sup>

<sup>1</sup>Radboud University Nijmegen Medical Centre, the Netherlands;

<sup>2</sup>University of Twente, the Netherlands

**M09-221 Assessment of X-Ray Scatter for the Micro-CT Subsystem of the FLEX Triumph™ Preclinical PET-CT Scanner**

D. Gutierrez, H. Zaidi

PET Instrumentation & Neuroimaging Laboratory, Switzerland

**M09-226 Analysis of the Minimum Detectable Activity of a Small Animal Scanner**

I. Lajtos<sup>1</sup>, M. Emri<sup>1</sup>, S. A. Kis<sup>1</sup>, G. Opposits<sup>1</sup>, J. Molnar<sup>2</sup>, L. Balkay<sup>1</sup>

<sup>1</sup>Institute of Nuclear Medicine, University of Debrecen, Hungary;

<sup>2</sup>Institute of Nuclear Research of the Hungarian Academy of Sciences, Hungary

**M09-231 Iterative Reconstruction for Circular Cone-Beam CT with an Offset Flat-Panel Detector**

E. Hansis, J. Bredno, D. Sowards-Emmerd, L. Shao

Philips Healthcare, USA

**M09-236 Anisotropic Total Variation for Limited-Angle CT Reconstruction**

X. Jin<sup>1,2</sup>, L. Li<sup>1,2</sup>, Z. Chen<sup>1,2</sup>, L. Zhang<sup>1,2</sup>, Y. Xing<sup>1,2</sup>

<sup>1</sup>Tsinghua University, China; <sup>2</sup>Ministry of Education, China

**M09-241 A Filter Model to Analyze Reconstruction Artifacts in Perfusion C-arm CT**

A. Fieselman<sup>1,2</sup>, F. Dennerlein<sup>2</sup>, Y. Deuerling-Zheng<sup>2</sup>, J. Boese<sup>2</sup>, R. Fahrig<sup>3</sup>, J. Hornegger<sup>1</sup>

<sup>1</sup>University of Erlangen-Nuremberg, Germany; <sup>2</sup>Siemens AG, Germany;

<sup>3</sup>Stanford University, USA

**M09-246 A Curve-Filtered FDK Reconstruction for Circular Cone-Beam CT**

L. Li, Y. Xing, Z. Chen, L. Zhang, K. Kang, Y. Xiao

Tsinghua University, China

**M09-251 A Cache-Aware GPU Memory Scheduling Scheme for CT Reconstruction Back-Projection**

Z. Zheng, K. Mueller, Stony Brook University, USA

**M09-256 Comparison of List-Mode and DIRECT Approaches for Time-of-Flight PET Reconstruction**

M. E. Daube-Witherspoon, S. Matej, M. E. Werner, S. Surti,

J. S. Karp

University of Pennsylvania, USA

**M09-261 Evaluation of Direct 4D Parametric Reconstruction with Low Count Human PET Data**

J. Yan, B. Planeta-Wilson, J.-D. Gallezot, R. E. Carson

PET center, Yale University, USA

**M09-266 Effect of Edge Artifact on Quantification of Positron Emission Tomography**

B. Bai, P. D. Esser, Columbia University, U.S.A

**M09-271 Compensation for Intra-Crystal Count Distribution in PET Image Reconstruction**

S. Stute, D. Benoit, N. Rehfeld, I. Buvat

IMNC IN2P3 CNRS, France

**M09-276 Cramer-Rao Bound for Gated PET**

C. Cloquet, Universit Libre de Bruxelles, Belgium; M. Defrise, Vrije

Universiteit Brussel, Belgium

**M09-281 GPU Implementation of List-Mode DRAMA for Real-Time OpenPET Image Reconstruction**

S. Kinouchi<sup>1,2</sup>, T. Yamaya<sup>2</sup>, E. Yoshida<sup>2</sup>, H. Tashima<sup>2</sup>, H. Kudo<sup>3</sup>,

M. Suga<sup>1</sup>

<sup>1</sup>Chiba University, Japan; <sup>2</sup>National Institute of Radiological Sciences,

Japan; <sup>3</sup>Tsukuba University, Japan

**M09-286 Image Quality and Convergence Properties of MLEM**

H. Wiczorek

Philips Technology Research Laboratories, Germany

**M09-291 Lower Variance FBP Image Reconstruction via New Filter Families**

J. Verhaeghe, A. J. Reader

Montreal Neurological Institute, McGill University, Canada

**M09-296 View Sampling Requirements for Cardiac SPECT using Iterative Reconstruction**

Y.-S. Li, H. Sabet, M. Rozler, W. Chang

Rush University Medical Center, USA

**M09-301 Derivation of the System Matrix for an Animal SPECT Scanner with Rotational Collimator and Stationary Ring Detector**

T. Ma<sup>1</sup>, X. Deng<sup>2</sup>, R. Lecomte<sup>3</sup>, R. Yao<sup>2</sup>

<sup>1</sup>Tsinghua University, China; <sup>2</sup>University at Buffalo, SUNY, USA;

<sup>3</sup>Universit de Sherbrooke, Canada

**M09-306 A Common Approach to Image Reconstruction for Different Applications of Compton Cameras**

S. Schöne<sup>1</sup>, G. Shakirin<sup>2</sup>, T. Kormoll<sup>2</sup>, C.-M. Herbach<sup>3</sup>, G. Pausch<sup>3</sup>,

W. Enghardt<sup>2</sup>

<sup>1</sup>Research Center Dresden-Rossendorf, Germany; <sup>2</sup>OncoRay - Center for

Radiation Research in Oncology, Germany; <sup>3</sup>ICx Technologies, Germany

**M09-311 Comparison Between Reconstruction-Incorporated Super-Resolution and Super-Resolution as a Post-Processing Step for Motion Correction in PET**

D. Wallach<sup>1</sup>, F. Lamare<sup>2</sup>, C. Roux<sup>1</sup>, D. Visvikis<sup>1</sup>

<sup>1</sup>INSERM, LaTIM U650, France; <sup>2</sup>CHU Bordeaux, France

**M09-316 Effect of Motion-Estimation Error on Three 4D PET Image Reconstruction Methods with Respiratory Motion Compensation**

S. Chen, B. M. W. Tsui

Johns Hopkins Medical Institutions, U.S.

**M09-321 Correction of Patient Movement with a Phase-Only Correlation Method in a SPECT Study**

R. Ando, K. Ogawa

Graduate School of Engineering, Hosei University, Japan

**M09-326 Correction for the Partial Volume Effect in Cardiac Mouse PET Imaging Using a 2D and 3D Model**

T. Dumouchel, R. A. deKemp

University of Ottawa Heart Institute, Canada

**M09-331 Reduction of Random Coincidences in Small Animal PET Using Artificial Neural Networks**

E. Fuster-Garcia<sup>1</sup>, J. F. Oliver<sup>2</sup>, J. Cabello<sup>2</sup>, S. Tortajada<sup>3</sup>, M. Rafecas<sup>2</sup>  
<sup>1</sup>Universitat Internacional Valenciana, Spain; <sup>2</sup>Instituto de Fisica Corpuscular (Universidad de Valencia / CSIC), Spain; <sup>3</sup>Universitat Politecnica de Valencia, Spain

**M09-336 Uniformity Correction Using Non-Uniform Floods**

F. P. Jansen<sup>1</sup>, L. Tsukerman<sup>2</sup>, L. Volokh<sup>2</sup>, I. Blevis<sup>2</sup>, J. Hugg<sup>1</sup>, J.-P. Bouhnik<sup>2</sup>  
<sup>1</sup>GE Global Research, USA; <sup>2</sup>GE Healthcare, Israel

**M09-341 Scatter Correction in 3D PET Using STIR**

I. Polycarpou<sup>1</sup>, K. Thielemans<sup>2</sup>, R. Manjeshwar<sup>3</sup>, P. K. Marsden<sup>1</sup>, C. Tsoumpas<sup>1</sup>  
<sup>1</sup>King's College London, UK; <sup>2</sup>General Electric, UK; <sup>3</sup>General Electric, US

**M09-346 Is SPECT or CT Based Attenuation Correction More Quantitatively Accurate for Dedicated Breast SPECT Acquired with Non-Traditional Trajectories?**

K. L. Perez, P. Madhav, M. P. Tornai  
 Duke University, USA

**M09-351 Adaptive Beam Hardening Correction Based on Projection Data Consistency Condition**

S. Tang, X. Mou, Q. Xu, Y. Zhang, Xi'an Jiaotong University, P.R.China; H. Yu, Virginia Tech., USA

**M09-356 A Physiological Model for Representation of Arterial Tracer Concentration Time Courses in Dynamic Imaging Studies with CT, PET and MR**

N. Fitzgerald<sup>1</sup>, F. O'Sullivan<sup>1</sup>, J. Huang<sup>1</sup>, M. Muzi<sup>2</sup>, G. S. Newman<sup>3</sup>, J. D. Unadkat<sup>2</sup>, T. L. Richards<sup>2</sup>, K. A. Krohn<sup>2</sup>  
<sup>1</sup>University College Cork, Ireland; <sup>2</sup>University of Washington, USA; <sup>3</sup>Albert Einstein Medical Center, USA

**M09-361 Evaluation of Equivalence of Upslope Method-Derived Myocardial Perfusion Index and Transfer Constant Based on Two-Compartment Tracer Kinetic Model for CT Quantitative Myocardial Perfusion**

T. Ichihara<sup>1</sup>, R. T. George<sup>2</sup>, Y. Ikeda<sup>3</sup>, J. A. C. Lima<sup>2</sup>, A. C. Lardo<sup>2</sup>  
<sup>1</sup>Fujita Health University School of Health Science, Japan; <sup>2</sup>Johns Hopkins University School of Medicine, USA; <sup>3</sup>Toshiba Medical Systems Corporation, Japan

**M09-366 Machine Learning for Very Early Alzheimer's Disease Diagnosis; a 18F-FDG and PiB PET Comparison**

I. A. Illan, J. M. Gorriz, J. Ramirez, R. Chavez, F. Segovia, M. Lopez, D. Salas-Gonzalez, P. Padilla, C. G. Puntonet  
 University of Granada, Spain

**M09-371 Analysis of Asymmetries in Ictal and Inter-Ictal SPECT Images for the Localization of Epileptic Foci**

D. Merhof, University of Konstanz, Germany; C. Mathers, T. Wright, Siemens Molecular Imaging, UK; T. Kuwert, University of Erlangen-Nuremberg, Germany; G. Platsch, Siemens Molecular Imaging EU, Germany

**M09-376 A Multi-Observation Fusion Approach for Patient Follow-up Using PET/CT**

S. David<sup>1</sup>, M. Hatt<sup>1</sup>, N. Bousson<sup>1</sup>, P. Fernandez<sup>2</sup>, M. Allard<sup>2</sup>, O. Barrett<sup>2</sup>, D. Visvikis<sup>1</sup>  
<sup>1</sup>U650 INSERM, Laboratoire de Traitement de l'Information Medicale (LaTIM), France; <sup>2</sup>Service de Medecine Nucleaire, France

**M09-381 Detecting Visual Differences in Reconstructed Images Using a Region-Based Test for Outliers**

G. V. Gerganov, K. K. Mitev, Sofia University, Bulgaria; C. R. Schmidtlein, H. Kang, A. S. Kirov, Memorial Sloan-Kettering Cancer Center, USA; I. Kawrakow, Siemens OCS, Germany

**M09-386 Closed-Form Kinetic Parameter Estimation Solution to Truncated Emission Data Problem**

G. L. Zeng, University of Utah, USA; G. T. Gullberg, Lawrence Berkeley National Laboratory, USA

**M09-391 Numerical Observer for Cardiac-Motion**

T. Marin<sup>1</sup>, P. H. Pretorius<sup>2</sup>, Y. Yang<sup>1</sup>, M. N. Wernick<sup>1</sup>, J. G. Brankov<sup>1</sup>  
<sup>1</sup>Illinois Institute of Technology, USA; <sup>2</sup>University of Massachusetts Medical School, USA

**M09-396 Non-Rigid Full Torso Respiratory Motion Correction of SPECT Studies**

J. Dey, M. A. King  
 University of Massachusetts Medical School, USA

**M09-401 Motion Incorporated Partial Volume Correction: Methodology and Validation**

O. G. Rousset, A. Rahmim, D. F. Wong  
 Johns Hopkins University, USA

**M09-406 Image Registration and Perfusion Imaging: Application to Dynamic Circular Cardiac CT**

A. A. Isola<sup>1</sup>, H. Schmitt<sup>1</sup>, U. van Stevendaal<sup>1</sup>, P. G. Begemann<sup>2</sup>, M. Grass<sup>1</sup>  
<sup>1</sup>Philips Research Europe - Hamburg, Germany; <sup>2</sup>University Hospital Hamburg-Eppendorf, Germany

**M09-411 Longitudinal Registration of Liver PET Scans Using Four Phase CT**

W. Zhu, R. M. Leahy, P. S. Conti, Q. Li  
 University of Southern California, United States

**M09-416 Binding of [18F]fallypride in the Mouse Brain: Test-Retest and Effects of Registration.**

M. A. Bahri, A. Geuzaine, G. Warnock, D. Goblet, E. Tirelli, C. Lemaire, A. Seret, A. Luxen, A. Plenevaux  
 University of Liege, Belgium

**M09-421 Unsupervised Segmentation of MR Images for Brain Dock Examinations**

K. Sato<sup>1</sup>, S. Kadowaki<sup>2</sup>, H. Madokoro<sup>1</sup>, M. Ito<sup>3</sup>, A. Inugami<sup>4</sup>  
<sup>1</sup>Akita Prefectural University, Japan; <sup>2</sup>SmartDesign Co., Ltd, Japan; <sup>3</sup>The University of Tokushima, Japan; <sup>4</sup>Akita Kumiai General Hospital, Japan

**M09-426 Segmentation of Abnormal Liver Using Adaptive Threshold in Abdominal CT Images**

W. Seong, J. W. Park  
 Chungnam National University, South KOREA

**M09-431 Predicting the Variance of ML Reconstructions with Body Contour Constraint for Multi-Pinhole SPECT**

L. Zhou, K. Vunckx, J. Nuyts  
 Nuclear Medicine K.U.Leuven, Belgium

**M09-436 Scan Time Reduction with Advanced PET Reconstruction: Preserving Lesion Detection Performance**

D. J. Kadmas, T. J. Bradshaw, C. J. Seegmiller, University of Utah, USA; M. E. Casey, J. J. Hamill, Siemens Medical Solutions USA, USA



## RTSD Poster Presentations

**M09-441 Adapting Dose Prescription to Tumour Heterogeneities: Influence of the Functional Contrast**

A. Le Maitre<sup>1</sup>, M. Hatt<sup>1</sup>, C. Cheze Le Rest<sup>2</sup>, O. Pradier<sup>2</sup>, D. Visvikis<sup>1</sup>  
<sup>1</sup>INSERM U650, LaTIM, France; <sup>2</sup>CHU Morvan, France

**M09-446 The New XCAT Series of Digital Phantoms for Multi-Modality Imaging Research**

W. P. Segars, G. M. Sturgeon, *Duke University, USA*; D. J. Tward, J. T. Ratnanather, M. I. Miller, B. M. W. Tsui, *Johns Hopkins University, USA*

**M09-451 qGATE: a New Graphical Simulation Client-Server Application Based on GATE**

X. Li, W. Zhao, *University of Miami, USA*

**M09-456 Validation of PeneloPET Positron Range Estimations**

J. Cal-Gonzalez<sup>1</sup>, J. Lopez-Herraiz<sup>1</sup>, S. Espana<sup>2</sup>, M. Desco<sup>3,4,5</sup>, J. J. Vaquero<sup>3</sup>, J. M. Udias<sup>1</sup>  
<sup>1</sup>Universidad Complutense Madrid, Spain; <sup>2</sup>Massachusetts General Hospital and Harvard Medical School, USA; <sup>3</sup>Hospital General Universitario Gregorio Maraon, Spain; <sup>4</sup>Instituto de Salud Carlos III, Spain; <sup>5</sup>Universidad Carlos III, Spain

**M09-461 Monte Carlo Studies on a Novel PET Block Detector Design Scheme with Cross-Shape PMT Layout**

Q. Wei<sup>1,2</sup>, Y. Liu<sup>1,2</sup>, T. Ma<sup>1,2</sup>, Y. Xia<sup>1,2</sup>, S. Wang<sup>1,2</sup>, Z. Wu<sup>1,2</sup>, Y. Jin<sup>1,2</sup>  
<sup>1</sup>Tsinghua University, China; <sup>2</sup>Ministry of Education, China

**M09-466 Quantification of Inter-Crystal Scatter and Penetration Events in GE Discovery RX PET/CT Scanner: a Monte Carlo Simulation**

N. Zeraatkar<sup>1</sup>, M. R. Ay<sup>1</sup>, S. Sarkar<sup>1</sup>, P. Geramifar<sup>1</sup>, A. Rahmim<sup>2</sup>  
<sup>1</sup>Tehran University of Medical Sciences, Iran; <sup>2</sup>Johns Hopkins Medical Institutions, USA

**M09-471 Fast System Matrix Generation Using the Detector Response Function Model on Fermi GPUs**

T. Kuestner, P. Pedron, J. Schirmer, J. Weidendorfer, S. I. Ziegler  
*Technische Universitaet Muenchen, Germany*

**M09-476 Reduction in SPECT Bone Imaging Scan Times Through Collimator Design and Accurate System Modeling**

J. Uribe<sup>1</sup>, Y. Shrem<sup>2</sup>, J. Sachs<sup>2</sup>, E. Asma<sup>1</sup>, R. M. Manjeshwar<sup>1</sup>, A. Ganin<sup>1</sup>  
<sup>1</sup>General Electric, USA; <sup>2</sup>GENERAL ELECTRIC, Israele

**M09-481 Optimization of Energy Windows for Dual-Isotope Simultaneous-Acquisition Myocardial Perfusion SPECT Using Ideal Observer and Realistic Background Variations.**

M. Ghaly, X. He, Y. Du, G. Fung, E. C. Frey  
*Johns Hopkins University, USA*

**M09-486 Proton Energy Calibration for Thick Targets**

O. Yevseyeva, J. de Assis, *Rio de Janeiro State University, Brazil*; I. Evseev, H. Schelin, S. Paschuk, E. Milhoretto, J. Setti, V. Denyak, *Federal University of Technology Paran, Brazil*; K. Diaz, *Centro de Aplicaciones Tecnologicas y Desarrollo Nuclear, Cuba*; J. Hormaza, *State University of Sao Paulo - UNESP, Brazil*; R. Lopes, *Federal University of Rio de Janeiro - UFRJ, Brazil*

**R14: RTSD Poster II (Repeat of R05)**

Thursday, Nov. 4

14:00-15:15

Exhibition Hall B

Session Chair: Ernesto Dieguez, *Spain*



Fri, Nov. 5	07:30	08:00	08:30	09:00	09:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30
Ballroom A				M11: Application-Specific Imaging Instrumentation																M15: Pre-Clinical and High Resolution Imaging Instrumentation							
Ballroom B				M12: Data Corrections for PET Imaging																							
Ballroom C																											
Ballroom E				Workshop: <sup>3</sup> He Alternatives for Neutron Detection				Workshop: <sup>3</sup> He Alternatives for Neutron Detection												Workshop: <sup>3</sup> He Alternatives for Neutron Detection							
Ballroom F																											
Ballroom G																											
Room 301A									R17: Characterization of CZT III																		
Room 301B									R16: Semiconductor Materials																		
Room 301D																											
Room 301E																											

Fri, Nov. 5	07:30	08:00	08:30	09:00	09:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30
Lecture Hall		MIC Refresher Course																									
Room 200A																											
Room 200B																											
Room 200C																											
Room 200D																											
Room 200E																											
Exhibit Hall B									M13: MIC Poster 2											M14: MIC Poster 3							
Off-Site Events																										MIC Dinner The Foundry	

## MIC Oral Presentations

## M11: Application-Specific Imaging Instrumentation

Friday, Nov. 5 08:30-10:00 Ballroom A

Session Chairs: Stan Majewski, *West Virginia University, USA*  
Robert S. Miyaoka, *University of Washington, USA*

**M11-1 (08:30) TOPEM: a Multimodality Probe (PET TOF, MRI and MRS) for Diagnosis and Follow up of the Prostate Cancer**  
F. Garibaldi<sup>1</sup>, R. De Leo<sup>2</sup>, A. Ranieri<sup>2</sup>, F. Loddo<sup>2</sup>, M. Floresta<sup>2</sup>, C. Tamma<sup>2</sup>, A. Gabrielli<sup>3</sup>, F. Giorgi<sup>3</sup>, R. Fonte<sup>4</sup>, F. Librizzi<sup>4</sup>, F. Cusanno<sup>1</sup>, P. Musico<sup>5</sup>, R. Perrino<sup>6</sup>, P. Finocchiaro<sup>7</sup>, L. Cosentino<sup>7</sup>, A. Pappalardo<sup>7</sup>, F. Meddi<sup>1</sup>, B. Maraviglia<sup>8</sup>, F. Giobe<sup>8</sup>, T. Gili<sup>8</sup>, N. Clinthorne<sup>9</sup>, S. Huhss<sup>9</sup>, S. Majewski<sup>9</sup>, M. Lucentini<sup>10</sup>, M. Gricia<sup>10</sup>, F. Giuliani<sup>10</sup>

<sup>1</sup>*INFN Roma1, Italy*; <sup>2</sup>*INFN Bari, Italy*; <sup>3</sup>*INFN Bologna, Italy*; <sup>4</sup>*INFN Catania, Italy*; <sup>5</sup>*INFN Genova, Italy*; <sup>6</sup>*INFN Lecce, Italy*; <sup>7</sup>*INFN LNS, Italy*; <sup>8</sup>*University of Rome La Sapienza, Italy*; <sup>9</sup>*University of Michigan, USA*; <sup>10</sup>*Istituto Superiore di Sanita', Italy*

**M11-2 (08:45) Near-Field Collimation for Dose Reduction in Molecular Breast Imaging**

D. J. Wagenaar<sup>1</sup>, M. K. O'Connor<sup>2</sup>, A. Weinmann<sup>2</sup>, C. B. Hruska<sup>2</sup>, R. A. Moats<sup>3</sup>, J. Li<sup>1</sup>, K. B. Parnham<sup>1</sup>, J. W. Hugg<sup>1</sup>, S. Chowdhury<sup>1</sup>, B. E. Patt<sup>1</sup>

<sup>1</sup>*Gamma Medica-Ideas, Inc., USA*; <sup>2</sup>*Mayo Clinic, USA*; <sup>3</sup>*Children's Hospital of Los Angeles, USA*

**M11-3 (09:00) Phase Sensitive X-Ray Imaging: Towards Medical Applications**

C. Kottler<sup>1</sup>, V. Revol<sup>1</sup>, R. Kaufmann<sup>1</sup>, C. Maake<sup>2</sup>, C. Urban<sup>1</sup>

<sup>1</sup>*CSEM SA, Switzerland*; <sup>2</sup>*University of Zurich, Switzerland*

**M11-4 (09:15) X-Ray Fluorescence Emission Tomography (XFET) Towards 3D Mapping of Trace-Metals in Biological Samples with a Bench-Top X-Ray Source**

L.-J. Meng, G. Fu, N. Li, *University of Illinois at Urbana-Champaign, USA*; P. La Riviere, *University of Chicago, USA*

**M11-5 (09:30) A New Approach to Disambiguate Fiber Tract Orientations Determined with 3D-PLI**

M. Axer<sup>1,2</sup>, B. Eiben<sup>1</sup>, D. Graessel<sup>1</sup>, J. Dammers<sup>1</sup>, M. Kleiner<sup>1</sup>, T. Huetz<sup>1</sup>, K. Amunts<sup>1,3</sup>, U. Pietrzyk<sup>1,2</sup>

<sup>1</sup>*Research Centre Juelich, Germany*; <sup>2</sup>*University of Wuppertal, Germany*; <sup>3</sup>*RWTH Aachen, Germany*

**M11-6 (09:45) Hardware Setup for the Next Generation of a 3D Ultrasound Computer Tomography**

H. E. H. Gemmeke, N. V. Ruiters, M. Zapf, M. Birk, L. Berger, A. Menshikov, D. Tchernikhovski, G. Goebel  
*Karlsruhe Institute of Technology, Germany*

## M12: Data Corrections for PET Imaging

Friday, Nov. 5 08:30-10:00 Ballroom B&amp;C

Session Chairs: Paul E. Kinahan, *University of Washington, USA*  
Osama R. Mawlawi, *MD Anderson Cancer Center, USA*

**M12-1 (08:30) A Generic Respiratory Motion Model for Motion Correction in PET/CT**

H. Fayad<sup>1</sup>, T. Pan<sup>2</sup>, C. Roux<sup>1,3</sup>, D. Visvikis<sup>1</sup>

<sup>1</sup>*INSERM U650, LaTIM, France*; <sup>2</sup>*M.D. Anderson Cancer Center, USA*; <sup>3</sup>*Institut Telecom - Telecom Bretagne, France*

**M12-2 (08:45) Statistical Motion Modelling of the Thorax Applied to Respiratory Gated FDG PET**

R. Barnett<sup>1,2,3</sup>, S. Meikle<sup>1,2</sup>, R. Fulton<sup>1,2,3,4</sup>

<sup>1</sup>*Faculty of Health Sciences, Sydney University, Australia*; <sup>2</sup>*Brain & Mind Research Institute, Sydney University, Australia*; <sup>3</sup>*Westmead Hospital, Australia*; <sup>4</sup>*School of Physics, Sydney University, Australia*

**M12-3 (09:00) Respiratory Motion Modelling and Prediction Using Probability Density Estimation**

M. R. Alnowami<sup>1</sup>, E. Lewis<sup>1</sup>, M. Guy<sup>2</sup>, K. Wells<sup>1</sup>

<sup>1</sup>*University of Surrey, UK*; <sup>2</sup>*Medway Maritime Hospital, UK*

**M12-4 (09:15) Evaluation of the Accuracy and Robustness of a Motion Correction Algorithm for 4D PET Using a Novel Phantom Measurement Approach**

S. D. Wollenweber, *GE Healthcare, USA*; G. Gopalakrishnan, A. Roy, *GE Global Research, India*; R. Manjeshwar, *GE Global Research, USA*; K. Thielemans, *Hammersmith Imanet, GB*

**M12-5 (09:30) Investigation of Motion-Corrected VOI Reconstruction for Freely Moving Small Animals with microPET**

M. Akhtar<sup>1</sup>, A. Kyme<sup>1</sup>, V. Zhou<sup>1</sup>, R. Fulton<sup>1,2</sup>, W. Lehnert<sup>1</sup>,

W. N. P. Man<sup>1</sup>, S. Meikle<sup>1</sup>

<sup>1</sup>*The University of Sydney, Australia*; <sup>2</sup>*Westmead Hospital, Australia*

**M12-6 (09:45) TOF Scatter Estimation Through TOF True Distribution Generation from Non-TOF Image Reconstruction**

Y. Y. Panin, *Siemens Medical Solutions, USA*

## M13: MIC Posters 2

Friday, Nov. 5 10:30-12:00 Exhibit Hall B

See listings in the MIC Poster section.

## M14: MIC Posters 3

Friday, Nov. 5 13:30-15:30 Exhibit Hall B

See listings in the MIC Poster section.

## M15: Pre-Clinical and High Resolution Imaging Instrumentation

Friday, Nov. 5 16:00-18:00 Ballroom B&amp;C

Session Chairs: Richard Laforest, *Washington University, School of Medicine, USA*  
Freek J. Beekman, *Delft University of Technology, Netherlands*

**M15-1 (16:00) Sub-millimeter SPECT/PET with clustered pinholes: first experimental results**

M. C. Goorden<sup>1</sup>, F. van der Have<sup>1,2</sup>, R. Kreuger<sup>1</sup>, F. J. Beekman<sup>1,3,2</sup>

<sup>1</sup>*Delft University of Technology, The Netherlands*; <sup>2</sup>*Molecular Imaging Laboratories, The Netherlands*; <sup>3</sup>*University Medical Center Utrecht, The Netherlands*

**M15-2 (16:15) Geometrical Optimization and Calibration for an Animal PET Converted to SPECT**

X. Deng<sup>1</sup>, T. Ma<sup>2</sup>, J. Cadorette<sup>3</sup>, Z. Cao<sup>4</sup>, R. Lecomte<sup>4</sup>, R. Yao<sup>1</sup>

<sup>1</sup>*University at Buffalo, USA*; <sup>2</sup>*Tsinghua University, China*; <sup>3</sup>*Gamma Medica-Ideas, Inc., Canada*; <sup>4</sup>*Universit de Sherbrooke, Canada*

### M15-3 (16:30) Optimization of Image Object Helical Movement Scheme for an Animal SPECT with Slit-Slat Collimator

T. Ma, *Tsinghua University, China*; X. Deng, R. Yao, *University at Buffalo, SUNY, USA*

### M15-4 (16:45) NEMA NU4-2008 Comparison of Preclinical PET Systems

A. L. Goertzen<sup>1</sup>, Q. Bao<sup>2</sup>, M. Bergeron<sup>3</sup>, E. Blankemeyer<sup>4</sup>, M. Canadas<sup>5</sup>, A. Chatziioannou<sup>2</sup>, R. Lecomte<sup>3</sup>, V. Sossi<sup>6</sup>, S. Surti<sup>4</sup>, Y.-C. Tai<sup>7</sup>, J. J. Vaquero<sup>8</sup>, R. Laforest<sup>7</sup>  
<sup>1</sup>University of Manitoba, Canada; <sup>2</sup>University of California, Los Angeles, USA; <sup>3</sup>Universite de Sherbrooke, Canada; <sup>4</sup>University of Pennsylvania, USA; <sup>5</sup>Centro de Investigaciones Energeticas, Medioambientales y Tecnologicas, Spain; <sup>6</sup>University of British Columbia, Canada; <sup>7</sup>Washington University School of Medicine, USA; <sup>8</sup>Hospital General Universitario Gregorio Maranon, Spain

### M15-5 (17:00) Hybrid Emission Imaging with the PEDRO Small Animal Imaging System

M. R. Dimmock, D. Nikulin, J. M. C. Brown, C. J. Hall, J. E. Gillam  
*Monash University, Australia*

### M15-6 (17:15) Initial Performance Evaluation of the NanoPET/CT Pre-Clinical PET-CT Scanner

I. Szanda<sup>1</sup>, J. E. Mackewn<sup>1</sup>, G. Patay<sup>2</sup>, P. Major<sup>2</sup>, K. Sunassee<sup>1</sup>, G. E. D. Mullen<sup>1</sup>, G. Nemeth<sup>2</sup>, Y. Haemisch<sup>3</sup>, P. K. Marsden<sup>1</sup>  
<sup>1</sup>King's College London, United Kingdom; <sup>2</sup>MEDISO Ltd., Hungary; <sup>3</sup>Bioscan Inc., United States

### M15-7 (17:30) Rat Coronary Microangiography System for Preclinical Imaging Using Synchrotron Radiation

K. Umetani, *Japan Synchrotron Radiation Research Institute, Japan*; J. T. Pearson, *Monash University, Australia*; M. Shirai, *National Cardiovascular Center, Japan*

### M15-8 (17:45) A Motion Adaptive Animal Chamber for PET Imaging of Freely Moving Animals

V. W. Zhou<sup>1</sup>, A. Kyme<sup>1</sup>, J. Eisenhuth<sup>1</sup>, M. Akhtar<sup>1</sup>, R. Fulton<sup>1,2</sup>, S. R. Meikle<sup>1</sup>  
<sup>1</sup>Sydney University, Australia; <sup>2</sup>Westmead Hospital, Australia

## RTSD Oral Presentations

### R16: Semiconductor Materials

Friday, Nov. 5 08:30-09:50 301A & 301B

Session Chair: Laura Fornaro, *Faculty of Chemistry, Montevideo, Uruguay, Uruguay*

#### R16-1 (08:30, invited) Recent Development of TlBr Gamma-Ray Detectors

K. Hitomi<sup>1</sup>, T. Tada<sup>1</sup>, T. Tanaka<sup>2</sup>, S.-Y. Kim<sup>1</sup>, H. Yamazaki<sup>1</sup>, T. Shoji<sup>2</sup>, K. Ishii<sup>1</sup>  
<sup>1</sup>Tohoku University, Japan; <sup>2</sup>Tohoku Institute of Technology, Japan

#### R16-2 (08:50) Recent Progress in Thallium Bromide Gamma-Ray Spectrometer Development

H. Kim<sup>1</sup>, A. Kargar<sup>1</sup>, A. Churilov<sup>1</sup>, G. Ciampi<sup>1</sup>, L. Cirignano<sup>1</sup>, W. Higgins<sup>1</sup>, F. Olschner<sup>2</sup>, B. Donmez<sup>3</sup>, C. Thrall<sup>3</sup>, Z. He<sup>3</sup>, K. Shah<sup>1</sup>  
<sup>1</sup>Radiation Monitoring Devices Inc., USA; <sup>2</sup>Cremat Inc., USA; <sup>3</sup>University of Michigan, USA

#### R16-3 (09:05) High Resolution Study of Polarisation Effects in Thallium Bromide X-Ray Detectors

A. G. Kozorezov<sup>1</sup>, V. Gostilo<sup>2</sup>, A. Owens<sup>3</sup>, F. Quararti<sup>3</sup>, M. Shorohov<sup>2</sup>, A. Webb<sup>4</sup>, J. K. Wigmore<sup>1</sup>  
<sup>1</sup>Lancaster University, United Kingdom; <sup>2</sup>Bruker Baltic, Latvia; <sup>3</sup>ESA/ESTEC, Netherlands; <sup>4</sup>HASYLAB at DESY, Germany

#### R16-4 (09:20) Process and Yield Enhancements for Epitaxially Grown Mercuric Iodide Crystals

M. R. Saleno, L. van den Berg, R. D. Vigil, J. L. Baker  
*Constellation Technology Corp., USA*

#### R16-5 (09:35) Study on the Performance of HgI<sub>2</sub> Semiconductor Detectors

Y. J. Li<sup>1</sup>, L. Zhang<sup>2</sup>, X. C. Zheng<sup>2</sup>, Z. Deng<sup>1</sup>  
<sup>1</sup>Tsinghua University, China; <sup>2</sup>Nuctech Company Limited, China

### R17: Characterization of CZT III

Friday, Nov. 5 10:30-12:05 301A & 301B

Session Chair: Kelvin G. Lynn, *Washington State University, USA*

#### R17-1 (10:30, invited) The Application of Cadmium Telluride and Related Materials Grown by Physical Vapour Transport Method I. Radley, Kromek Ltd., U.K.

#### R17-2 (10:50) Comparison of the X-Ray Performance of Small Pixel CdTe and CZT Detectors

M. D. Wilson<sup>1</sup>, L. L. Jones<sup>1</sup>, P. Seller<sup>1</sup>, P. J. Sellin<sup>2</sup>, M. C. Veale<sup>1</sup>, P. Veeramani<sup>2</sup>  
<sup>1</sup>Rutherford Appleton Laboratory, UK; <sup>2</sup>University of Surrey, UK

#### R17-3 (11:05) Charge Transport Properties in CZT Detectors Grown by the Vertical Bridgman Technique

N. Auricchio<sup>1</sup>, L. Marchini<sup>2</sup>, E. Caroli<sup>1</sup>, J. B. Stephen<sup>1</sup>, M. Zanichelli<sup>3</sup>, A. Zappettini<sup>2</sup>, L. Abbene<sup>4</sup>, S. Del Sordo<sup>1</sup>  
<sup>1</sup>INAF, Italy; <sup>2</sup>CNR, Italy; <sup>3</sup>University of Parma, Italy; <sup>4</sup>University of Palermo, Italy

#### R17-4 (11:20) Reduced Leakage Currents in CdZnTe Radiation Detectors Using CdTe/HgTe Superlattice Contacts

Y. Chang, C. H. Grein, C. R. Becker, X. J. Wang, S. Sivananthan, Q. Duan, S. Ghosh, *University of Illinois at Chicago, USA*; P. Dreisack, R. Bommene, F. Aqariden, *EPIR Technologies, Inc., IL*

**R17-5 (11:35) X-Ray Imaging Using Photon Counting CMOS-DPS<sup>TM</sup> and CdZnTe Arrays**R. Sia<sup>1</sup>, G. Prekas<sup>1</sup>, S. Kleinfelder<sup>2</sup>, V. Nagarkar<sup>1</sup><sup>1</sup>Radiation Monitoring Devices, Inc, USA; <sup>2</sup>University of California Irvine, USA**R17-6 (11:50) Positron Annihilation Studies of Ga<sub>2</sub>Te<sub>3</sub> and Ga-Sc-Te Semiconductors**N. M. Abdul-Jabbar<sup>1</sup>, E. D. Bourret-Courchesne<sup>2</sup>, D. Xu<sup>1</sup>,B. D. Wirth<sup>1</sup><sup>1</sup>University of California, USA; <sup>2</sup>Lawrence Berkeley National Laboratory, USA**R18: Application CdZnTe**

Friday, Nov. 5 13:30-15:00 301A &amp; 301B

Session Chair: Ian Radley, *Kromek*,**R18-1 (13:30, invited) Photon-Counting Energy-Resolving CdTe Detectors for High-Flux X-Ray Imaging**W. C. Barber<sup>1</sup>, E. Nygard<sup>2</sup>, J. C. Wessel<sup>2</sup>, N. Malakhov<sup>2</sup>,N. E. Hartsough<sup>1</sup>, J. S. Iwanczyk<sup>1</sup><sup>1</sup>DxRay Inc., USA; <sup>2</sup>Interon AS, Norway**R18-2 (13:45) Large 12cm<sup>2</sup> Monolithic CdTe Pixel Sensors with Medipix Readout**

A. Zwerger, A. Fauler, M. Fiederle

*University of Freiburg, Germany***R18-3 (14:00) Optimizing the Design Parameters of Adhesively Bonded Assemblies to Enhance Reliability and Performance of the CZT Detectors**S. Taherion, H. Chen, P. Lu, S. Awadalla, P. Marthadam, G. Bindley  
*Redden Technologies, USA***R18-4 (14:15) Compact CZT-Based Gamma Camera for Prostate Cancer Imaging**Y. Cui<sup>1</sup>, T. Lall<sup>2</sup>, A. Bolotnikov<sup>1</sup>, B. Tsui<sup>3</sup>, K. Weisman<sup>4</sup>,Y. Seo<sup>5</sup>, P. Vaska<sup>1</sup>, G. Meinken<sup>1</sup>, G. Mahler<sup>1</sup>, P. O'Connor<sup>1</sup>,G. De Geronimo<sup>1</sup>, G. Camarda<sup>1</sup>, A. Hossain<sup>1</sup>, K. H. Kim<sup>1</sup>, G. Yang<sup>1</sup>,  
R. B. James<sup>1</sup><sup>1</sup>Brookhaven National Laboratory, USA; <sup>2</sup>Hybridyne Imaging Technologies, Inc., Canada; <sup>3</sup>Johns Hopkins University, USA; <sup>4</sup>Midstate Hospital, USA; <sup>5</sup>University of California, San Francisco, USA**R18-5 (14:30) X-Ray and Infrared Light Induced Photo-Currents in CdTe and CdZnTe Devices with Different Charge Transport and Barrier Properties**

M. Prokesch, H. Li, C. Szeles

*Detection & Imaging Systems, a division of Endicott Interconnect Technologies, Inc., USA***R18-6 (14:45) CdZnTe Detectors for Astrophysical and Medical Applications**S. Del Sordo<sup>1</sup>, L. Abbene<sup>2</sup>, E. Caroli<sup>1</sup>, C. da Silva<sup>3</sup><sup>1</sup>Stefano Del Sordo, Italy; <sup>2</sup>Leonardo Abbene, Italy; <sup>3</sup>Ezio Caroli, Italy**R19: Characterization of CZT IV**

Friday, Nov. 5 16:00-17:00 301A &amp; 301B

Session Chair: Aleksey E. Bolotnikov, *Brookhaven National Laboratory, USA***R19-1 (16:00) Characterization of Electrical, Chemical, and Detector Performance Properties of CZT from Various Sources**  
M. C. Duff, A. L. Washington, L. Teague, *Savannah River National Laboratory, USA*; A. Burger, M. Groza, V. Buliga, *Fisk University, USA*; J. Bradley, N. Teslich, H. Ishii, J. Aguiar, P. Wozniakiewicz, *Lawrence Livermore National Laboratory, USA*; K. Lynn, K. Jones, R. Soundararajan, *Washington State University, USA***R19-2 (16:15) Investigation of Nano-Structural Defects in Detector-Grade CdZnTe Crystals**A. Hossain, R. B. James, A. E. Bolotnikov, K. Kisslinger, L. Zhang, G. S. Camarda, Y. Cui, G. Yang, K. Kim, *Brookhaven National Laboratory, USA*; L. Xu, *Northwestern Polytechnic University, China***R19-3 (16:30) Performance Improvement of 3-D Position-Sensitive Pixelated HgI<sub>2</sub> Detectors When Cooled from Room Temperature to 10 Degree Celsius**Y. Zhu, W. R. Kaye, F. Zhang, Z. He  
*University of Michigan, USA***R19-4 (16:45, invited) Observations of a Deep-Level Defect in Spectroscopic Semi-Insulated CdTe and CdZnTe**V. Babentsov, *Institute of Semiconductor Physics, Ukraine*; J. Franc, *Faculty of Mathematics and Physics, Czech Republic*; E. Dieguez, *Universidad Autnoma de Madrid, Spain*; N. V. Sochinskii, *Centro Ricerche Elettro-Ottiche, Italy*; R. B. James, *Brookhaven National Laboratory, USA*

## MIC Poster Presentations

## M13: MIC Posters 2

Friday, Nov. 5 10:30-12:00 Exhibit Hall B

Session Chairs: Marc Kachelriess, *Institute of Medical Physics (IMP), Universität Erlangen-Nürnberg, Germany*  
 Roger R. Fulton, *Westmead Hospital, Australia*

**M13-2 Performance Trade-off Analysis Comparing Different Front-End Configurations for a Digital X-Ray Imager**

A. T. Kuhls-Gilcrist, A. Jain, D. R. Bednarek, S. Rudin  
*Toshiba Stroke Research Center, University at Buffalo, State University of New York, USA*

**M13-7 Silicon Carbide Detectors for in Vivo Dosimetry**

G. Bertuccio<sup>1,2</sup>, D. Puglisi<sup>1,2</sup>, D. Macera<sup>1,2</sup>, R. Di Liberto<sup>3</sup>, L. Mantovani<sup>3</sup>, M. Lamborizio<sup>3</sup>  
<sup>1</sup>*Politecnico di Milano - Polo regionale di Como, Italy*; <sup>2</sup>*INFN- sez. Milano, Italy*; <sup>3</sup>*Policlinico San Matteo, Italy*

**M13-12 PET Detector Module with Thick Light Guide and GAPD Array Having Large-Area Microcells**

J. Kang<sup>1,2</sup>, Y. Choi<sup>1</sup>, K. J. Hong<sup>1</sup>, W. Hu<sup>1,2</sup>, J. Y. Hwang<sup>3</sup>, H. K. Lim<sup>1</sup>, Y. S. Huh<sup>1,2</sup>, S. Kim<sup>1</sup>, K. B. Kim<sup>1</sup>, J. W. Jung<sup>1</sup>, Y. H. Chung<sup>3</sup>, B.-T. Kim<sup>2</sup>  
<sup>1</sup>*Sogang University, Korea*; <sup>2</sup>*SungKyunKwan University, Korea*; <sup>3</sup>*Yonsei University College of Health Science, Korea*

**M13-17 Lu<sub>2</sub>O<sub>3</sub>:Eu Sub-Micron-Sized X-Ray Phosphor**

M. Wojtowicz, E. Zych, *University of Wrocław, Poland*

**M13-22 Initial Implementation of An All-Digital PET DAQ System**

X. Wang<sup>1,2</sup>, Q. Xie<sup>1,2</sup>, Y. Chen<sup>1</sup>, M. Niu<sup>1,2</sup>, Z. Wu<sup>3</sup>, J. Zhu<sup>3</sup>, D. Xi<sup>1</sup>, J. Gao<sup>1</sup>, Y. Wang<sup>1</sup>  
<sup>1</sup>*Huazhong University of Science and Technology, China*; <sup>2</sup>*Wuhan National Laboratory for Optoelectronics, China*; <sup>3</sup>*Chongqing University, China*

**M13-27 Energy and Timing Measurement of a PET Detector with Time Based Readout Electronics**

Y. Shao<sup>1</sup>, X. Sun<sup>1</sup>, A. Lan<sup>1</sup>, Z. Deng<sup>2</sup>, Y. Liu<sup>2</sup>  
<sup>1</sup>*The University of Texas M.D. Anderson Cancer Center, USA*; <sup>2</sup>*Tsinghua University, China*

**M13-32 Evolution of the Design of a Second Generation Firewire Based Data Acquisition System**

T. K. Lewellen, R. S. Miyaoka, L. R. MacDonald, M. Haselman, D. DeWitt, S. Hauck  
*University of Washington, USA*

**M13-37 Maximum Likelihood Estimation of Scintillation Event Parameters for General Purpose SPECT System on GPU Hardware**

V. A. Kolbasin, A. I. Ivanov  
*Institute for scintillation materials NAS of Ukraine, Ukraine*

**M13-42 Mapping Positron Emission Rate of a Bio-Specimen Slice with a 10µm Resolution**

Q. Peng, S. E. Holland, W.-S. Choong, T. F. Budinger, W. W. Moses  
*Lawrence Berkeley National Laboratory, USA*

**M13-47 Performance Evaluation of Position Sensitive Solid State Photomultiplier**

P. Dakhale, M. McClish, J. Christian, C. Stapels, K. Shah  
*Radiation Monitoring Devices Inc., USA*

**M13-52 Modular Architecture for Future PET Detectors Based on the RatCAP Technology**

S. S. Junnarkar<sup>1</sup>, M. L. Purschke<sup>1</sup>, C. Woody<sup>1</sup>, D. Schlyer<sup>1</sup>, P. O'Connor<sup>1</sup>, E. Gualtieri<sup>2</sup>, J. Karp<sup>2</sup>, P. Vaska<sup>1</sup>  
<sup>1</sup>*Brookhaven National Laboratory, USA*; <sup>2</sup>*University of Pennsylvania, USA*

**M13-57 Monitoring Energy Calibration Drift Using the Scintillator Background Radiation**

M. Conti, L. Eriksson, C. Hayden, *Siemens Healthcare, USA*

**M13-62 Minimizing the Quantity of Photodetectors to Reduce Positron Emission Mammography System Cost**

S. G. Cuddy<sup>1,2</sup>, J. A. Rowlands<sup>1</sup>, D. R. Green<sup>1,2,3</sup>, F. Taghibakhsh<sup>1,2,3</sup>  
<sup>1</sup>*Sunnybrook Health Sciences Centre, Canada*; <sup>2</sup>*University of Toronto, Canada*; <sup>3</sup>*Thunder Bay Regional Research Institute, Canada*

**M13-67 A Versatile Scalable PET Detector Processing System**

H. T. Dong, A. Weisenberger, J. McKisson, C. Cuevas, L. Zukerman  
*Jefferson Lab, USA*

**M13-72 Characterization of the Timing Resolution of a Single-Ring Time-of-Flight PET**

W.-S. Choong, Q. Peng, C. Q. Vu, M. Janecek, W. W. Moses  
*Lawrence Berkeley National Laboratory, U.S.A.*

**M13-77 COMPET - a Preclinical PET Scanner Implementing a Block Detector Geometry with High Resolution, Sensitivity and 3D Event Reconstruction**

J. G. Bjaalie<sup>1</sup>, E. Bolle<sup>2</sup>, J. I. Buskenes<sup>2</sup>, O. Dorholt<sup>2</sup>, M. T. Rissi<sup>2</sup>, O. Roehne<sup>2</sup>, A. Skretting<sup>3</sup>, S. Stapnes<sup>2,4</sup>  
<sup>1</sup>*Department of Anatomy & CMBN, Norway*; <sup>2</sup>*Universitetet i Oslo, Norway*; <sup>3</sup>*Rikshospitalet-Radiumhospitalet Medical Center, Norway*; <sup>4</sup>*CERN, Switzerland*

**M13-82 Performance Evaluation Standards for Positron Emission Mammography (PEM)**

W. Luo<sup>1</sup>, M. Dahlbom<sup>2</sup>, L. MacDonald<sup>3</sup>, X. Lu<sup>1</sup>, O. R. Mawlawi<sup>4</sup>  
<sup>1</sup>*Naviscan Inc., USA*; <sup>2</sup>*UCLA, USA*; <sup>3</sup>*University of Washington, USA*; <sup>4</sup>*The University of Texas M.D. Anderson Cancer Center, USA*

**M13-87 A Monte Carlo Estimation of Effect of Activity in Outside Field of View in O-15 Cardiac 3D-PET**

Y. Hirano, K. Koshino, H. Iida  
*National Cerebral and Cardiovascular Center, Japan*

**M13-92 Design and Validation of an Adaptive SPECT System: AdaptiSPECT**

R. Van Hoken<sup>1,2</sup>, J. W. Moore<sup>2</sup>, L. R. Furenlid<sup>2</sup>, H. H. Barrett<sup>2</sup>  
<sup>1</sup>*Ghent University, Belgium*; <sup>2</sup>*University of Arizona, US*

**M13-97 Development of a Modular Detector System for C-SPECT**

H. Sabet, H. Liang, Y.-S. Li, M. Rozler, W. Chang  
*Rush University Medical Center, USA*

**M13-102 Novel Methods of Resolving Energy and 3D Position of Interactions in Monolithic Scintillator Plates**

F. Taghibakhsh<sup>1,2</sup>, J. A. Rowlands<sup>1,2</sup>  
<sup>1</sup>*University of Toronto, Canada*; <sup>2</sup>*Thunder Bay Regional Research Institute, Canada*

**M13-107 New Myocardial SPECT System with CdZnTe Semiconductor Detectors**

K. Ogawa, Y. Ozaku, *Graduate School of Engineering, Hosei University, Japan*; Y. Nyui, M. Fukushi, *Graduate School of Health Sciences, Tokyo Metropolitan University, Japan*



**M13-112 A Compact SPECT Detector Based on a Quad PMT**

C. L. Kim, A. Ivan, *GE Global Research Center, USA*; A. Ganin, *GE Healthcare, USA*

**M13-117 GATE Simulations for the Combined MicroPET / MR System**

P. D. E. Herrick, R. C. Hawkes, R. E. Ansorge, A. T. Carpenter, J. W. Stevick  
*University of Cambridge, UK*

**M13-122 Attenuation Correction for Whole Body PET/MR - Quantitative Evaluation and Lung Attenuation Estimation with Consistency Information**

I. Bezrukov<sup>1</sup>, M. Hofmann<sup>1,2,3</sup>, P. Aschoff<sup>4</sup>, T. Beyer<sup>5</sup>, F. Mantlik<sup>1,2</sup>, B. J. Pichler<sup>1</sup>, B. Schoelkopf<sup>2</sup>  
<sup>1</sup>*Dept. of Radiology, Eberhard Karls University, Germany*; <sup>2</sup>*Max-Planck-Institute for Biological Cybernetics, Germany*; <sup>3</sup>*University of Oxford, United Kingdom*; <sup>4</sup>*Eberhard Karls University, Germany*; <sup>5</sup>*cmi-experts GmbH, Switzerland*

**M13-127 Automated Least-Squares Co-Registration for a Micro PET-CT System**

B. Feng, S. Yan, M. Chen, D. W. Austin, J. Deng, R. A. Mintzer  
*Siemens Medical Solutions, USA*

**M13-132 Quantification of Myocardial Blood Flow Using Combination of Bolus Tracking and Time-Registered Helical Multidetector CT Angiography During Adenosine Stress**

T. Ichihara<sup>1</sup>, R. T. George<sup>2</sup>, R. Mather<sup>3</sup>, C. Silva<sup>2</sup>, J. A. C. Lima<sup>2</sup>, A. C. Lardo<sup>2</sup>  
<sup>1</sup>*Fujita Health University School of Health Science, Japan*; <sup>2</sup>*Johns Hopkins University School of Medicine, USA*; <sup>3</sup>*Toshiba Medical Research Institute, USA*

**M13-137 Multisource Inverse-Geometry CT - Prototype System Integration**

J. Uribe, J. L. Reynolds, L. P. Inzinna, R. S. Longtin, D. D. Harrison, V. B. Nucleaies, K. J. Frutschy, A. Caiafa, B. DeMan, R. F. Senzig, *General Electric, USA*; N. Pelc, J. Baek, *Stanford University, USA*

**M13-142 Identification of a Material with a Photon Counting X-Ray CT System**

K. Ogawa, T. Hirokawa, S. Nakamura  
*Graduate School of Engineering, Hosei University, Japan*

**M13-147 Spatial Resolution Performance and Object Detection Improvement with a Multiple-Wavelength NIR-Light Transmission Scanner**

N. M. Uzunov<sup>1,2</sup>, M. Bello<sup>1</sup>, G. Moschini<sup>1</sup>, G. Baldazzi<sup>3</sup>, A. Rosato<sup>4,5</sup>, M. B. Rondina<sup>4,5</sup>, I. M. Montagner<sup>4,5</sup>, D. Boldrin<sup>4,5</sup>, P. C. Muzzio<sup>4,5</sup>, P. Rossi<sup>1</sup>  
<sup>1</sup>*INFN, Italy*; <sup>2</sup>*Shumen University, Bulgaria*; <sup>3</sup>*University of Bologna, Italy*; <sup>4</sup>*Veneto Institute of Oncology, Italy*; <sup>5</sup>*University of Padua, Italy*

**M13-152 Confirmation of Appropriate Spatial Resolution Range for Sensitivity map Using SENSE Reconstruction based on Linear Coil Array Simulation and Noise Variation**

D. H. Lee<sup>1</sup>, C. P. Hong<sup>1</sup>, M. W. Lee<sup>2</sup>, S. H. Kim<sup>2</sup>, B. S. Han<sup>1</sup>  
<sup>1</sup>*Yonsei University, Korea*; <sup>2</sup>*Advanced Imaging Laboratory Cooperation, Korea*

**M13-157 The Optimal Design and Evaluation of a (RMSVASH) Collimator for Clinical Myocardial Perfusion SPECT**

A. J. Rittenbach<sup>1</sup>, J. Xu<sup>1</sup>, S. Chen<sup>1</sup>, L. Shao<sup>2</sup>, B. M. W. Tsui<sup>1</sup>  
<sup>1</sup>*Johns Hopkins University, USA*; <sup>2</sup>*Philips Healthcare, USA*

**M13-162 Performance Characteristics of the MAMMI PENT Scanner Based on NEMA NU 2-2007**

L. Moliner Martinez, A. Soriano Asensi, A. Orero Palomares, M. Carles Farinya, F. Sanchez Martinez, J. M. Benlloch Baviera, *IFIC-UV, Spain*; C. Correcher Salvador, A. Gonzalez Martinez, *ONCOVISION, Spain*

**M13-167 Design and Testing of a Flattening Filter for a Radiography Machine**

F. Abdulkhalik, N. M. Maalej  
*King Fahd University of Petroleum and Minerals, Saudi Arabia*

**M13-172 Fingertip Beta Imager Based on the SiPM Technology**

A. V. Stolin, S. Majewski, R. R. Raylman, H. W. Hazard  
*West Virginia University, USA*

**M13-177 Noise and Gain Properties of Position-Sensitive APDs**

Y. Yang<sup>1</sup>, Y. Wu<sup>1</sup>, R. Farrell<sup>2</sup>, P. A. Dokhale<sup>2</sup>, K. S. Shah<sup>2</sup>, S. R. Cherry<sup>1</sup>  
<sup>1</sup>*University of California at Davis, USA*; <sup>2</sup>*Radiation Monitoring Devices Inc., USA*

**M13-182 Design of a High Resolution, MRI Compatible, Compact PET Detector with DOI Positioning Capability**

X. Li, R. S. Miyaoka, T. K. Lewellen  
*University of Washington, USA*

**M13-187 Characterizing the Performance of a 220 Micron Depth-of-Interaction LSO PET Detector**

S. St. James<sup>1</sup>, M. Spurrier Koschan<sup>2</sup>, C. L. Melcher<sup>2</sup>, S. R. Cherry<sup>1</sup>  
<sup>1</sup>*University of California, Davis, U.S.A.*; <sup>2</sup>*University of Tennessee, U.S.A.*

**M13-192 The engineering design and construction of the detector system for an ultra-high resolution high-sensitivity preclinical PET camera**

Y. Zhang, R. Ramirez, H. Li, S. Liu, S. An, C. Wang, H. Baghaei, W.-H. Wong  
*The University of Texas MD Anderson Cancer Center, USA*

**M13-197 Half-Millimeter Animal SPECT Imaging on a Clinical SPECT Scanner with Highly Flexible Collimator Design**

T. Ma, T. Dai, H. Liu, J. Cui, S. Wang, Y. Liu, Q. Wei, J. Wu, Y. Jin  
*Tsinghua University, China*

**M13-202 Three Dimensional Small-Animal Molecular Imaging Using Portable Devices and a Pinhole-Insert Collocating with a Clinical Single Photon Emission Computed Tomography System**

C.-M. Hu, J.-C. Chen, *National Yang-Ming University, Taiwan*

**M13-207 Optical Demonstration of a Medical Imaging System with an EMCCD-Sensor Array for Use in a High Resolution Dynamic X-Ray Imager**

B. Qu, Y. Huang, W. Wang, P. Sharma, A. T. Kuhls-Glicrist, A. N. Cartwright, A. H. Titus, D. R. Bednarek, S. Rudin  
*University at Buffalo, USA*

**M13-212 Image Quality Evaluation for 124I in the MicroPET Focus 120 Scanner Using the NEMA NU4-2008 Phantom.**

M. A. Bahri, G. Warnock, A. Plenevaux, A. Luxen, A. Seret  
*University of Liege, Belgium*

**M13-217 An Investigation of Motion Tracking for Freely Moving Animals in PET**

A. Z. Kyme<sup>1</sup>, S. R. Meikle<sup>1</sup>, C. Baldock<sup>1</sup>, R. R. Fulton<sup>1,2</sup>  
<sup>1</sup>*University of Sydney, Australia*; <sup>2</sup>*Westmead Hospital, Australia*

**M13-222 Maximum-Likelihood Calibration of an X-Ray Computed Tomography System**

J. W. Moore<sup>1</sup>, R. Van Holen<sup>2</sup>, H. H. Barrett<sup>1</sup>, L. R. Furenlid<sup>1</sup>  
<sup>1</sup>University of Arizona, USA; <sup>2</sup>Ghent University, Belgium

**M13-227 Scanning Multiple Mice in a Small-Animal PET Scanner: Influence on Image Quality**

F. J. Siepel, M. G. J. T. B. van Lier, *University of Twente, the Netherlands*; M. Chen, *Siemens, USA*; J. A. Disselhorst, A. P. W. Meeuwis, W. J. G. Oyen, O. C. Boerman, E. P. Visser, *Radboud University Nijmegen Medical Centre, the Netherlands*

**M13-232 Iterative Image Reconstruction for Low-Dose CT with Constrained Total-Variation Minimization**

E. Y. Sidky<sup>1</sup>, Y. Duchin<sup>1</sup>, L. Pesce<sup>1</sup>, C. Ullberg<sup>2</sup>, X. Pan<sup>1</sup>  
<sup>1</sup>University of Chicago, United States; <sup>2</sup>XCounter AB, Sweden

**M13-237 An Improved TV Minimization Algorithm for Incomplete Data Problem in Computer Tomography**

H. Xue, L. Zhang, Y. Xing, Z. Chen  
*Department of Engineering Physics, Tsinghua University, China*

**M13-242 A Patchwork (Back)projector to Accelerate Artifact Reduction in CT Reconstruction**

K. Van Slambrouck, J. Nuyts, *K.U.Leuven, Belgium*

**M13-247 Weighted Total Variation Constrained Reconstruction for Reduction of Metal Artifact in CT**

Y. Zhang, X. Mou, H. Yan  
*Xi'an Jiaotong University, P.R. China*

**M13-252 PET as a Perturbation of the X-Ray Transform**

T. Koesters, F. Wuebbeling, F. Natterer  
*University of Muenster, Germany*

**M13-257 Fully 3-D Time-of-Flight Positron Emission Tomography Image Reconstruction from List-Mode Data Using GPUs and CUDA**

J.-Y. Cui<sup>1</sup>, G. Pratz<sup>1</sup>, S. Prevrhal<sup>2</sup>, C. S. Levin<sup>1</sup>  
<sup>1</sup>Stanford University, USA; <sup>2</sup>Philips Healthcare, USA

**M13-262 AB-OSEM Reconstruction for Improved Kinetic Parameter Estimation**

J. Verhaeghe, A. J. Reader  
*Montreal Neurological Institute, McGill University, Canada*

**M13-267 Gap Compensation in Positron Emission Tomography Using Constrained, Total-Variation Minimization**

S. Ahn, S. M. Kim, D. S. Lee, J. S. Lee  
*Seoul National University, Korea*

**M13-272 List-Mode MLEM Image Reconstruction from 3D ML Position Estimates**

L. Caucci<sup>1</sup>, W. C. J. Hunter<sup>2</sup>, L. L. Furenlid<sup>1</sup>, H. H. Barrett<sup>1</sup>  
<sup>1</sup>University of Arizona, USA; <sup>2</sup>University of Washington, USA

**M13-277 A Proposal and Evaluation of Spatio-Temporal Reconstruction Method Based on DRAMA**

T. Kon<sup>1</sup>, T. Obi<sup>1</sup>, H. Tashima<sup>2</sup>, N. Ohyama<sup>1</sup>  
<sup>1</sup>Tokyo Institute of Technology, Japan; <sup>2</sup>National Institute of Radiological Sciences, Japan

**M13-282 A Scatter and Randoms Weighted (SRW) Iterative PET Reconstruction**

J.-C. C. Cheng, N. Agbeko, J. O'Sullivan, R. Laforest  
*Washington University in St. Louis, USA*

**M13-287 GPU Accelerated Rotation-Based Emission Tomography Reconstruction**

S. Pedemonte<sup>1</sup>, A. Bousse<sup>2</sup>, K. Erlandsson<sup>2</sup>, M. Modat<sup>1</sup>, S. Arridge<sup>1</sup>, B. F. Hutton<sup>2</sup>, S. Ourselin<sup>1</sup>  
<sup>1</sup>University College London, UK; <sup>2</sup>University College London Hospitals NHS Trust, UK

**M13-292 Image Reconstruction in Emission Tomography Using Canonical Origin Ensembles**

A. Sitek  
*Brigham and Women's Hospital and Harvard Medical School, USA*

**M13-297 A GPU Implementation of Compton Reconstruction for the PEDRO Hybrid Small Animal Imaging System**

M. R. Dimmock, D. Nikulin, J. M. C. Brown, C. J. Hall, J. E. Gillam  
*Monash University, Australia*

**M13-302 Image Reconstruction of a Stationary MR-Compatible SPECT Camera**

J. Xu<sup>1</sup>, S. Chen<sup>1</sup>, J. Yu<sup>1</sup>, D. Meier<sup>2</sup>, D. J. Wagenaar<sup>2</sup>, J. W. Hugg<sup>2</sup>, B. M. Tsui<sup>1</sup>  
<sup>1</sup>Johns Hopkins University, USA; <sup>2</sup>Gamma Medica-Ideas, Inc, USA

**M13-307 Image Reconstruction from Sparse Phase-decorated Synchrotron Radiation Micro-CT Data**

D. Xia<sup>1</sup>, X. Xiao<sup>2</sup>, E. Y. Sidky<sup>3</sup>, F. De Carlo<sup>2</sup>, X. Pan<sup>3</sup>  
<sup>1</sup>Academia Sinica, China; <sup>2</sup>Argonne National Laboratory, U.S.A.; <sup>3</sup>The University of Chicago, U.S.A.

**M13-312 Automatic Thresholding for Frame-Repositioning Using External Tracking**

O. V. Olesen<sup>1,2,3</sup>, S. H. Keller<sup>1</sup>, M. Sibomana<sup>1</sup>, R. Larsen<sup>2</sup>, B. Roed<sup>3</sup>, L. Hoejgaard<sup>1</sup>  
<sup>1</sup>Rigshospitalet, Copenhagen University Hospital, Denmark; <sup>2</sup>Technical University of Denmark, Denmark; <sup>3</sup>Siemens Healthcare, Denmark

**M13-317 Performance Evaluation of a Particle Filter Framework for Respiratory Motion Estimation in Nuclear Medicine Imaging**

A. A. Abd. Rahni<sup>1</sup>, E. Lewis<sup>1</sup>, M. Guy<sup>2,1</sup>, B. Goswami<sup>1</sup>, K. Wells<sup>1</sup>  
<sup>1</sup>University of Surrey, England; <sup>2</sup>Medway Maritime Hospital, England

**M13-322 Image Space Identification of a Motion Tracking Tool in PET and PET/CT**

P. J. Noonan<sup>1,2</sup>, W. A. Hallett<sup>2</sup>, T. F. Cootes<sup>1</sup>, R. Hinz<sup>1</sup>  
<sup>1</sup>University of Manchester, UK; <sup>2</sup>GlaxoSmithKline, UK

**M13-327 Evaluation of an OSEM-Based PVC Method for SPECT with Clinical Data**

K. Erlandsson<sup>1</sup>, B. Thomas<sup>1</sup>, J. C. Dickson<sup>2</sup>, B. F. Hutton<sup>1</sup>  
<sup>1</sup>University College London, UK; <sup>2</sup>University College London Hospital, UK

**M13-332 Estimation of Gap Data Using Bow-Tie Filters for 3D Time-of-Flight PET**

R. Ren<sup>1</sup>, Q. Li<sup>1</sup>, S. Ahn<sup>1</sup>, S. Cho<sup>2</sup>, R. M. Leahy<sup>1</sup>  
<sup>1</sup>University of Southern California, United States; <sup>2</sup>Siemens, United States

**M13-337 SIMIND Scatter Estimation: Experimental Verification**

Z. Liu, P. H. Pretorius, *University of Massachusetts Medical School, United States*; M. Ljungberg, *Lund University, Sweden*

**M13-342 A Comparative Study of Multiple Scatters in 3D PET**

H. Qian, R. Manjeshwar, *GE Global Research, USA*; K. Thielemans, *GE Healthcare, UK*

**M13-347 Accuracy Evaluation of Four-Segment Whole-Body Attenuation Correction in Image Based Radiation Dosimetry Using PET/MRI**

J. H. Kim, J. S. Lee, I.-C. Song, D. S. Lee  
Seoul National University College of Medicine, KOREA

**M13-352 Is Transmission-Gating Necessary for Cardiac SPECT Imaging with Attenuation Correction?**

C. Bai, R. Conwell, *Digirad Corporation, USA*

**M13-357 Quantitative Accuracy of the HRRT in an Interscanner Study with the HR+ and (R)-[11C]verapamil**

M. C. Huisman<sup>1</sup>, J. E. M. Mourik<sup>1</sup>, F. H. P. van Velden<sup>1</sup>, M. Sibomana<sup>2</sup>, S. H. Keller<sup>2</sup>, S. Wang<sup>3</sup>, J. Anton<sup>3</sup>, D. van Assema<sup>1</sup>, F. E. A. M. Froklage<sup>1</sup>, N. J. Hoetjes<sup>1</sup>, R. W. Kloet<sup>1</sup>, B. N. M. van Berckel<sup>1</sup>, R. C. Schuit<sup>1</sup>, M. Lubberink<sup>1</sup>, R. Boellaard<sup>1</sup>, A. A. Lammertsma<sup>1</sup>

<sup>1</sup>VU University Medical Center, The Netherlands; <sup>2</sup>PET Center, Copenhagen University Hospital, Rigshospitalet, Denmark; <sup>3</sup>School of Cancer and Enabling Sciences, Wolfson Molecular Imaging Centre, University of Manchester, United Kingdom

**M13-362 Development of Assessment Technology for a Rat Myocardial Infarct Model Using Integrated PET/CT and MRI Images**

S.-K. Woo, G. J. Cheon, K. M. Kim, W. H. Lee, Y. J. Lee, J. A. Park, I. O. Ko, J. S. Kim, J. G. Kim, Y. H. Ji, C. W. Choi, S. M. Lim  
Korea Institute of Radiological and Medical Science, Korea

**M14: MIC Posters 3**

Friday, Nov. 5 13:30-15:30 Exhibit Hall B

Session Chairs: Michael A. King, *Univ of Mass Med School, USA*  
Ramsey D. Badawi, *UC Davis Medical Center, USA*

**M14-3 Component Level Modular Design of a Solid State X-Ray Image Intensifier for an MxN Array**

Y. Huang, B. Qu, P. Sharma, A. T. Kuhls-Gilchrist, W. Wang, A. H. Titus, A. N. Cartwright, D. R. Bednarek, S. Rudin  
University at Buffalo, The State University of New York, USA

**M14-8 A System for X-Ray Diffraction and Fluorescence Imaging of Nanoparticle Biomarkers**

K. Pepper<sup>1</sup>, A. Gibson<sup>1</sup>, A. Castoldi<sup>2</sup>, C. Guazzoni<sup>2</sup>, G. Royle<sup>1</sup>  
<sup>1</sup>University College London, UK; <sup>2</sup>Politecnico di Milano, Italy

**M14-13 Design Considerations for Application of SiPMs in Nuclear Imaging**

N. Efthimiou<sup>1</sup>, G. Argiropoulos<sup>1</sup>, G. Loudos<sup>2</sup>, G. Panayiotakis<sup>1</sup>  
<sup>1</sup>Univ. of Patras, Greece; <sup>2</sup>TEI of Athens, Greece

**M14-18 Spectroscopy of BaHfO<sub>3</sub>:Eu, Li - Activated Phosphors under Excitation with UV/VUV and X-Rays**

A. Dobrowolska, E. Zych  
University of Wrocław, Faculty of Chemistry, Poland

**M14-23 An FPGA Based Data Acquisition System for High Resolution PET Using Flat-Panel PMT**

H. S. Yoon<sup>1</sup>, G. B. Ko<sup>1</sup>, S. I. Kwon<sup>1</sup>, C. M. Lee<sup>1</sup>, M. Ito<sup>2</sup>, D. S. Lee<sup>1</sup>, S. J. Hong<sup>3</sup>, J. S. Lee<sup>1</sup>

<sup>1</sup>Seoul National University College of Medicine, KOREA; <sup>2</sup>Korea University, Korea; <sup>3</sup>Eulji University, Korea

**M14-28 Clock Distribution and Synchronization over 1000BASE-T Ethernet**

J. Imrek, G. Hegyesi, G. Kalinka, J. Molnar, F. Nagy, I. Valastyan, *Institute of Nuclear Research of the Hungarian Academy of Sciences, Hungary*; Z. Szabo, *University of Debrecen, Hungary*

**M14-33 Eighty Channel Multiplexed List Mode Data Acquisition System for a 25-511 keV Gamma Camera**

G. Tapis Gil<sup>1</sup>, J. L. Villena<sup>1</sup>, R. Kreuger<sup>1</sup>, F. J. Beekman<sup>1,2</sup>

<sup>1</sup>Delft University of Technology, Netherlands; <sup>2</sup>University Medical Center Utrecht, Netherlands

**M14-38 External Motion Tracking for Brain Imaging: Structured Light Tracking with Invisible Light**

O. V. Olesen<sup>1,2,3</sup>, R. R. Paulsen<sup>1</sup>, L. Hoejgaard<sup>2</sup>, B. Roed<sup>3</sup>, R. Larsen<sup>1</sup>

<sup>1</sup>Technical University of Denmark, Denmark; <sup>2</sup>Rigshospitalet, Copenhagen University Hospital, Denmark; <sup>3</sup>Siemens, Denmark

**M14-43 A Novel Phoswich Detector for Simultaneous Beta and Coincidence Gamma Imaging of Plant Leaves**

H. Wu, Y.-C. Tai, *Washington University in St. Louis, USA*

**M14-48 Effects on the Gains and Time Delays of an Array of SPMs Due to Changing Bias Voltage**

C. J. Thompson, *McGill University, Canada*

**M14-53 Development of a Depth of Interaction Capable LYSO Array Read Out with Multiplexed Silicon Photomultipliers**

C. J. Bircher, X. Sun, A. Lan, Y. Shao

*Univeristy of Texas MD Anderson Cancer Center, United States*

**M14-58 Performance Evaluation of Four-Layer DOI Detectors Using Multi-Pixel Photon Counter Arrays**

F. Nishikido<sup>1</sup>, T. Mitsuhashi<sup>2</sup>, N. Inadama<sup>1</sup>, E. Yoshida<sup>1</sup>, H. Murayama<sup>1</sup>, T. Yamaya<sup>1</sup>

<sup>1</sup>National Institute of Radiological Sciences, Japan; <sup>2</sup>Chiba University, Japan

**M14-63 A Prototype PET Detector Module Using Micro-Channel Plate Photomultiplier Tube with Waveform Sampling**

H. Kim, C.-M. Kao, H. Frisch, J.-F. Genat, F. Tang, C.-T. Chen  
*University of Chicago, U.S.*

**M14-68 AX-PET : Concept, Proof of Principle and First Results with Phantoms**

P. Solevi, *Instituto de Fisica Corpuscular (CSIC/Universidad de Valencia), Spain*

On behalf of the AX-PET Collaboration

**M14-73 Design Study of an in-Situ PET Scanner for Use in Proton Beam Therapy**

S. Surti, W. Zou, J. McDonough, M. E. Daube-Witherspoon, J. S. Karp

*University of Pennsylvania, USA*

**M14-78 Timing Alignment Study of PMT-Quadrant-Sharing (PQS) Detectors for Time-of-Flight PET**

S. An, H. Li, S. Liu, R. Ramirez, Y. Zhang, C. Wang, H. Baghaci, W.-H. Wong

*Univ. of Texas M.D. Anderson Cancer Center, U.S.A.*

**M14-83 Improvement in Signal-to-Noise Ratio at Variable Random Fraction in TOF PET**

V. Tabacchini<sup>1</sup>, G. Mettivier<sup>1</sup>, M. Conti<sup>2</sup>, P. Russo<sup>1</sup>

<sup>1</sup>INFN and Univ. of Napoli, Italy, Italy; <sup>2</sup>Siemens, USA

**M14-88 Count-Rate Dependent Resolution Degradation from Inter-Layer Pile-up on the HRRT**

Y. Jian, T. Mulnix, R. E. Carson, *Yale University, USA*

**M14-93 Experimental Characterization of a Prototype Mobile Ultra-High Resolution High Energy SPECT Brain Imager**

R. J. Jaszczak<sup>1</sup>, K. L. Greer<sup>1</sup>, B. Kross<sup>2</sup>, S. Majewski<sup>3</sup>, J. McKisson<sup>2</sup>, V. Popov<sup>2</sup>, J. Proffitt<sup>4</sup>, M. F. Smith<sup>5</sup>, A. G. Weisenberger<sup>2</sup>, R. Wojcik<sup>6</sup>  
<sup>1</sup>Duke University Medical Center, USA; <sup>2</sup>Thomas Jefferson National Accelerator Facility, USA; <sup>3</sup>West Virginia University, USA; <sup>4</sup>Adaptive I/O Inc., USA; <sup>5</sup>University of Maryland, USA; <sup>6</sup>Ray Visions, Inc., USA

**M14-98 Focused Scintillator Array for High Resolution Gamma Ray Imaging**

V. V. Nagarkar, B. Singh, *RMD, Inc., USA*

**M14-103 High Performance Cardiac SPECT Camera: Resolution Simulations**

J. Dey, *University of Massachusetts Medical School, USA*

**M14-108 A Very-High Resolution SPECT System Based on the Energy-Resolved Photon-counting(ERPC) CdTe Detectors**

L. Cai, G. Fu, L.-J. Meng  
*University of Illinois at Urbana Champaign, USA*

**M14-113 Pinhole Materials for Small Animal SPECT**

V. R. Bom, M. C. Goordem, F. J. Beekman  
*Delft University of Technology, The Netherlands*

**M14-118 Combined PET / NMR for Plant Research**

S. Beer<sup>1</sup>, C. Windt<sup>2</sup>, M. Dautzenberg<sup>2</sup>, G. Roeb<sup>2</sup>, C. Parl<sup>1</sup>, M. Streun<sup>1</sup>, D. van Dusschoten<sup>2</sup>, S. Jahnke<sup>2</sup>  
<sup>1</sup>Central Institute for Electronics, Forschungszentrum Juelich, Germany;  
<sup>2</sup>ICG3: Phytosphere, Forschungszentrum Juelich, Germany

**M14-123 CT-Based Evaluation of Segmented Head Regions for Attenuation Correction in MR-PET Systems**

G. Wagenknecht<sup>1</sup>, E. Rota Kops<sup>1</sup>, J. Kaffanke<sup>1</sup>, L. Tellmann<sup>1</sup>, F. Mottaghy<sup>2</sup>, M. D. Pitho<sup>2</sup>, H. Herzog<sup>1</sup>  
<sup>1</sup>Research Center Juelich, Germany; <sup>2</sup>University Hospital Aachen, Germany

**M14-128 Design and Prototyping of a Human Brain PET Scanner Based on Monolithic Scintillators**

P. Rato Mendes<sup>1</sup>, J. Alberdi<sup>1</sup>, M. Canadas<sup>1</sup>, P. Garcia de Acilu<sup>1</sup>, J. Navarrete<sup>1</sup>, L. Nunez<sup>2</sup>, J. M. Perez<sup>1</sup>, L. Romero<sup>1</sup>, I. Sarasola<sup>1</sup>, C. Willmott<sup>1</sup>  
<sup>1</sup>CIEMAT, Spain; <sup>2</sup>Hospital Universitario Puerta de Hierro - Majadabonda, Spain

**M14-133 Practical Estimation of Detectability Maps for Assessment of CT Scanner Performance**

A. Wunderlich, F. Noo, *University of Utah, USA*

**M14-138 TRI-PICCS in Single Source and Dual Source CT**

C. Maass, C. Hofmann, M. Kachelriess  
*Institute of Medical Physics, Germany*

**M14-143 A Small-Animal Phase-Contrast microCT-Scanner**

P. Bruyndonckx<sup>1</sup>, A. Tapfer<sup>2</sup>, X. Liu<sup>1</sup>, B. Pauwels<sup>1</sup>, A. Sasov<sup>1</sup>, J. Kennrner<sup>3</sup>, J. Schulz<sup>3</sup>, J. Mohr<sup>2</sup>, M. Bech<sup>2</sup>, K. A. Achterhold<sup>2</sup>, F. Pfeiffer<sup>2</sup>  
<sup>1</sup>SkyScan, Belgium; <sup>2</sup>Technische Universität München, Germany;  
<sup>3</sup>Karlsruhe Institute of Technology, Germany

**M14-148 Three-Dimensional Diffuse Optical Tomography: System Implementation and Validation of Reconstruction Algorithms**

S. K. Biswas, R. Kanhirodan, V. R. M  
*Indian Institute of Science, Bangalore, India*

**M14-153 Improvements in Intrinsic Feature Pose Measurement for Awake Animal Imaging**

J. S. Goddard, J. S. Baba, S. J. Lee, *Oak Ridge National Laboratory, USA*; A. G. Weisenberger, J. McKisson, *Thomas Jefferson National Accelerator Facility, USA*; M. F. Smith, *University of Maryland, USA*

**M14-158 Coronary Artery Motion Estimation and Compensation: a Feasibility Study**

M. Jarroui<sup>1</sup>, R. Bhagalia<sup>1</sup>, D. Beque<sup>1</sup>, S. John<sup>2</sup>, J. D. Pack<sup>1</sup>  
<sup>1</sup>General Electric Global Research, USA; <sup>2</sup>General Electric Healthcare Technologies, USA

**M14-163 A New Calibration Method in Dual Energy Mammography**

S.-M. Han, D.-G. Kang, S.-S. Kim, H.-H. Oh, Y. H. Sung, S. D. Lee  
*Samsung Electronics, South Korea*

**M14-168 Studying Contaminant Transport and Chemical Reduction in Subsurface Sediment by Modeling Flow in Porous Media**

R. Boutchko<sup>1</sup>, V. Rayz<sup>2</sup>, F. Neacsu<sup>1</sup>, J. P. O'Neil<sup>1</sup>, N. T. Vandehey<sup>1</sup>, P. S. Nico<sup>1</sup>, J. Druhan<sup>1</sup>, T. F. Budinger<sup>1</sup>, D. Saloner<sup>2</sup>, G. T. Gullberg<sup>1</sup>, W. W. Moses<sup>1</sup>  
<sup>1</sup>Lawrence Berkeley National Lab, USA; <sup>2</sup>University of California San Francisco, USA

**M14-173 Models of Detection Physics for Nuclear Probes in Freehand SPECT Reconstruction**

A. Hartl, S. Ziegler, N. Navab  
*Technische Universität München, Germany*

**M14-178 Enhanced High-Resolution EMCCD-Based Gamma Camera Using SiPM Side Detection**

J. W. T. Heemskerk<sup>1,2</sup>, M. A. N. Korevaar<sup>1,2</sup>, J. Huizenga<sup>1</sup>, R. Kreuger<sup>1</sup>, D. R. Schaart<sup>1</sup>, M. C. Goorden<sup>1,2</sup>, F. J. Beekman<sup>1,2,3</sup>  
<sup>1</sup>Delft University of Technology, Netherlands; <sup>2</sup>University Medical Center Utrecht, Netherlands; <sup>3</sup>Molecular Imaging Laboratories, Netherlands

**M14-183 Spatial Resolution Improvement by Maximum Likelihood Estimation in a 3D Positioning CZT Detector for High-Resolution PET**

Y. Gu, G. Chinn, A. Boussethem, C. S. Levin  
*Stanford University, USA*

**M14-188 System Design and Development of a Lower-Cost Animal PET-CT (MuPET) with Large Axial Solid PET Ring of 1.25-mm LYSO Detectors**

H. Li, Y. Zhang, R. A. Ramirez, C. Wang, H. Baghaei, S. An, W.-H. Wong  
*University of Texas, M.D. Anderson Cancer Center, USA*

**M14-193 A Prototype Continuous Miniature Crystal Element (cMiCE) Scanner**

R. S. Miyaoka, X. Li, W. C. Hunter, L. Pierce, W. McDougald, P. E. Kinahan, T. K. Lewellen  
*University of Washington, USA*

**M14-198 Attenuation Correction of Tc-99m Tetrofosmin Micro SPECT/CT Cardiac Measurements in Rats**

J. Strydhorst, G. Wells  
*University of Ottawa Heart Institute, Canada*



**M14-203 Development of PIXSIC, a miniaturized wireless Beta-Probe for in vivo brain studies in freely moving rodents**

P. Weiss<sup>1</sup>, M. Benoit<sup>2</sup>, J.-C. Clemens<sup>1</sup>, B. Dinskespiller<sup>1</sup>, S. Fieux<sup>3</sup>, B. Janvier<sup>4</sup>, M. Jevaud<sup>1</sup>, P. Gisquet-Verrier<sup>3</sup>, S. Karkar<sup>1</sup>, M. Menouni<sup>1</sup>, P. Ollive<sup>1</sup>, F. Pain<sup>4</sup>, L. Pinot<sup>4</sup>, K. Sietambie Ngnekou<sup>1</sup>, L. Zimmer<sup>5</sup>, C. Morel<sup>1</sup>, P. Laniece<sup>4</sup>

<sup>1</sup>Centre de Physique des Particules de Marseille (Univ. de la Mediterranee et CNRS), France; <sup>2</sup>Laboratoire de l'Accelérateur Linéaire (Univ. P11 et CNRS), France; <sup>3</sup>Centre de Neurosciences de Paris-Sud (Univ. P11 et CNRS), France; <sup>4</sup>Imagerie et Modélisation en Neurobiologie et Cancérologie (Univ. P7/P11 et CNRS), France; <sup>5</sup>Centre d'Etude et de Recherche Multimodal Et Pluridisciplinaire en Imagerie du vivant CERMEP - Imagerie du vivant, France

**M14-208 Imaging Study of a Phantom and Small Animal with a Two-Head Electron-Tracking Compton Gamma-Ray Camera**

S. Kabuki<sup>1</sup>, H. Kimura<sup>1</sup>, H. Amano<sup>1</sup>, H. Kubo<sup>1</sup>, K. Miuchi<sup>1</sup>, H. Kawashima<sup>2</sup>, M. Ueda<sup>3</sup>, K. Ogawa<sup>4</sup>, S. Hideo<sup>1</sup>, T. Tanimori<sup>1</sup>  
<sup>1</sup>Kyoto University, Japan; <sup>2</sup>National Cerebral and Cardiovascular Center, Japan; <sup>3</sup>Kyoto University Hospital, Japan; <sup>4</sup>Hosei University, Japan

**M14-213 Performance Evaluation of a MultiModality SPECT/CT Scanner**

J. G. Mannheim, M. S. Judenhofer, T. Schlichthaerle, B. J. Pichler  
Laboratory for Preclinical Imaging and Imaging Technology of the Werner Siemens-Foundation, University of Tuebingen, Germany

**M14-218 Image Quality Phantom and Parameters for High Spatial Resolution Small-Animal SPECT**

E. P. Visser<sup>1</sup>, A. A. Hartevelde<sup>2</sup>, A. A. Meeuwis<sup>1</sup>, J. A. Disselhorst<sup>1</sup>, W. J. G. Oyen<sup>1</sup>, O. C. Boerman<sup>1</sup>

<sup>1</sup>Radboud University Nijmegen Medical Centre, the Netherlands;  
<sup>2</sup>University of Twente, the Netherlands

**M14-223 Timing Calibration Method for NanoPET/CT System**

P. Major<sup>1</sup>, G. Hesz<sup>2</sup>, T. Bukki<sup>1</sup>, B. Benyo<sup>2</sup>, G. Nemeth<sup>1</sup>

<sup>1</sup>Mediso Ltd., Hungary; <sup>2</sup>Budapest Univ. of Technology and Economics, Hungary

**M14-228 Organ Delineation Using Factor Analysis on the Genisys Preclinical PET System**

F. R. Daver, S. Christiaan, J. T. Lee, L. Wei, M. Dahlbom  
University of California - Los Angeles, USA

**M14-233 Performance Evaluation of TV-minimization-based Image Reconstruction from OBI-sparse-data**

X. Han<sup>1</sup>, E. Pearson<sup>1</sup>, S. Cho<sup>2</sup>, J. Bian<sup>1</sup>, E. Y. Sidky<sup>1</sup>, C. A. Pelizzari<sup>1</sup>, X. Pan<sup>1</sup>

<sup>1</sup>The University of Chicago, USA; <sup>2</sup>Korea Advanced Institute of Science and Technology, Korea

**M14-238 Block-Based Iterative Coordinate Descent**

T. M. Benson, B. K. B. De Man, L. Fu, GE Global Research, United States; J.-B. Thibault, GE Healthcare, United States

**M14-243 Motion Weighting in Helical Computed Tomography with Wide Cone Angle**

A. A. Zamyatin, B. S. Chiang, Toshiba Medical Research Institute USA, USA; S. Nakanishi, Toshiba Medical Systems Corporation, Japan

**M14-248 Evaluating Popular Non-Linear Image Processing Filters for Their Use in Regularized Iterative CT**

W. Xu, K. Mueller, Stony Brook University, USA

**M14-253 System Matrix Calibration with Point Source Measurements for Preclinical PET**

M. Chen, V. Y. Panin, H. Rothfuss, S. Cho, I. Hong, Siemens Molecular Imaging, USA; R. M. Leahy, University of Southern California, USA

**M14-258 Efficiently GPU-Accelerating Long Kernel Convolutions in 3-D DIRECT TOF PET Reconstruction via a Kernel Decomposition Scheme**

S. Ha<sup>1</sup>, Z. Zhang<sup>1</sup>, S. Matej<sup>2</sup>, K. Mueller<sup>1</sup>

<sup>1</sup>Stony Brook University, USA; <sup>2</sup>University of Pennsylvania, PN

**M14-263 Direct Parametric Estimation of Blood Flow in Abdominal PET/CT Within an EM Reconstruction Framework**

F. A. Kotasidis<sup>1</sup>, A. J. Reader<sup>2</sup>, G. I. Angelis<sup>1</sup>, P. J. Markiewicz<sup>1</sup>, M. D. Walker<sup>1</sup>, P. M. Price<sup>3</sup>, W. R. Lionheart<sup>1</sup>, J. C. Matthews<sup>1</sup>

<sup>1</sup>University of Manchester, United Kingdom; <sup>2</sup>McGill University, Canada; <sup>3</sup>Christie hospital, NHS Trust, United Kingdom

**M14-268 Positron Range Correction in PET Using an Alternating EM Algorithm**

N. N. Agbeko, J. A. O'Sullivan, R. Laforest, J.-C. Cheng  
Washington University In St. Louis, United States

**M14-273 Maximum a Posteriori Reconstruction Using PRESTO and PET/MR Data Acquired Simultaneously with the 3TMR-BrainPET**

L. L. Caldeira<sup>1,2</sup>, J. J. Scheins<sup>3</sup>, P. Almeida<sup>1</sup>, J. Seabra<sup>2</sup>, H. Herzog<sup>3</sup>

<sup>1</sup>Instituto de Biofisica e Engenharia Biomedica, Portugal; <sup>2</sup>Siemens Healthcare, Portugal; <sup>3</sup>Institute of Neurosciences and Medicine, Germany

**M14-278 3D Cone-Beam Rebinning and Reconstruction for Animal PET Transmission Tomography**

J. Deng, S. Siegel, M. Chen, Siemens Molecular Imaging, USA

**M14-283 Fast GPU-Based Forward and Back Projection in MAP Reconstruction with a Factored System Matrix**

Y. Lin, Q. Lin, R. M. Leahy, USC, United States

**M14-288 Distance Driven Projection and Backprojection for Spherically Symmetric Basis Functions**

Y. M. Levakhina, T. M. Buzug  
University of Luebeck, Germany

**M14-293 Data-Driven Problem Reduction for Image Reconstruction from Projections Using Gift Wrapping**

J. Gregor, University of Tennessee, USA

**M14-298 A convergent regularized SPECT reconstruction algorithm using an anatomical prior for improved dose-rate volume histogram estimation**

L. Cheng<sup>1</sup>, X. He<sup>1</sup>, R. Hobbes<sup>1</sup>, W. E. Bolch<sup>2</sup>, G. Sgouros<sup>1</sup>, E. C. Frey<sup>1</sup>

<sup>1</sup>Johns Hopkins University School of Medicine, USA; <sup>2</sup>University of Florida, USA

**M14-303 An Adaptive and Non-Uniform SPECT Angular Sampling Approach for Optimizing Estimation Task Performances**

N. Li, L.-J. Meng, The University of Illinois, USA

**M14-308 A Novel Reconstruction Algorithm for Molecular Breast Imaging Tomosynthesis**

Z. Gong, M. B. Williams, University of Virginia, VA



**M14-313 Multiple Acquisition Frame-Based Motion Correction for Awake Monkey PET Imaging**

X. Jin, C. M. Sandiego, T. Mulnix, K. Fowles, S. Liddie, S. Ford, S. A. Castner, G. V. Williams, R. E. Carson  
Yale University, USA

**M14-318 Inter- and Intra-Subject Variation of Abdominal Vs. Thoracic Respiratory Motion Using Kernel Density Estimation**

M. R. Alnowami<sup>1</sup>, D. Okwechime<sup>1</sup>, E. Lewis<sup>1</sup>, M. Guy<sup>2</sup>, K. Wells<sup>1</sup>  
<sup>1</sup>University of Surrey, UK; <sup>2</sup>Medway Maritime Hospital, UK

**M14-323 Event-Based Motion Correction in PET Transmission Measurements with a Rotating Point Source**

V. W. Zhou<sup>1</sup>, A. Kyme<sup>1</sup>, S. R. Meikle<sup>1</sup>, R. Fulton<sup>1,2</sup>  
<sup>1</sup>School of Physics, Sydney University, Australia; <sup>2</sup>Department of Medical Physics, Australia

**M14-328 MR-Based Partial Volume Correction for PET Using Geometric Transfer Matrices**

K. Buescher<sup>1</sup>, M. S. Judenhofer<sup>2</sup>, B. J. Pichler<sup>2</sup>, K. Bolwin<sup>1</sup>, M. A. Schaefer<sup>3</sup>, L. Stegger<sup>3</sup>  
<sup>1</sup>University of Muenster, Germany; <sup>2</sup>University of Tuebingen, Germany; <sup>3</sup>University Hospital of Muenster, Germany

**M14-333 New Calibration and Evaluation Method for PET Scanners using Point-like Radioactive Sources**

T. Hasegawa<sup>1</sup>, K. Oda<sup>2</sup>, Y. Wada<sup>3</sup>, T. Yamada<sup>4</sup>, E. Yoshida<sup>5</sup>, H. Murayama<sup>5</sup>, K. Saito<sup>1</sup>, T. Takeda<sup>1</sup>, T. Kikuchi<sup>6</sup>  
<sup>1</sup>Kitasato Univ., Japan; <sup>2</sup>TMIG, Japan; <sup>3</sup>RIKEN, Japan; <sup>4</sup>JRIA, Japan; <sup>5</sup>NIRS, Japan; <sup>6</sup>Kitasato Univ. Hospital, Japan

**M14-338 Efficient Point Clouds Based Scatter Correction for Fully 3D PET**

F. Gao<sup>1</sup>, H. Liu<sup>2</sup>, P. Shi<sup>1</sup>  
<sup>1</sup>Rochester Institute of Technology, USA; <sup>2</sup>Zhejiang University, China

**M14-343 Investigation of Motion Induced Errors in Scatter Correction for the HRRT Brain Scanner**

J. M. Anton-Rodriguez<sup>1</sup>, M. Siboman<sup>2</sup>, M. C. Huisman<sup>3</sup>, M. D. Walker<sup>1,4</sup>, J. C. Matthews<sup>1</sup>, M. Feldmann<sup>1,4</sup>, S. H. Keller<sup>2</sup>, M.-C. Asselin<sup>1</sup>  
<sup>1</sup>Manchester University, United Kingdom; <sup>2</sup>Rigshospitalet, Copenhagen University Hospital, Denmark; <sup>3</sup>VU University Medical Center, The Netherlands; <sup>4</sup>University College London, United Kingdom

**M14-348 Attenuation Map Segmentation in Low-Dose PET/CT**

J. J. Hamill<sup>1</sup>, B. Bai<sup>2</sup>, R. L. Eisner<sup>3</sup>, M. Ichese<sup>2</sup>, J. A. Nye<sup>4</sup>  
<sup>1</sup>Siemens Medical Solutions, USA; <sup>2</sup>Columbia Presbyterian Medical Center, USA; <sup>3</sup>Emory University Hospital Midtown, USA; <sup>4</sup>Emory University Hospital, USA

**M14-353 Projection Correlation Based Noise Reduction in Low Dose Volume CT**

H. Yan, X. Mou, Xian Jiaotong University, P.R.China

**M14-358 Feasibility study of the quantitative correction directly from the images of the carotid artery for the brain input function imaging by an ultra-high resolution dedicated brain PET**

Y. Zhang, H. Li, H. Baghaei, S. Liu, R. Ramirez, S. An, C. Wang, W.-H. Wong  
University of Texas MD Anderson Cancer Center, USA

**M14-363 Tracer Input for Kinetic Modeling of Liver Physiology by PET in Pigs Determined Without Sampling Portal Venous Blood**

M. Winterdahl, S. Keiding, M. Sorensen, F. V. Mortensen, A. K. O. Alstrup, O. L. Munk

Aarhus University Hospital, Denmark

**M14-368 A Novel Approach to the Assessment of Response to Chemotherapy in Human Sarcoma Imaged with PET-FDG**

E. Wolsztynski, F. O'Sullivan, University College Cork, Ireland; E. Conrad, J. F. Eary, University of Washington, USA

**M14-373 Automated VOI Analysis in 18F-FDDNP PET Using Structural Warping: Validation Through Classification of Alzheimers Disease Patients**

M. Q. Wilks, H. Protas, M. Wardak, G. Small, J. Barrio, S.-C. Huang  
UCLA, USA

**M14-378 Comparison of Methods for Quantification of rCBF on the HRRT PET Scanner Using [<sup>15</sup>O]H<sub>2</sub>O**

M. D. Walker<sup>1,2</sup>, M. Feldmann<sup>1,2</sup>, J. M. Anton-Rodriguez<sup>2</sup>, S. Wang<sup>2</sup>, J. C. Matthews<sup>2</sup>, M. J. Koeppe<sup>1</sup>, M.-C. Asselin<sup>2</sup>  
<sup>1</sup>University College London, UK; <sup>2</sup>University of Manchester, UK

**M14-383 Task Based Assessment of Cardiac Function in Monte Carlo Simulated Gated TI-201 Perfusion SPECT: a Human Observer Study**

P. H. Pretorius, J. M. O'Connor, R. Licho, University of Massachusetts Medical School, United States; J. G. Brankov, Illinois Institute of Technology, United States

**M14-388 Quantification Task-Optimized Estimates from OSEM and FBP Reconstructions in Single- and Multi-Subject Studies**

J. Verhaeghe, P. Gravel, A. J. Reader  
Montreal Neurological Institute, McGill University, Canada

**M14-393 Input Function Extraction from Small-Animal Gated PET Images**

R. Mabrouk<sup>1</sup>, L. Bentabet<sup>2</sup>, F. Dubeau<sup>1</sup>, M. Bentourkia<sup>1</sup>  
<sup>1</sup>Universite de Sherbrooke, Canada; <sup>2</sup>Bishop's University, Canada

**M14-398 A Continuity Equation Based Optical Flow Method for Cardiac Motion Correction in 3D PET Data**

M. Dawood, C. Brune, F. Buether, M. Schaefer, K. P. Schaefer  
University of Muenster, Germany

**M14-403 Comparison of Data-Driven and External-Surrogate Based Motion Estimation Strategies in Cardiac SPECT Imaging**

J. M. Mukherjee<sup>1</sup>, B. F. Hutton<sup>2</sup>, M. A. King<sup>1</sup>  
<sup>1</sup>University of Massachusetts, USA; <sup>2</sup>University College London, UK

**M14-408 Automated Coronary Artery Tracking of Low-Axial Resolution Multi Slice CT**

J. Wu, E. Lewis, University of Surrey, United Kingdom; G. Ferns, Keele University, United Kingdom

**M14-413 Automatic Alignment of CTA and Nuclear Perfusion Images**

T. L. Faber, C. A. Santana, M. Piccinelli, J. A. Nye, J. R. Votaw, E. V. Garcia, Emory University, USA; E. Haber, University of British Columbia, Canada

**M14-418 Non-Rigid Registration Between 3D MRI and CT Images of the Liver Based on Intensity and Edge Orientation Information**

W. H. Nam, D. Lee, K. Y. Jeong, J. H. Kim, J. B. Ra  
KAIST, Republic of Korea

**M14-423 Experimental Validation of Brain PET Image Registration in Rats**

S. C. Coello<sup>1</sup>, T. Hjørnevik<sup>1</sup>, F. Courivaud<sup>2</sup>, F. Willoch<sup>1</sup>  
<sup>1</sup>Akershus University Hospital, Norway; <sup>2</sup>Rikshospitalet, Norway

**M14-428 Evaluation of Automatic Striatal Segmentation for the ECAT HRRT Images**

U. Tuna<sup>1</sup>, J. Tohka<sup>1</sup>, R. J. P. C. Farinha<sup>2</sup>, U. Ruotsalainen<sup>1</sup>

<sup>1</sup>Tampere University of Technology, Finland; <sup>2</sup>Ramboll Finland Oy, Finland

**M14-433 Application of Mutual Information Metric to Wavelet Filter Selection for Denoising of Nuclear Medicine Images**

E. Matsuyama, D.-Y. Tsai, Y. Lee, Niigata University,

Japan; K. Kojima, Hamamatsu University, Japan

**M14-438 Practical Noise Assessment Method**

Z. Yang, A. A. Zamyatin

Toshiba Medical Research Institute USA, Inc., USA

**M14-443 Image Quality Evaluation Using Automatic Image Scanning and a Novel Nonparametric Free-Response Data Analysis Method. Application to PET Energy-Based Scatter Correction Evaluation.**

L. M. Popescu, Food and Drug Administration, USA

**M14-448 Comparison of Image Characteristics of Isotopes Used for Radioembolization**

M. Elschot, L. J. Dam, J. F. W. Nijsen, H. W. A. M. de Jong

UMC Utrecht, The Netherlands

**M14-453 Multithreading GATE**

P. Torres-Tramon, University of Santiago of Chile, Chile; N. Vega-

Acevedo, F. R. Rannou, Equifax Inc., Chile

**M14-458 Validation of a New Deterministic Transport Code for SPECT Simulation**

K. K. Royston, A. Haghghat, D. Gilland, C. Yi

University of Florida, USA

**M14-463 Spectral Response Simulation of Scintillator Arrays with SiPM Readout**

K. Pham-Gia, W. Metzger, S. Kappler, S. Wirth

Siemens AG, Germany

**M14-468 A Monte Carlo Based Simulation of an High Speed ADC-Based TOF-PET Read-Out System**

N. Brekke<sup>1,2</sup>, D. Rorich<sup>2</sup>, K. Ullaland<sup>2</sup>, R. Gruner<sup>1,2</sup>

<sup>1</sup>Haukeland University Hospital, Norway; <sup>2</sup>University of Bergen, Norway

**M14-473 Parallel Beam Approximation for Calculation of Detection Efficiency of Crystals in PET Detector Array**

S. A. Komarov, Y.-C. Tai

Washington University in St. Louis, USA

**M14-478 Advancing Nuclear Breast Imaging Through the Use of High-Purity Germanium Detectors**

D. L. Campbell, T. E. Peterson

Vanderbilt University Institute of Imaging Science, United States of America

**M14-483 SPECT Dual-Isotope Myocardial Perfusion Imaging with a 20-Pinhole Collimator: a Simulation Study**

J. D. Bowen<sup>1</sup>, Q. Huang<sup>2</sup>, G. T. Gullberg<sup>3</sup>, Y. Seo<sup>1</sup>

<sup>1</sup>University of California, United States; <sup>2</sup>Shanghai Jiao Tong University, China; <sup>3</sup>Lawrence Berkeley National Laboratory, United States

**M14-488 Adaptive Acquisition Protocol Design for Local CNR Maximization in Flexible SPECT and PET Scanners**

E. Asma, R. M. Manjeshwar

General Electric Global Research, USA

Sat. Nov. 6	07:30	08:00	08:30	09:00	09:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30
Ballroom A					M16: Modeling and Simulation Techniques																						
Ballroom B					M17: Enhancing PET, SPECT and CT Imaging															M20: PET and SPECT Imaging Performance							
Ballroom C																											
Ballroom E																											
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Room 301A																											
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Room 301D																											
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Room 200D																											
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Exhibit Hall B																											
Off-Site Events																											

## MIC Oral Presentations

## M16: Modeling and Simulation Techniques

Saturday, Nov. 6 08:30-10:00 Ballroom A

Session Chairs: Maria Grazia Pia, *INFN Genova, Italy*  
 Stephen C. Moore, *Brigham & Women's Hospital, USA*

**M16-1 (08:30) Modeling Spectral Distortions in Energy Resolved Photon-Counting X-Ray Detectors**

X. Wang<sup>1</sup>, D. Meier<sup>2</sup>, J. Hugg<sup>2</sup>, S. Chowdhury<sup>2</sup>, D. Wagenaar<sup>2</sup>, B. Patt<sup>2</sup>, E. Frey<sup>1</sup>

<sup>1</sup>Johns Hopkins University, USA; <sup>2</sup>Gamma Medica-Ideas, Inc., Norway/Canada/USA

**M16-2 (08:45) Mixture Model for Fast Estimation of Positron Annihilation Position**

P. D. Olcott, E. Gonzalez, A. Vandenbroucke, C. S. Levin  
*Stanford University, USA*

**M16-3 (09:00) Nonlinear Least Squares Modeling of 3D Interaction Position in a Monolithic Scintillator Block**

Z. Li, M. Wedrowski, P. Bruyndonckx, G. Vandersteen  
*Vrije universiteit Brussel, Belgium*

**M16-4 (09:15) Realistic Simulation of Regional Myocardial Perfusion Defects for Cardiac SPECT Studies**

G. S. K. Fung<sup>1</sup>, W. P. Segars<sup>2</sup>, T.-S. Lee<sup>1</sup>, T. Higuchi<sup>1</sup>, A. I. Veress<sup>3</sup>, G. T. Gullberg<sup>4</sup>, B. M. W. Tsui<sup>1</sup>

<sup>1</sup>Johns Hopkins University, USA; <sup>2</sup>Duke University, USA; <sup>3</sup>University of Washington, USA; <sup>4</sup>E.O. Lawrence Berkeley National Laboratory, USA

**M16-5 (09:30) Quantitative Elemental Imaging with Neutrons for Breast Cancer Diagnosis: a GEANT4 Study**

A. J. Kapadia, J. P. Shah, G. A. Agasthya  
*Duke University, USA*

**M16-6 (09:45) Monte Carlo Based Dose Estimation in Intraoperative Radiotherapy**

P. Guerra<sup>1</sup>, W. Gonzalez<sup>2</sup>, M. J. Ledesma-Carbayo<sup>3,1</sup>, J. Cal-Gonzalez<sup>4</sup>, E. Herranz<sup>4</sup>, J. M. Udias<sup>4</sup>, A. Lallena<sup>2</sup>, A. Santos<sup>3,1</sup>

<sup>1</sup>Biomedical Research Center in Bioengineering, Biomaterials and Nanomedicine, Spain; <sup>2</sup>Universidad de Granada, Spain; <sup>3</sup>Universidad Politecnica de Madrid, Spain; <sup>4</sup>Universidad Computense de Madrid, Spain

## M17: Enhancing PET, SPECT and CT Imaging

Saturday, Nov. 6 08:30-10:00 Ballroom B&amp;C

Session Chairs: Gene R. Gindi, *SUNY at Stony Brook, USA*  
 Margaret E. Daube-Witherspoon, *University of Pennsylvania, USA*

**M17-1 (08:30) Performance of a Local Projection-Based Estimation Approach to SPECT Partial Volume Correction**

S. Southekal<sup>1,2</sup>, S. J. McQuaid<sup>1,2</sup>, S. C. Moore<sup>1,2</sup>

<sup>1</sup>Brigham and Women's Hospital, USA; <sup>2</sup>Harvard Medical School, USA

**M17-2 (08:45) A Hybrid Between Region-Based and Voxel-Based Method for Partial Volume Correction**

S. H. Segobin, J. C. Matthews, P. J. Markiewicz, K. Herholz  
*The University of Manchester, United Kingdom*

**M17-3 (09:00) Weight Choice in PWLS Algorithms for Emission and Transmission Tomography**

K. Little, P. Vargas, P. La Riviere  
*Dept. of Radiology, The University of Chicago, USA*

**M17-4 (09:15) Restoration of Fine Azimuthal Sampling of Measured TOF Projection Data**

Y. Y. Panin<sup>1</sup>, M. Defrise<sup>2</sup>, M. E. Casey<sup>1</sup>

<sup>1</sup>Siemens Medical Solutions, USA; <sup>2</sup>Vrije Universiteit, Belgium

**M17-5 (09:30) Estimation of a Four-Dimensional Sinogram Blurring Function for Fully 3D PET from Point Source Scans**

M. S. Tohme, J. Zhou, J. Qi

*University of California, Davis, USA*

**M17-6 (09:45) Results from Neural Networks for Recovery of PET Triple Coincidences**

J.-B. Michaud, C.-A. Brunet, R. Lecomte, R. Fontaine  
*University of Sherbrooke, Canada*

## M18: MIC Posters 4

Saturday, Nov. 6 10:30-12:00 Exhibit Hall B

See listings in the MIC Poster section.

## M19: MIC Posters 5

Saturday, Nov. 6 13:30-15:30 Exhibit Hall B

See listings in the MIC Poster section.

## M20: PET and SPECT Imaging Performance

Saturday, Nov. 6 16:00-18:00 Ballroom B&amp;C

Session Chairs: Steven R. Meikle, *University of Sydney, Australia*  
 Georges El Fakhri, *Harvard Medical School and Massachusetts General Hospital, USA*

**M20-1 (16:00) A Practical Approximation of Variance of OSEM Reconstructions**

Q. Li, R. M. Leahy

*University of Southern California, SIPI, USA*

**M20-2 (16:15) Properties of Edge Artifacts in PSF-Based PET Reconstruction**

S. Tong<sup>1</sup>, A. M. Alessio<sup>1</sup>, K. Thielemans<sup>2</sup>, C. Stearns<sup>3</sup>, S. Ross<sup>3</sup>, P. E. Kinahan<sup>1</sup>

<sup>1</sup>University of Washington, United States; <sup>2</sup>Hammersmith Imanet, UK; <sup>3</sup>GE Healthcare, United States

**M20-3 (16:30) Reduction in Variability of Clinical Lesion Quantification with TOF-PET Imaging**

A. E. Perkins<sup>1</sup>, M. E. Daube-Witherspoon<sup>2</sup>, S. Surti<sup>2</sup>, E. Clementel<sup>3</sup>, J. S. Karp<sup>2</sup>

<sup>1</sup>Philips Healthcare, USA; <sup>2</sup>University of Pennsylvania, USA; <sup>3</sup>University of Ghent, Belgium

**M20-4 (16:45) Analysis of the Benefit of Time-of-Flight PET for Activity Quantitation in Myocardial Perfusion Imaging**

S. Southekal<sup>1,2</sup>, S. C. Moore<sup>1,2</sup>, A. Sitek<sup>1,2</sup>, M. F. Kijewski<sup>1,2</sup>

<sup>1</sup>Brigham and Women's Hospital, USA; <sup>2</sup>Harvard Medical School, USA

**M20-5 (17:00) Theoretical Improvement in Cardiac and Oncologic PET Image Quality with TOF Timing Resolution**

M. S. Levine, G. El Fakhri

Massachusetts General Hospital and Harvard Medical School, USA

**M20-6 (17:15) Time-of-Flight Precision and PET Image Accuracy**

J. A. Kolthammer, A. E. Perkins, *Philips Healthcare, USA*

**M20-7 (17:30) A Phantom Study of Regularized PET Image Reconstruction**

J. M. Wilson<sup>1</sup>, S. G. Ross<sup>2</sup>, T. W. Deller<sup>2</sup>, E. Asma<sup>3</sup>,  
R. M. Manjeshwar<sup>3</sup>, T. G. Turkington<sup>1,4</sup>

<sup>1</sup>Duke University, USA; <sup>2</sup>GE Healthcare, USA; <sup>3</sup>GE Global Research Center, USA; <sup>4</sup>Duke University Medical Center, USA

**M20-8 (17:45) Evaluation of Accuracy and Precision of Organ Activity Estimates for Quantitative I-131 SPECT**

N. Song<sup>1</sup>, Y. Du<sup>1</sup>, B. He<sup>2</sup>, E. C. Frey<sup>1</sup>

<sup>1</sup>Johns Hopkins Medical Institution, U.S.A.; <sup>2</sup>New York Presbyterian Hospital-Weill Cornell Medical Center, U.S.A.

**MIC Poster Presentations**

**M18: MIC Posters 4**

Saturday, Nov. 6 10:30-12:00 Exhibit Hall B

Session Chairs: Craig S. Levin, *Stanford University School of Medicine, USA*

James E. Bowsher, *Duke University Medical Center, USA*

**M18-4 An Improved Nearest Neighbor Method for the Estimation of the Gamma Photon Entry Point in Monolithic Scintillator Detectors for PET**

H. T. van Dam<sup>1</sup>, S. Seifert<sup>1</sup>, R. Vinke<sup>2</sup>, H. L&couml;hner<sup>2</sup>,  
P. Dendooven<sup>2</sup>, F. J. Beekman<sup>1,3</sup>, D. R. Schaart<sup>1</sup>

<sup>1</sup>Delft University of Technology, The Netherlands; <sup>2</sup>Kernfysisch Versneller Instituut (KVI), The Netherlands; <sup>3</sup>University Medical Centre Utrecht, The Netherlands

**M18-9 Determination of the Effects of Surface Chemistry and Composition on the Electron-Induced Secondary Electron Yield of Materials in Photo-Detectors Using X-Ray Photoelectron Spectroscopy and Ultra-Violet Photoelectron Spectroscopy**

S. J. Jokela<sup>1</sup>, I. V. Veryovkin<sup>1</sup>, A. V. Zinovev<sup>1</sup>, H. J. Frisch<sup>2</sup>,

J. W. Elam<sup>1</sup>, Q. Peng<sup>1</sup>, A. U. Mane<sup>1</sup>, I. Z. Zinetula<sup>1</sup>

<sup>1</sup>Argonne National Laboratory, USA; <sup>2</sup>University of Chicago, USA

**M18-14 1 mm Isotropic Detector Resolution Achieved by X'tal Cube Detector**

T. Mitsuhashi<sup>1,2</sup>, N. Inadama<sup>2</sup>, F. Nishikido<sup>2</sup>, E. Yoshida<sup>2</sup>,

H. Murayama<sup>2</sup>, H. Kawai<sup>1</sup>, M. Suga<sup>1,2</sup>, H. Haneishi<sup>1,2</sup>, K. Shibuya<sup>3</sup>,  
M. Watanabe<sup>4</sup>, T. Yamaya<sup>2</sup>

<sup>1</sup>Chiba University, Japan; <sup>2</sup>National Institute of Radiological Sciences, Japan; <sup>3</sup>Tokyo university, Japan; <sup>4</sup>Hamamatsu Photonics K.K., Japan

**M18-19 Readout Design and Validation for a 1 mm<sup>3</sup> Resolution Breast Dedicated PET System**

P. D. Reynolds, F. W. Lau, A. Vandenbroucke, C. S. Levin

*Stanford University, USA*

**M18-24 A High Resolution Scintillator Based SPECT Detector with Digital Pulse Processing (SPECTatress)**

K. Deprez, S. Vandenbergh, S. Staelens

*University of Ghent-IBBT, Belgium*

**M18-29 FPGA-Based Pulse Pileup Correction**

M. D. Haselman, S. Hauck, T. K. Lewellen, R. S. Miyaoka

*University of Washington, USA*

**M18-34 Beyond List Mode: on-Line Rebinning and Histogramming for Continuous Bed Motion in Clinical Whole-Body TOF PET/CT**

W. F. Jones, E. Breeding, J. H. Reed, P. Luk, A. Moor, *Siemens*

*Molecular Imaging, USA*; D. Townsend, *Singapore Bioimaging Consortium, Singapore*

**M18-39 Marker-Less Tracking for Respiratory Motion Correction in Nuclear Medicine**

M. R. Alnowami<sup>1</sup>, E. Lewis<sup>1</sup>, M. Guy<sup>2</sup>, K. Wells<sup>1</sup>

<sup>1</sup>University of Surrey, UK; <sup>2</sup>Medway Maritime Hospital, UK

**M18-44 LuYAP/LSO Phoswich Detectors for High Resolution Positron Emission Tomography**

L. A. Eriksson<sup>1,2,3,4</sup>, M. Conti<sup>1</sup>, C. L. Melcher<sup>2</sup>, H. Rothfuss<sup>1,2</sup>,

M. L. Eriksson<sup>3</sup>, M. Zhuravleva<sup>2</sup>



<sup>1</sup>Molecular Imaging, USA; <sup>2</sup>Scintillation Materials Research Center, USA; <sup>3</sup>Clinical Neuroscience, Sweden; <sup>4</sup>Department of Physics, Sweden

**M18-49 A Dual-Layer LYSO Crystal PET Detector Using a SPM Array and a 16:3 Signal Multiplexer**

C. J. Thompson, McGill University, Canada; A. L. Goertzen, University of Manitoba, Canada

**M18-54 Comparison of Two Light Reflector Patterns Designed for PMT-Quadrant-Sharing (PQS) Time-of-Flight PET Detectors**

S. An, H. Li, R. Ramirez, S. Liu, Y. Zhang, C. Wang, H. Baghaei, W.-H. Wong  
Univ. of Texas M.D. Anderson Cancer Center, U.S.A.

**M18-59 Increasing Edge Sensitivity of Modular PET Detectors by Incorporating Information from Adjacent Detectors**

S. Siegel, D. Hu, Siemens Healthcare, 37932

**M18-64 Improvement of Dead Time and Decoding Resolution for Position-Sensitive Detectors Using a Fully Dynamic Approach of Light Collection**

H. Li, C. Wang, S. An, H. Baghaei, Y. Zhang, R. A. Ramirez, W.-H. Wong  
University of Texas, M.D. Anderson Cancer Center, USA

**M18-69 Initial Evaluations of a Ring PET Breast Imager with Close Approach to the Chest Wall**

A. V. Stolin, S. Majewski, R. R. Raylman, West Virginia University, USA; J. E. McKisson, B. Kross, V. Popov, A. G. Weisenberger, Thomas Jefferson National Accelerator Facility, USA; J. Proffitt, Adaptive I/O Inc, USA; M. F. Smith, University of Maryland, USA; R. Wojcik, Ray Visions, Inc, USA

**M18-74 Development of a small OpenPET prototype for in-beam experiments**

E. Yoshida<sup>1</sup>, F. Nishikido<sup>1</sup>, N. Inadama<sup>1</sup>, H. Murayama<sup>1</sup>, H. Mashino<sup>2</sup>, T. Yamaya<sup>1</sup>

<sup>1</sup>National Institute of Radiological Sciences, Japan; <sup>2</sup>Espec Technos, Japan

**M18-79 Calculation of a Complete Depth of Interaction Response Function Without the Use of an External Source**

C. J. Bircher, X. Sun, Y. Shao

Univeristy of Texas MD Anderson Cancer Center, United States

**M18-84 Time of Flight PET Compared to Increased Scan Time**

T. G. Turkington<sup>1,2</sup>, J. M. Wilson<sup>2</sup>

<sup>1</sup>Duke University Medical Center, USA; <sup>2</sup>Duke University, USA

**M18-89 A new module-level parameter Interference Ratio (IR) to evaluate the performance of PET detector block**

X. Kang, Y. Liu, Y. Jin, Y. Xia, Q. Wei, T. Ma, S. Wang, Z. Wu  
Dept. of Engineering Physics, China

**M18-94 Collimator Optimization in SPECT Using Different Tasks Involving Detection and Localization**

L. Zhou, G. R. Gindi, SUNY at Stony Brook, USA

**M18-99 High Resolution Brain Imaging with Combined Parallel Hole and Pinhole Collimation**

Q. Huang<sup>1</sup>, T. Zeniya<sup>2</sup>, H. Kudo<sup>3</sup>, H. Iida<sup>2</sup>, G. T. Gullberg<sup>4</sup>

<sup>1</sup>Shanghai Jiaotong University, China; <sup>2</sup>National Cardiovascular Center Research Institute, Japan; <sup>3</sup>University of Tsukuba, Japan; <sup>4</sup>Lawrence Berkeley National Laboratory, USA

**M18-104 Collimator Design in SPECT, an Optimisation Tool**

N. Fuin<sup>1</sup>, A. Bousse<sup>1</sup>, S. Pedemonte<sup>2</sup>, S. Arridge<sup>2</sup>, S. Ourselin<sup>2</sup>, B. F. Hutton<sup>1</sup>

<sup>1</sup>UCLH University College London Hospitals, UK; <sup>2</sup>UCL University College London, UK

**M18-109 InSPECT a Multi-Modular Micro-SPECT System Based on the BazookaSPECT Technology**

M. I. Peterson<sup>1</sup>, K. Ljunggren<sup>1</sup>, L. Andersson-Ljus<sup>2</sup>, B. Miller<sup>3</sup>, S.-E. Strand<sup>1</sup>

<sup>1</sup>Lund University, Sweden; <sup>2</sup>Skens Universitetssjukhus, Sweden;

<sup>3</sup>University of Arizona, USA

**M18-114 Performance Evaluation of a LYSO-SSPM PET Detector Module for Combined PET/MRI Applications**

P. Dokhale<sup>1</sup>, Y. Wu<sup>2</sup>, Y. Yang<sup>2</sup>, R. Robertson<sup>1</sup>, C. Stapels<sup>1</sup>, J. Christian<sup>1</sup>, S. Cherry<sup>2</sup>, K. Shah<sup>1</sup>

<sup>1</sup>Radiation Monitoring Devices Inc., USA; <sup>2</sup>University of California-Davis, USA

**M18-119 PET/MRI: Observation of Non-Isotropic Positron Distribution in High Magnetic Fields and Its Diagnostic Impact**

A. Kolb<sup>1</sup>, M. Hofmann<sup>1,2</sup>, A. Sauter<sup>1</sup>, C.-C. Liu<sup>1</sup>, L. Eriksson<sup>3</sup>, B. Schoelkopf<sup>2</sup>, B. J. Pichler<sup>1</sup>

<sup>1</sup>University of Tuebingen, Germany; <sup>2</sup>Max Planck Institute, Germany;

<sup>3</sup>Siemens Healthcare, USA

**M18-124 MR-based attenuation correction using clinical whole-body MR and PET/CT**

J. Ouyang<sup>1</sup>, S. Y. Chun<sup>1</sup>, C. Catana<sup>1,2</sup>, T. Benner<sup>1,2</sup>, G. El Fakhri<sup>1</sup>

<sup>1</sup>Massachusetts General Hospital, USA; <sup>2</sup>Atinoulou A. Martinos Center for Biomedical Imaging, USA

**M18-129 Simple ROI Cone-Beam Computed Tomography**

C. Maass, M. Knaup, S. Sawall, M. Kachelriess  
Institute of Medical Physics, Germany

**M18-134 Synthetic CT Noise Emulation in the Raw Data Domain**

T. M. Benson, B. K. B. De Man  
GE Global Research, United States

**M18-139 Non-Circular Cone Beam CT Trajectories: a Preliminary Investigation on a Clinical Scanner**

E. A. Pearson<sup>1</sup>, S. Cho<sup>2</sup>, C. A. Pelizzari<sup>1</sup>, X. Pan<sup>1</sup>

<sup>1</sup>University of Chicago, USA; <sup>2</sup>Kaist University, Republic of Korea

**M18-144 Performance Analysis of X-Ray Phase-Contrast Interferometers with Respect to Grating Layouts**

W. Haas<sup>1</sup>, P. Bart<sup>2</sup>, F. Bayer<sup>2</sup>, J. Durst<sup>2</sup>, T. Grund<sup>3</sup>, J. Kenntner<sup>3</sup>, T. Michel<sup>2</sup>, A. Ritter<sup>2</sup>, T. Weber<sup>2</sup>, G. Anton<sup>2</sup>, J. Hornegger<sup>1</sup>

<sup>1</sup>Pattern Recognition Lab, Germany; <sup>2</sup>ECAP, Germany; <sup>3</sup>Institute for Microstructure Technology, Germany

**M18-149 Three-Dimensional Diffusion Weighted Imaging of the Acute Cerebral Ischemia Rat Using 3D MP-RAGE MRI**

T. Numano<sup>1</sup>, A. Marushima<sup>2</sup>, K. Hyodo<sup>3</sup>, K. Homma<sup>3</sup>, K. Suzuki<sup>2</sup>, A. Matsumura<sup>2</sup>

<sup>1</sup>Tokyo Metropolitan University, Japan; <sup>2</sup>Tsukuba University, Japan;

<sup>3</sup>National Institute of Advanced Industrial Science and Technology, Japan

**M18-154 Monte Carlo Simulation of Positron-Emitting Nuclei Distributions in Proton Therapy**

C. Van Ngoc Ty<sup>1</sup>, L. De Marzi<sup>2</sup>, S. Jan<sup>1</sup>, L. Lestand<sup>3</sup>, R. Ferrand<sup>2</sup>, C. Comtat<sup>1</sup>, R. Trebossen<sup>1</sup>

<sup>1</sup>CEA, France; <sup>2</sup>Institut Curie, France; <sup>3</sup>IN2P3, France

**M18-159 Simulation of Left Ventricular Dyssynchrony Using the XCAT Phantom**

A. A. Cheung<sup>1</sup>, T. Niu<sup>1</sup>, T. L. Faber<sup>2</sup>, W. P. Segars<sup>3</sup>, L. Zhu<sup>1</sup>, J. Chen<sup>2</sup>

<sup>1</sup>Georgia Institute of Technology, USA; <sup>2</sup>Emory University, USA; <sup>3</sup>Duke University, USA

**M18-164 Experimental Feasibility of Multi-Material Decomposition Imaging in Small Animal SPECT/CT System**

H.-M. Cho<sup>1,2</sup>, M. Pivovarov<sup>3</sup>, H.-J. Kim<sup>1,2</sup>, C.-L. Lee<sup>1,2</sup>, Y. Seo<sup>1</sup>

<sup>1</sup>University of California, San Francisco, USA; <sup>2</sup>Yonsei University, Korea;

<sup>3</sup>Lawrence Livermore National Laboratory, USA

**M18-169 Detection Tests of Imaging Devices Based on Silicon Pixel-Array Detectors Assembled Using Tape Automated Bonding and Microcable Technologies**

Y. Linhart<sup>1</sup>, V. Borshchov<sup>2</sup>, D. Burdette<sup>3</sup>, E. Chesi<sup>3</sup>, V. Cindro<sup>4</sup>, N. H. Clinthorne<sup>5</sup>, E. Cochran<sup>3</sup>, B. Grosicar<sup>4</sup>, K. Honscheid<sup>3</sup>, H. Kagan<sup>3</sup>, C. Lacasta<sup>1</sup>, O. Listratenko<sup>2</sup>, G. Llosa<sup>1</sup>, M. Mikuz<sup>4,6</sup>, M. Protsenko<sup>2</sup>, V. Stankova<sup>1</sup>, A. Studen<sup>4</sup>, I. Tymchuk<sup>2</sup>, P. Weilhammer<sup>3</sup>, D. Zontar<sup>4</sup>

<sup>1</sup>IFIC/CSIC-UVeG, Spain; <sup>2</sup>State Enterprise Scientific Research Technological Institute of Instrument Engineering (SE SRTIIE), Ukraine;

<sup>3</sup>Ohio State University, OH, USA; <sup>4</sup>Joef Stefan Institute, Slovenia;

<sup>5</sup>University of Michigan, MI, USA; <sup>6</sup>University of Ljubljana, Slovenia

**M18-174 The First Generation Prototype of the Surgical PET Imaging Probe System**

S. S. Huh<sup>1</sup>, E. Cochran<sup>2</sup>, K. Honscheid<sup>2</sup>, H. Kagan<sup>2</sup>, S. Smith<sup>2</sup>, W. L. Rogers<sup>1</sup>, N. H. Clinthorne<sup>1</sup>

<sup>1</sup>University of Michigan, USA; <sup>2</sup>The Ohio State University, USA

**M18-179 A Depth-Encoding PET Detector Module Based on GAPD Having Large-Area Microcells**

J. Kang<sup>1,2</sup>, Y. Choi<sup>1</sup>, K. J. Hong<sup>1</sup>, W. Hu<sup>1,2</sup>, Y. S. Huh<sup>1,2</sup>, H. K. Lim<sup>1</sup>, B.-T. Kim<sup>2</sup>

<sup>1</sup>Sogang University, Korea; <sup>2</sup>SungKyunKwan University, Korea

**M18-184 Exploring the Limits of PET Resolution with a Monolithic Scintillator Detector**

S. Stoll<sup>1</sup>, S. Krishnamoorthy<sup>2</sup>, M. L. Purschke<sup>1</sup>, C. L. Woody<sup>1</sup>, D. J. Schlyer<sup>1</sup>, P. Vaska<sup>1</sup>

<sup>1</sup>Brookhaven National Laboratory, U.S.A.; <sup>2</sup>Stony Brook University, U.S.A.

**M18-189 High Resolution PET Utilizing Concentric Silicon and Scintillator Rings**

E. Cochran<sup>1</sup>, E. Chesi<sup>1</sup>, N. H. Clinthorne<sup>2</sup>, K. Honscheid<sup>1</sup>, S. S. Huh<sup>2</sup>, H. Kagan<sup>1</sup>, C. Lacasta<sup>3</sup>, M. Mikuz<sup>4</sup>, J. Rackers<sup>1</sup>, S. Smith<sup>1</sup>, A. Studen<sup>4</sup>, P. Weilhammer<sup>1</sup>, E. Wolf<sup>1</sup>

<sup>1</sup>The Ohio State University, USA; <sup>2</sup>University of Michigan, USA; <sup>3</sup>IFIC/CSIC/University of Valencia, Spain; <sup>4</sup>University of Ljubljana, Slovenia

**M18-194 Verification of Prototype Geiger-Mode APD Small Animal PET Scanner by Comparing with PMT-Based PET**

S. I. Kwon<sup>1</sup>, J. S. Lee<sup>1</sup>, H. S. Yoon<sup>1</sup>, M. Ito<sup>2</sup>, G. B. Ko<sup>1</sup>, S.-H. Lee<sup>1</sup>, I. C. Song<sup>3</sup>, D. S. Lee<sup>1</sup>, S. J. Hong<sup>4</sup>

<sup>1</sup>Seoul National University, Korea; <sup>2</sup>Korea University, Korea; <sup>3</sup>Seoul National University Hospital, Korea; <sup>4</sup>Eulji University, Korea

**M18-199 Design and Simulation Study of Low-Cost 511 keV SPECT/CT Imaging of PET Tracers in Mice**

F. P. DiFilippo, R. S. Klatt, Cleveland Clinic, USA

**M18-204 The Micro-Angiographic Fluoroscope (MAF) in High Definition (HD) Mode for Improved Contrast-to-Noise Ratio and Resolution in Fluoroscopy and Roadmapping**

A. S. Panse, C. N. Ionita, W. Wang, S. K. Natarajan, A. Jain, D. R. Bednarek, S. Rudin

Toshiba Stroke Research Center, SUNY University at Buffalo, USA

**M18-209 Refraction-Compensated Motion Tracking of Unrestrained Animals in PET**

A. Z. Kyme<sup>1</sup>, S. R. Meikle<sup>1</sup>, C. Baldock<sup>1</sup>, R. R. Fulton<sup>1,2</sup>

<sup>1</sup>University of Sydney, Australia; <sup>2</sup>Westmead Hospital, Australia

**M18-214 Imaging Performance of Two Multiple-Pinhole Small-Animal SPECT Systems: Multiplexed Vs. Non-Multiplexed Data Acquisition**

M.-A. Park<sup>1,2</sup>, E. P. Lunsford<sup>3,2</sup>, R. E. Zimmerman<sup>1,2</sup>, S. Southehal<sup>1,2</sup>, J. V. Frangioni<sup>3,2</sup>, S. C. Moore<sup>1,2</sup>

<sup>1</sup>Brigham and Women's Hospital, USA; <sup>2</sup>Harvard Medical School, USA; <sup>3</sup>Beth Israel Deaconess Medical Center, USA

**M18-219 Adsorption of TcO<sub>4</sub><sup>-</sup> by Zeolites and Other Crystalline Minerals for Testing Small-Animal Imaging System Performance**

R. E. Zimmerman<sup>1</sup>, M.-A. Park<sup>1</sup>, R. D. Andrews<sup>2</sup>, S. C. Moore<sup>1</sup>

<sup>1</sup>Harvard Medical Sch Brigham & Women's H Radiology, USA; <sup>2</sup>Boulder Innovative Technologies, Inc., USA

**M18-224 High Accuracy Geometrical Calibration for Half-Mm Animal SPECT Imaging**

H. Liu, T. Ma, T. Dai, J. Cui, Y. Liu, S. Wang, Y. Jin  
Tsinghua University, China

**M18-229 Improved Sparsity Constrained CT Image Reconstruction Applied to Clinical Data**

L. Ritschl, F. Bergner, M. Kachelriess

Institute of Medical Physics (IMP), Germany

**M18-234 CT Reconstruction Based on Improved Total Variation Minimization**

Q. Xu, X. Mou, S. Tang, Y. Zhang

Xian Jiaotong University, China

**M18-239 Performance Evaluation of Iterative Image Reconstruction Algorithms for Non-Sparse Object Reconstruction**

S. Singh, Corporate Technology, Siemens, India, India

**M18-244 Automatic Motion Correction in Cone-Beam Computed Tomography**

S. Ens<sup>1</sup>, J. Ulrici<sup>2</sup>, E. Hell<sup>2</sup>, T. Buzug<sup>1</sup>

<sup>1</sup>University of Luebeck, Germany; <sup>2</sup>Sirona Dental Systems GmbH, Germany

**M18-249 Theoretical Noise Estimation in 3D X-Ray CT Reconstruction**

D. Cai<sup>1,2</sup>, Y. Xiao<sup>1,2</sup>, Y. Xing<sup>1,2</sup>

<sup>1</sup>Tsinghua, China; <sup>2</sup>Ministry of Education, China

**M18-254 Polar Voxelization Schemes Combined with a Monte-Carlo Based System Matrix for Image Reconstruction in High Resolution PET**

J. Cabello<sup>1</sup>, J. F. Oliver<sup>1</sup>, I. Torres-Espallardo<sup>2</sup>, M. Rafecas<sup>1</sup>

<sup>1</sup>Institute for Corpuscular Physics (IFIC), University of Valencia/CSIC, Spain; <sup>2</sup>Institute for Imaging and Computer Vision (LFB), RWTH Aachen University, Germany

**M18-259 Heuristic Modification of an Anatomical Markov Prior Improves its Performance**

K. Vunckx, J. Nuyts, K.U. Leuven, Belgium

**M18-264 Impact of PSF Modeling on the Convergence Rate and Edge Behavior of EM Images in PET**

K. Thielemans, Hammersmith Imanet, GE Healthcare, UK; E. Asma, R. M. Manjeshwar, GE Global Research, USA; T. Deller, S. G. Ross, C. W. Stearns, A. Ganin, GE Healthcare, USA

**M18-269 Nonlocal-Means Approaches to Anatomy-Based PET****Image Reconstruction**V.-G. Nguyen, S.-J. Lee, *Paichai University, Korea***M18-274 Accelerated MAP Reconstructions Using an Accelerating Factor**Y.-J. Tsai<sup>1</sup>, I.-T. Hsiao<sup>1,2</sup><sup>1</sup>*Chang Gung University, Taiwan*; <sup>2</sup>*Chang Gung Memorial Hospital, Taiwan***M18-279 A Dedicated 3D List-Mode Reconstruction for Whole-Body PET**

A. Lougovski, J. Langner, E. Will, J. van den Hoff

*Forschungszentrum Dresden-Rossendorf, Germany***M18-284 Evaluation of a Spline Reconstruction Technique: Comparison with FBP, MLEM and OSEM**G. A. Kastis, *Academy of Athens, Greece*; A. Gaitanis, *Biomedical**Research Foundation of the Academy of Athens (BRFAA),**Greece*; Y. Fernandez, *CETIR Centre Medic, Spain*; G. Kontaxakis,*Universidad Politecnica de Madrid, Spain*; A. S. Fokas, *University of Cambridge, UK***M18-289 Augmented Lagrangian Methods for Penalized Likelihood Reconstruction in Emission Tomography**

D. J. Lingenfelter, J. A. Fessler

*University of Michigan, USA***M18-294 Class Conditional Entropic Prior for MRI Enhanced SPECT Reconstruction**S. Pedemonte<sup>1</sup>, M. J. Cardoso<sup>1</sup>, A. Bousse<sup>2</sup>, C. Panagiotou<sup>1</sup>,D. Kazantsev<sup>1</sup>, S. Arridge<sup>1</sup>, B. F. Hutton<sup>2</sup>, S. Ourselin<sup>1</sup><sup>1</sup>*University College London, UK*; <sup>2</sup>*University College London Hospitals NHS Trust, UK***M18-299 ET Bayesian Reconstruction Using Automatic Bandwidth Selection for Joint Entropy Optimization**D. Kazantsev<sup>1</sup>, S. Pedemonte<sup>1</sup>, A. Bousse<sup>2</sup>, C. Panagiotou<sup>1</sup>,S. R. Arridge<sup>1</sup>, B. F. Hutton<sup>2</sup>, S. Ourselin<sup>1</sup><sup>1</sup>*University College London, United Kingdom*; <sup>2</sup>*University College London Hospitals, United Kingdom***M18-304 System Matrix Based on Analytical Models for Multipinhole SPECT Reconstructions**H. Hsieh<sup>1,2</sup>, C.-H. Hsu<sup>3</sup>, G. S. P. Mok<sup>4</sup>, I.-T. Hsiao<sup>1,2</sup><sup>1</sup>*Chang Gung University, Taiwan*; <sup>2</sup>*Chang Gung Memorial Hospital,**Taiwan*; <sup>3</sup>*National Tsing Hua University, Taiwan*; <sup>4</sup>*The Chinese**University of Hong Kong, China***M18-309 Respiratory Motion-Corrected Rb-82 Myocardial Perfusion PET Imaging**A. Rahmim<sup>1</sup>, J. Tang<sup>2</sup>, M. R. Ay<sup>3</sup>, F. M. Bengel<sup>1</sup><sup>1</sup>*Johns Hopkins University, USA*; <sup>2</sup>*Philips Healthcare, USA*; <sup>3</sup>*Tehran**University of Medical Sciences, Iran***M18-314 Model-Based Motion Compensation in Projection Space for Emission Tomography Imaging**Y. J. Deng, *University of Colorado Denver, USA*; L. Udpa,K. L. Berger, *Michigan State University, USA***M18-319 Motion Correction of Cardiac PET Using Mass-Preserving Registration**F. Gigengack<sup>1,2</sup>, L. Ruthotto<sup>3,4</sup>, M. Burger<sup>3</sup>, C. H. Wolters<sup>4</sup>, X. Jiang<sup>2</sup>,K. Schaeffers<sup>1</sup><sup>1</sup>*European Institute for Molecular Imaging (EIMI), Germany*; <sup>2</sup>*Institute for Computer Science, Germany*; <sup>3</sup>*Institute for Computational and**Applied Mathematics, Germany*; <sup>4</sup>*Institute for Biomagnetism and Biosignalanalysis, Germany***M18-324 Use of MRI to Assess the Prediction of Heart Motion with Voluntary Body Movement by Stereo-Tracking of Markers on the Chest Surface**

M. King, J. Dey, K. Johnson, J. Mitra Mukherjee, H. Pretorius,

J. McNamara, S. Zheng, S. Miro

*Univ of Mass Med School, USA***M18-329 Co-Fan-Sum Ratio Algorithm for Randoms Smoothing and Detector Normalization in PET**

C. C. Watson

*Siemens Medical Solutions Molecular Imaging, USA***M18-334 Continuous Deadtime Estimation for PET**

M. Chen, D. Hu, S. B. Siegel

*Siemens Molecular Imaging, USA***M18-339 Fast Implementation of Fully Iterative Scatter Corrected OSEM for HRRT Using GPU**

K. S. Kim, J. C. Ye

*Korea Advanced Institute of Science and Technology (KAIST), South Korea***M18-344 Scanning Rodents on the High Resolution Research Tomograph (HRRT) with Point Spread Function Reconstruction: a Feasibility Study**

S. A. L. Blinder, K. Dinelle, V. Sossi

*University of British Columbia, Canada***M18-349 Validation of CT-Based Attenuation Correction for Multipinhole PSF Reconstruction for Small Animal SPECT**D. W. Austin, B. Feng, M. Chen, R. A. Mintzer, *Siemens Healthcare,**Molecular Imaging, USA*; J. Gregor, *University of Tennessee, Knoxville,**USA*; A. C. Stuckey, J. S. Wall, *University of Tennessee Graduate**School of Medicine, USA***M18-354 Two-Step Metal Artifact Reduction Using 2D-NFFT and Spherically Symmetric Basis Functions**

Y. M. Levakhina, B. Kratz, T. M. Buzug

*University of Luebeck, Germany***M18-359 Estimating Kinetic Parameters of Tc-99m Teboroxime from Dynamic SPECT Projections**

S. J. McQuaid, A. Sitek, M.-A. Park, S. C. Moore, R. Zimmerman,

M. F. Kijewski

*Brigham and Women's Hospital, USA***M18-364 Development of Quantitative Method for the Hepatic Functional Images from Dynamic MRI with Gd-EOB-DTPA Using a Graphical Method**T. Ichihara<sup>1</sup>, T. Natsume<sup>1</sup>, I. Yoshida<sup>2</sup>, G. Asanuma<sup>3</sup>, Y. Azumi<sup>4</sup>,S. Isaji<sup>4</sup>, H. Sakuma<sup>3</sup><sup>1</sup>*Fujita Health University School of Health Sciences, Japan*; <sup>2</sup>*Fujita**Health University Graduate School of Health Sciences, Japan*; <sup>3</sup>*Mie**University Hospital, Japan*; <sup>4</sup>*Mie University, Japan***M19: MIC Posters 5**

Saturday, Nov. 6

13:30-15:30

Exhibit Hall B

Session Chairs: Bjoern W. Jakoby, *Univ. of TN Medical Center (USA)*;*Univ. of Surrey (UK)*; *Siemens MI (USA), USA*Juan José Vaquero, *Unidad de Medicina y Cirugía*

*Experimental, Hospital General Universitario Gregorio  
Marañón, Spain*

**M19-5 A Fully 3-D Maximum Likelihood Event Positioning Scheme with a Measured System Response in Continuous Scintillator Gamma-Ray Detectors**

S. Krishnamoorthy, *Stony Brook University, United States*; S. Stoll, M. Purschke, C. L. Woody, D. J. Schlyer, P. Vaska, *Brookhaven National Laboratory, United States*

**M19-10 Modulation Transfer Function of a Flat-Panel Detector in Photon and Ion Beams**

J. Engelke<sup>1,2</sup>, M. Martisikova<sup>1</sup>, B. Hesse<sup>1</sup>, O. Jaekel<sup>1,3</sup>  
<sup>1</sup>German Cancer Research Center, Germany; <sup>2</sup>Heidelberg University Hospital, Germany; <sup>3</sup>Heidelberg Ion Beam-Therapy Center (HIT), Germany

**M19-15 A DOI PET Detector Having Extended Xtal Cube Structure**

N. Inadama<sup>1</sup>, T. Mitsuhashi<sup>2,1</sup>, H. Murayama<sup>1</sup>, F. Nishikido<sup>1</sup>, E. Yoshida<sup>1</sup>, H. Tashima<sup>1</sup>, M. Suga<sup>2,1</sup>, M. Watanabe<sup>3</sup>, T. Yamaya<sup>1</sup>  
<sup>1</sup>National Institute of Radiological Sciences, Japan; <sup>2</sup>Chiba University, Japan; <sup>3</sup>Hamamatsu Photonics K.K., Japan

**M19-20 High Speed Multi-Channel Readout for SSPM Arrays**

M. Janecek, W. W. Moses, J.-P. Walder, H. von der Lippe, *Lawrence Berkeley National Laboratory, USA*; M. McClish, C. Stapels, J. Christian, K. Shah, *Radiation Monitoring Devices, Inc., USA*

**M19-25 Improved Data Acquisition System for Brain PET Using GAPD Arrays**

W. Hu<sup>1,2</sup>, Y. Choi<sup>1</sup>, K. J. Hong<sup>1</sup>, J. H. Kang<sup>1,2</sup>, Y. S. Huh<sup>1,2</sup>, H. K. Lim<sup>1</sup>, S. S. Kim<sup>1</sup>, J. W. Jung<sup>1</sup>, K. B. Kim<sup>1</sup>, B. T. Kim<sup>2</sup>  
<sup>1</sup>Sogang University, Korea; <sup>2</sup>Sungkyunkwan University School of Medicine, Korea

**M19-30 Improving SNR with a Maximum Likelihood Compressed Sensing Decoder for Multiplexed PET Detectors**

G. Chinn<sup>1,2</sup>, P. D. Olcott<sup>1,2,3</sup>, C. S. Levin<sup>1,2,3</sup>  
<sup>1</sup>Stanford School of Medicine, USA; <sup>2</sup>Molecular Imaging Program at Stanford (MIPS), USA; <sup>3</sup>Stanford University, USA

**M19-35 Real-Time Imaging System for a Small OpenPET Prototype**

H. Tashima<sup>1</sup>, E. Yoshida<sup>1</sup>, S. Kinouchi<sup>1,2</sup>, M. Suga<sup>2</sup>, F. Nishikido<sup>1</sup>, N. Inadama<sup>1</sup>, H. Murayama<sup>1</sup>, T. Yamaya<sup>1</sup>  
<sup>1</sup>National Institute of Radiological Sciences, Japan; <sup>2</sup>Chiba University, Japan

**M19-40 Exact Formulation of Stackgram Filters in Sinogram Domain**

S. Peltonen, U. Ruotsalainen  
*Tampere University of Technology, Finland*

**M19-45 LaBr<sub>3</sub>:Ce and SiPMs for Time-of-Flight PET: New Results**

S. Seifert<sup>1</sup>, H. T. van Dam<sup>1</sup>, R. Vinke<sup>2</sup>, M. R. de Boer<sup>1</sup>, J. Huijenga<sup>1</sup>, F. J. Beekman<sup>1</sup>, H. Loehner<sup>2</sup>, P. Dendooven<sup>2</sup>, D. R. Schaart<sup>1</sup>  
<sup>1</sup>Delft University of Technology, The Netherlands; <sup>2</sup>University of Groningen, The Netherlands

**M19-50 New Ultra High Resolution LYSO PQS-Pentagon Detector Blocks for Lower-Cost Animal PET-CT (MuPET)**

R. A. Ramirez, Y. Zhang, S. An, S. Liu, H. Li, H. Baghaei, C. Wang, W.-H. Wong  
*University of Texas, USA*

**M19-55 Evaluation of SiPM-Based Small Animal PET/MR System Designs Using an Analytical Detector Response Model**

M. Hohberg<sup>1</sup>, T. Kuestner<sup>2</sup>, J. Weidendorfer<sup>2</sup>, S. Ziegler<sup>1</sup>  
<sup>1</sup>Klinikum rechts der Isar, Germany; <sup>2</sup>Institut für Informatik, Germany

**M19-60 Comparing the Resolution of Monolithic Block Scintillators to Pixelated Scintillator Detectors**

M. Streun, H. Larue, C. Parl, K. Ziemons  
*Forschungszentrum Juelich, Germany*

**M19-65 High Resolution Emission and Transmission Imaging Using the Same Detector**

A. S. Panse<sup>1</sup>, A. Jain<sup>1</sup>, W. Wang<sup>1</sup>, R. Yao<sup>2</sup>, D. R. Bednarek<sup>1</sup>, S. Rudin<sup>1</sup>  
<sup>1</sup>Toshiba Stroke Research Center, SUNY University at Buffalo, USA; <sup>2</sup>SUNY University at Buffalo, USA

**M19-70 First PET Imaging Results with Continuous LYSO Crystals and Monolithic, 64-Pixel SiPM Matrices**

G. Llosa, J. Barrio, C. Lacasta, *Instituto de Fisica Corpuscular (IFIC/CSIC-UV-VEG), Spain*; M. G. Bisogni, A. Del Guerra, S. Marcatili, *University of Pisa and INFN Pisa, Italy*; P. Barrillon, S. Bondil-Blin, C. de La TAILLE, *Laboratoire de l'Accelérateur Lineaire, France*; C. Piemonte, *FBK-irst, Italy*

**M19-75 Performance Evaluation of an OpenPET Detector for Heavy Ion Therapy under Actual in-Beam Condition**

F. Nishikido<sup>1</sup>, T. Mitsuhashi<sup>2</sup>, N. Inadama<sup>1</sup>, T. Inaniwa<sup>1</sup>, S. Satoh<sup>1</sup>, H. Tashima<sup>1</sup>, E. Yoshida<sup>1</sup>, H. Murayama<sup>1</sup>, T. Yamaya<sup>1</sup>  
<sup>1</sup>National Institute of Radiological Sciences, Japan; <sup>2</sup>Chiba University, Japan

**M19-80 Tomographic and Planar Evaluation of Dual Head Small Animal PET**

N. Efthimiou<sup>1</sup>, S. Maistros<sup>1</sup>, C. Tripolitis<sup>1</sup>, A. P. Samartzis<sup>2</sup>, G. Loudos<sup>3</sup>, G. Panayiotakis<sup>1</sup>  
<sup>1</sup>Univ. of Patras, Greece; <sup>2</sup>Evangelismos General Hospital, Greece; <sup>3</sup>TEI of Athens, Greece

**M19-85 PET Time-of-Flight Performance Using Analytic Modelling and Offset Point-Sources Measurements**

I. S. Armstrong, D. Tout, H. A. Williams  
*Central Manchester University Hospitals, UK*

**M19-90 Reproducibility of TI-201 Myocardial Perfusion Study in Rat Model with Micro SPECT/CT.**

M. F. Nahin<sup>1,2</sup>, J. Lockwood<sup>2</sup>, J. Strydhorst<sup>1,2</sup>, M. Kordos<sup>2</sup>, T. D. Ruddy<sup>2</sup>, R. G. Wells<sup>1,2</sup>  
<sup>1</sup>Carleton University, Canada; <sup>2</sup>Ottawa Heart Institute, Canada

**M19-95 ProSPECTus: Towards an MRI Compatible, High-Sensitivity SPECT System**

L. J. Harkness<sup>1</sup>, A. J. Boston<sup>1</sup>, H. C. Boston<sup>1</sup>, J. R. Cresswell<sup>1</sup>, D. S. Judson<sup>1</sup>, P. J. Nolan<sup>1</sup>, J. A. Sampson<sup>1</sup>, D. P. Scraggs<sup>1</sup>, I. Burrows<sup>2</sup>, M. Cordwell<sup>2</sup>, J. Groves<sup>2</sup>, J. Headsmith<sup>2</sup>, I. H. Lazarus<sup>2</sup>, J. Simpson<sup>2</sup>, W. E. Bimson<sup>1</sup>, G. J. Kemp<sup>1</sup>, D. Gould<sup>3</sup>  
<sup>1</sup>University of Liverpool, UK; <sup>2</sup>STFC Daresbury Laboratory, UK; <sup>3</sup>Royal Liverpool University Hospital, UK

**M19-100 Development of the High Resolution and Quantitative SPECT for the Human Brain**

Y. Hirano, T. Zeniya, H. Iida  
*National Cerebral and Cardiovascular Center, Japan*

**M19-105 Performance of the SPECT System Based on PS PMT with Pin-Hole Collimator and Reduced Initial Projections**

V. Y. Pedash, V. A. Kolbasin



*Institute for scintillation materials NAS of Ukraine, Ukraine*

**M19-110 Planar and Tomographic (SPECT) Imaging of Small Volume Targets Using a Cross-Slit Collimator**

J. Mejia, O. Y. Galvis-Alonso, *Faculdade de Medicina de Sao Jose do Rio Preto, Brazil*; J. Braga, *Instituto Nacional de Pesquisas Espaciais, Brazil*; J. P. Leite, M. V. Simoes, *Faculdade de Medicina de Ribeirao Preto, Brazil*

**M19-115 Experimental Study of the Response of 1-5 mm Thick CdTe/CZT Detectors Inside Strong Magnetic Field**

J.-W. Tan, L. Cai, L.-J. Meng  
*University of Illinois at Urbana Champaign, USA*

**M19-120 Influence from High and Ultra-High Magnetic Field on Positron Range Measured with a 9.4TMR-BrainPET**

H. Herzog<sup>1</sup>, H. Iida<sup>2</sup>, C. Weirich<sup>1</sup>, L. Tellmann<sup>1</sup>, J. Kaffanke<sup>1</sup>, L. Caldeira<sup>3</sup>, E. Rota Kops<sup>1</sup>, N. J. Shah<sup>1</sup>  
<sup>1</sup>*Institute of Neuroscience and Medicine, Forschungszentrum Juelich, Germany*; <sup>2</sup>*National Cerebro- and Cardiovascular Center- Research Institute, Japan*; <sup>3</sup>*Science Faculty of University of Lisbon, Portugal*

**M19-125 Dual PET-TRUS Prostate Image Registration**

J. S. Huber, Q. Peng, W. W. Moses, *Lawrence Berkeley National Lab, USA*; J. Pouliot, I.-C. Hsu, *University of California, San Francisco, USA*

**M19-130 Optimization of the Field-of-View in a Multi-Resolution MAP Reconstruction for CT**

D. Pal, J. B. Thibault, *GE Healthcare, USA*

**M19-135 Improved Contrast-to-Noise Ratio of Photon Counting Clinical X-Ray CT Images Using a Model-Selection Based Approach**

S. Srivastava, K. Taguchi  
*Johns Hopkins School of Medicine, USA*

**M19-140 Monte Carlo Characterization of Scattered Radiation Profile in Volumetric 64 Slice CT Using GATE**

A. Najafi Darmian<sup>1</sup>, M. Ay<sup>2,3</sup>, M. Pouladian<sup>1</sup>, A. Shirazi<sup>1,2</sup>, H. Ghadiri<sup>4</sup>, A. Akbarzadeh<sup>2,3</sup>  
<sup>1</sup>*Science and Research Branch, Islamic Azad University, Iran*; <sup>2</sup>*Tehran University of Medical Sciences, Iran*; <sup>3</sup>*Medical Sciences/ University of Tehran, Iran*; <sup>4</sup>*Iran University of Medical Sciences, Iran*

**M19-145 Phase-Contrast Imaging of Dental Samples**

J. S. Butzer<sup>1</sup>, V. Altapova<sup>1</sup>, H. Schneider<sup>2</sup>, R. Haak<sup>2</sup>, A. Cecilia<sup>1</sup>, E. Hamann<sup>1</sup>, P. Vagovic<sup>1</sup>, T. D. S. Rolo<sup>1</sup>, J. Moosmazz<sup>1</sup>, E. Reznikova<sup>1</sup>, J. Mohr<sup>1</sup>, M. Fiederle<sup>3</sup>, T. Baumbach<sup>1</sup>  
<sup>1</sup>*Karlsruhe Institute of Technology, Germany*; <sup>2</sup>*University of Leipzig, Germany*; <sup>3</sup>*University of Freiburg, Germany*

**M19-150 Reproducibility and Feasibility Study for Phase Contrast MR Angiography at Low Tesla Open-MRI System**

D. H. Lee<sup>1</sup>, C. P. Hong<sup>1</sup>, M. W. Lee<sup>2</sup>, S. H. Kim<sup>2</sup>, B. S. Han<sup>1</sup>  
<sup>1</sup>*Yonsei University, Korea*; <sup>2</sup>*Advanced Imaging Laboratory Cooperation, Korea*

**M19-155 Test Results of PRIMA Proton Imaging Apparatus**

M. Bruzzi<sup>1,2</sup>, M. Bucciolini<sup>1,2</sup>, G. A. P. Cirrone<sup>2</sup>, C. Cividini<sup>2</sup>, G. Cuttone<sup>2</sup>, D. Lo Presti<sup>3,2</sup>, S. Pallotta<sup>1,2</sup>, N. Randazzo<sup>3</sup>, M. Scaringella<sup>1,2</sup>, V. Sipala<sup>3,2</sup>, C. Talamonti<sup>1,2</sup>, M. Brianzi<sup>2</sup>, M. Tesi<sup>1</sup>  
<sup>1</sup>*University of Florence, Italy*; <sup>2</sup>*INFN, Italy*; <sup>3</sup>*University of Catania, Italy*

**M19-160 A Method for Improving the Efficiency of Myocardial Perfusion Imaging Using Conventional SPECT and SPECT/CT Imaging Systems**

A. H. Vija<sup>1</sup>, R. Malmin<sup>1</sup>, A. Yahl<sup>2</sup>, J. Zeintl<sup>1</sup>, M. Bhattacharya<sup>1</sup>, T. D. Rempel<sup>1</sup>, E. G. Hawman<sup>1</sup>, B. Bendriem<sup>1</sup>  
<sup>1</sup>*Siemens Medical Solutions USA, Inc., Molecular Imaging, USA*; <sup>2</sup>*ImageRecon, LLC, USA*

**M19-165 Feasibility Studies of Compton Camera System for Tomographic Imaging**

S. Takeda, T. Fukuchi, Y. Kanayama, S. Motomura, M. Hiromura, S. Enomoto  
*RIKEN Center for Molecular Imaging Science, Japan*

**M19-170 Quantum Performance Analysis of an EMCCD-Based X-Ray Detector Using Photon Transfer Technique**

B. Qu, A. T. Kuhls-Gilcrest, Y. Huang, W. Wang, A. N. Cartwright, A. H. Titus, D. R. Bednarek, S. Rudin  
*University at Buffalo, USA*

**M19-175 The Tumor Resection Camera, a Gamma Imaging Probe for Radio-Guided Surgery**

E. Netter, L. Pinot, L. Menard, M.-A. Duval, B. Janvier, F. Lefebvre, R. Siebert, Y. Charon  
*Imagerie en Modelisation, Neurobiologie et Cancerologie - UMR 8165 CNRS, France*

**M19-180 Towards 1mm PET Resolution Using DOI Modules Based on Double-Sided SiPM Readout**

E. P. Delfino, S. Majewski, R. Raylman, A. Stolin  
*West Virginia University, USA*

**M19-185 PET Block Detector for Micro Insert Using Multi-Pixel Photon Counter Array**

T. Y. Song<sup>1</sup>, H. Wu<sup>1</sup>, S. A. Komarov<sup>1</sup>, S. B. Siegel<sup>2</sup>, Y.-C. Tai<sup>1</sup>  
<sup>1</sup>*Washington University in St. Louis, USA*; <sup>2</sup>*Siemens Molecular Imaging, USA*

**M19-190 Experimental Results of a Zoom-in PET System**

J. Qi, Y. Yang, J. Zhou, Y. Wu, S. St James, S. R. Cherry  
*University of California, Davis, USA*

**M19-195 Flexible Design Yields High Efficiency in Four-Head CZT microSPECT**

J. W. Hugg<sup>1</sup>, D. J. Wagenaar<sup>1</sup>, A. Liu<sup>2</sup>, R. Tabassi<sup>1</sup>, K. Parnham<sup>1</sup>, S. Chowdhury<sup>1</sup>, B. E. Patt<sup>1</sup>  
<sup>1</sup>*Gamma Medica-Ideas, USA*; <sup>2</sup>*Gamma Medica-Ideas, Canada*

**M19-200 Recent Progress on SPECT Imaging with near-Field Coded Aperture Collimation: a Small Animal Study**

Z. Mu, *Perspective Pixel Technologies, USA*; W. L. Dobrucki, X. Hu, Y.-H. Liu, *Yale University School of Medicine, USA*

**M19-205 High Speed Imaging in Vivo with Synchrotron Radiation-Time Structure of a Bolus Injection in a Beating Heart**

A. H. Walenta<sup>1</sup>, M. Boehm<sup>2</sup>, F. Estve<sup>3</sup>, R. Erbel<sup>4</sup>, S. Fiedler<sup>5</sup>, O. Kalthoff<sup>6</sup>, J. Mielebacher<sup>7</sup>, S. Moehlenkamp<sup>4</sup>, H.-W. Schenk<sup>1</sup>, K. Walenta<sup>2</sup>  
<sup>1</sup>*University of Siegen, Germany*; <sup>2</sup>*Saarland University, Germany*; <sup>3</sup>*INSERM/ESRF, France*; <sup>4</sup>*University of Duisburg-Essen, Germany*; <sup>5</sup>*EMBL/DESY, Germany*; <sup>6</sup>*University of Applied Science, Germany*; <sup>7</sup>*Mielebacher Informatik Systeme, Germany*



**M19-210 Performance Evaluation for 68Ga and 18F of the ARGUS Small-Animal PET Scanner Based on the NEMA NU-4 Standard**  
M. Canadas<sup>1</sup>, E. Romero Sanz<sup>1</sup>, M. Oteo Vives<sup>1</sup>, J. J. Vaquero<sup>2</sup>, M. Desco<sup>2,3,4</sup>, E. Vicente<sup>5,6</sup>, J. M. Udias<sup>5</sup>, L. Romero<sup>1</sup>

<sup>1</sup>CIEMAT - Centro de Investigaciones Energeticas, Medioambientales y Tecnologicas, Spain; <sup>2</sup>Hospital General Universitario Gregorio Maranon, Spain; <sup>3</sup>CIBERSAM, Instituto de Salud Carlos III, Spain; <sup>4</sup>Universidad Carlos III, Spain; <sup>5</sup>UNIVERSIDAD COMPLUTENSE DE MADRID, SPAIN; <sup>6</sup>Instituto de Estructura de la Materia, Consejo Superior de Investigaciones Cientificas (CSIC), Spain

**M19-215 Evaluation of Attenuation and Scatter Correction Requirements as a Function of Object Size in PET Small Animal Imaging**

A. Konik, M. T. Madsen, J. J. Sunderland, University of Iowa, US; T. Koesters, University of Muenster, Germany

**M19-220 Task-specific Evaluation of Low-dose, High-throughput Micro-CT Specimen Imaging**

X. Han<sup>1</sup>, J. Bian<sup>1</sup>, D. R. Eaker<sup>2</sup>, T. L. Kline<sup>2</sup>, E. Y. Sidky<sup>1</sup>, E. L. Ritman<sup>2</sup>, X. Pan<sup>1</sup>

<sup>1</sup>The University of Chicago, USA; <sup>2</sup>Mayo Clinic College of Medicine, USA

**M19-225 Calibration of dual-ended readout of axially oriented 100 mm long LYSO crystals for use in a compact PET system**

F. ur-Rehman, B. McIntosh, A. L. Goertzen, University of manitoba, Canada

**M19-230 Penalty Weighting for Statistical Iterative CT Reconstruction**

B. J. Brendel, T. Koehler, Philips Technologie GmbH Forschungslaboratorien, Germany

**M19-235 Investigation of Low-contrast Tumor Detection in Algorithm-enabled Low-dose CBCT**

J. Bian<sup>1</sup>, X. Han<sup>1</sup>, E. Y. Sidky<sup>1</sup>, J. H. Stewerdsen<sup>2</sup>, X. Pan<sup>1</sup>

<sup>1</sup>The University of Chicago, US; <sup>2</sup>Johns Hopkins University, US

**M19-240 Investigation on 4D Statistical Image Reconstruction for Dynamic X-Ray Computed Tomography**

M. Abella<sup>1</sup>, J. J. Vaquero<sup>1</sup>, A. Sisniega<sup>1</sup>, B. W. Reutter<sup>2</sup>, G. T. Gullberg<sup>2</sup>, M. Desco<sup>1,3,4</sup>

<sup>1</sup>Hospital General Universitario Gregorio Maranon, Spain; <sup>2</sup>Lawrence Berkeley National Laboratory, USA; <sup>3</sup>CIBERSAM, Instituto de Salud Carlos III, Spain; <sup>4</sup>Departamento de Bioingenieria, Spain

**M19-245 Reconstruction from a Limited Number of Projections Decomposed into Three Tissue Components**

A. S. Khaled, T. J. Beck, Johns Hopkins University, USA

**M19-250 Comparison of Iterative and FDK Cone-Beam CT Reconstruction for off-Center Flat Panel Imaging with a SPECT System**

S. Konate<sup>1</sup>, H. Pretorius<sup>1</sup>, J. Mitra Mukherjee<sup>1</sup>, J. Dey<sup>1</sup>, S. Glick<sup>1</sup>, M. O'Connor<sup>1</sup>, L. Shao<sup>2</sup>, J. Wang<sup>2</sup>, B. Feng<sup>3</sup>, M. A. King<sup>1</sup>

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**M19-255 Analytic reconstruction methods for list-mode time-of-flight (TOF) PET**

C.-M. Kao<sup>1</sup>, J. Guo<sup>2</sup>, H. Kim<sup>1</sup>, Q. Xie<sup>2</sup>, C.-T. Chen<sup>1</sup>

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**M19-260 Direct Estimation of Kinetic Parameters from Projection Data with Conjugate Gradient and Simultaneous Estimation**

Y.-H. D. Fang, G. El Fakhri, Massachusetts General Hospital, USA

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J. Zhou, J. Qi, University of California, Davis, USA

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M. Blume<sup>1,2</sup>, A. Keil<sup>2</sup>, N. Navab<sup>2</sup>, M. Rafecas<sup>1</sup>

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Z. Burbar, I. Hong, Siemens Healthcare, USA

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U. Tuna<sup>1</sup>, J. Johansson<sup>2</sup>, U. Ruotsalainen<sup>1</sup>

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J. Verhaeghe, A. J. Reader, Montreal Neurological Institute, McGill University, Canada

**M19-295 Weighted MRI-Based Bowsher Priors for SPECT Brain Image Reconstruction**

A. Bousse<sup>1</sup>, S. Pedemonte<sup>2</sup>, D. Kazantsev<sup>2</sup>, S. Ourselin<sup>2</sup>, S. Arridge<sup>2</sup>, B. Hutton<sup>1</sup>

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**M19-300 Evaluation of Corrective Reconstruction Method for Reduced Acquisition Time and Various Anatomies of Perfusion Defect Using Channelized Hotelling Observer for Myocardial Perfusion SPECT**

T.-S. Lee, B. M. W. Tsui, Johns Hopkins University, USA

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S. M. Kim<sup>1</sup>, J. S. Lee<sup>1</sup>, H. Seo<sup>2</sup>, J.-H. Park<sup>2</sup>, C. H. Kim<sup>2</sup>, C. S. Lee<sup>3</sup>, M. C. Lee<sup>1</sup>, D. S. Lee<sup>1</sup>, S.-J. Lee<sup>4</sup>

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**M19-310 Impact of Respiratory Motion Correction on the Detection of Small Lesions in Whole-Body PET Imaging: a Simulation Study**

S. Marache-Francisco<sup>1,2</sup>, F. Lamare<sup>3</sup>, H. Fayad<sup>4</sup>, D. Visvikis<sup>4</sup>, R. Prost<sup>1</sup>, J.-M. Rouet<sup>2</sup>, C. Lartizien<sup>1</sup>

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**M19-315 Estimation of Rigid Body Motion Parameters for the ECAT HRRT Data Without Image Reconstruction**

J. Forma, U. Tuna, U. Ruotsalainen  
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**M19-320 Detection of Respiratory Motion of Lung and Liver Tumors Using List Mode-Driven Respiratory Gating in PET**

F. Buecher, I. Ernst, M. Dawood, K. P. Schaefers  
*University of Muenster, Germany*

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N. Guillette, O. Sarrhini, R. Lecomte, M. Bentourkia  
*Universite de Sherbrooke, Canada*

**M19-330 MuST, Multiples Enhanced ST Method for Randoms Rate Estimations**

J. F. Oliver, M. Rafecas  
*IFIC, CSIC/Universitat de Valencia, Spain*

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R. G. Wells, K. Vanderwerf, T. D. Ruddy  
*University of Ottawa Heart Institute, Canada*

**M19-340 Validation of NEMA NU4-2008 Scatter Fraction Estimation with <sup>18</sup>F and <sup>68</sup>Ga for the ARGUS Small-Animal PET Scanner**

E. Vicente<sup>1,2</sup>, J. L. Herraiz<sup>1</sup>, M. Canadas<sup>3</sup>, J. Cal-Gonzalez<sup>1</sup>, S. Espana<sup>4</sup>, M. Desco<sup>5,6,7</sup>, J. J. Vaquero<sup>5</sup>, J. M. Udias<sup>1</sup>  
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**M19-345 Fast Single Scan Derivation of the PSF Resolution Model on the TruePoint PET/CT Using a Printed Point Source Array**

F. A. Kotasidis, J. C. Matthews, G. I. Angelis, P. J. Noonan, P. J. Markiewicz, W. R. Lionheart, *University of Manchester, United Kingdom*; A. J. Reader, *McGill University, Canada*

**M19-350 Estimation of MR-Coil Attenuation in the Simultaneous PET/MR BrainPET**

R. A. Stark<sup>1</sup>, M. Cervo<sup>1</sup>, J. A. Nye<sup>2</sup>, J. N. Aarsvold<sup>2,3</sup>  
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**M19-355 Beam Hardening Correction for Fan-Beam CT Imaging with Multiple Materials**

Y. Zhang, X. Mou, S. Tang  
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**M19-360 Bayesian Approach for Input Function Determination in Rat <sup>18</sup>F-FDG PET Imaging: Method and Validation**

R. Mabrouk<sup>1</sup>, E. Croteau<sup>1</sup>, L. Bentaber<sup>2</sup>, O. Sarrhini<sup>1</sup>, J.-F. Beaudoin<sup>1</sup>, F. Dubeau<sup>1</sup>, M. Bentourkia<sup>1</sup>  
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**M19-365 Noise Reduction for Multi-Harmonic Phase Analysis of Gated SPECT Myocardial Perfusion Imaging**

A. A. Cheung<sup>1</sup>, T. Niu<sup>1</sup>, J. Chen<sup>2</sup>, L. Zhu<sup>1</sup>  
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**M19-370 SNR Effects in Determining Change in PET SUVs in Response to Therapy**

R. L. Harrison, B. F. Elston, R. K. Doot, D. A. Mankoff, T. K. Lewellen, P. E. Kinahan  
*University of Washington, USA*

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M. Ito<sup>1</sup>, K. Sato<sup>2</sup>, I. Namura<sup>3</sup>, M. Fukumi<sup>1</sup>  
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**M19-380 System and Reconstruction Optimization in SPECT Using Model Observers for Different Tasks**

L. Zhou<sup>1</sup>, B. Liu<sup>2</sup>, G. R. Gindi<sup>1</sup>  
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H. C. Gifford, M. A. King, *Univ Mass Medical School, USA*

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P. Gravel, J. Verhaeghe, A. J. Reader  
*Montreal Neurological Institute, McGill University, Canada*

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J. Huang, F. O'Sullivan, N. Fitzgerald, *University College Cork, Ireland*; M. Muzi, J. D. Unadkat, K. A. Krohn, *University of Washington, USA*

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F. Neacsu, R. Boutchko, A. Giannakidis, G. T. Gullberg  
*Lawrence Berkeley National Laboratory, USA*

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W. Bai, M. Brady, *University of Oxford, UK*

**M19-410 An Elastic Registration Technique for Reducing Patient Motion Artifacts in Digital Subtraction Angiography**

Y. Bentoutou<sup>1</sup>, N. Taleb<sup>2</sup>, C. Serief<sup>1</sup>  
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D. Salas-Gonzalez, J. Estrada, J. M. Gorriz, J. Ramirez, F. Segovia, R. Chaves, M. Lopez, I. A. Illan, P. Padilla  
*University of Granada, Spain*

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H. Haneishi, K. Kobuba, M. Kanai, *Chiba University, Japan*; Y. Tamai, A. Sakohira, K. Suga, *Hospital St Hill, Japan*

**M19-425 Segmentation of Rat Spinal Cord in PET Using Spatiotemporal Information**

E. K. Fung<sup>1</sup>, D. Weinzimmer<sup>1</sup>, S. Strittmatter<sup>2</sup>, Y. Huang<sup>1</sup>, R. E. Carson<sup>1</sup>  
<sup>1</sup>Yale University, USA; <sup>2</sup>Yale School of Medicine, USA

**M19-430 Automatic Characterization and Segmentation of Classic Choroidal Neovascularization Using AdaBoost for Supervised Learning**C.-L. Tsai<sup>1</sup>, Y.-L. Yang<sup>2</sup>, S.-J. Chen<sup>3</sup>, C.-H. Chan<sup>2</sup>, W.-Y. Lin<sup>2</sup><sup>1</sup>Iona College, USA; <sup>2</sup>National Chung Cheng University, Taiwan; <sup>3</sup>Taipei Veterans General Hospital, Taiwan**M19-435 Median Non-Local Means Filtering for Low SNR Image Denoising**C. Chan<sup>1</sup>, S. Meikle<sup>1</sup>, R. Fulton<sup>1,2</sup>, D. D. Feng<sup>1,3</sup><sup>1</sup>The University of Sydney, Australia; <sup>2</sup>Westmead Hospital, Australia; <sup>3</sup>The Hong Kong Polytechnic University, China**M19-440 Evaluation of the Detection Limit at Low Activity Levels for Three Preclinical PET Systems**

Z. Gu, Q. Bao, A. Chatzioannou, UCLA, USA

**M19-445 Comparison of Image Signal-to-Noise Ratio and Noise Equivalent Counts in Time-of-Flight PET**

E. Clementel, S. Vandenberghe, Ghent University,

Belgium; J. S. Karp, S. Surti, University of Pennsylvania, USA

**M19-450 Hardware Image Processing System Optimized for Biometrical Applications**

K. Grabowski, A. Napieralski

Technical University of Lodz, Poland

**M19-455 Fast GATE Multi-Pinhole SPECT Simulations**

J. De Beenhouwer, S. Staelens, Ghent University, Belgium

**M19-460 Validation of a GATE Model of <sup>176</sup>Lu Intrinsic Activity in a Preclinical LSO PET System**B. McIntosh<sup>1</sup>, D. B. Stout<sup>2</sup>, A. L. Goertzen<sup>1</sup><sup>1</sup>University of Manitoba, Canada; <sup>2</sup>University of California, Los Angeles, USA**M19-465 Monte Carlo optimization of SiPM readout configurations for continuous LYSO blocks**

P. Aguiar, Fundacion IDICHUS. Complejo Hospitalario Universitario

de Santiago de Compostela, Spain, Spain; C. Lois, B. Couce, A. Iglesias, Universidad de Santiago de Compostela, Spain

**M19-470 Pushing the Spatial Resolution Limits in Positron Emission Tomography: the Effect of Inter-Crystal Scatter and Event Mispositioning with Sub-mm Crystals**S. St. James<sup>1</sup>, P. A. Cutler<sup>2</sup>, C. L. Melcher<sup>2</sup>, S. R. Cherry<sup>1</sup><sup>1</sup>University of California, Davis, U.S.A.; <sup>2</sup>University of Tennessee, U.S.A**M19-475 Detector Response Function of the NanoPET/CT System**

J. Lantos, S. Czifrus, D. Legrady, A. Cserkaszky

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A. Vandenbroucke, D. Innes, C. S. Levin

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**M19-485 Optimization of Collimator and Reconstruction Parameters for Lesion Quantification with Tc-99m**

S. J. McQuaid, S. Southekal, M. F. Kijewski, S. C. Moore

Brigham and Women's Hospital, USA

**M19-490 3D Extension for a Deformable Mesh Model of Cardiac Motion from Tagged and Untagged MRI Data**F. M. Parages<sup>1</sup>, M. N. Wernick<sup>1</sup>, T. S. Denney, Jr.<sup>2</sup>, J. G. Brankov<sup>1</sup><sup>1</sup>Illinois Institute of Technology, USA; <sup>2</sup>Auburn University, USA

The 2010 Nuclear Science Symposium, Medical Imaging Conference, and Room Temperature Semiconductor Detector Workshop would not be possible without the uncountable hours of hard work given by the Organizing Committee and all the other volunteers. They have worked to make the conference a scientific, social, and financial success while continuing to work at their "day job" and deserve my sincere "Thank you." It is made possible through the sponsorship of the IEEE Nuclear and Plasma Sciences Society (NPSS) and through the support and generosity of the cooperating institutions and organizations listed on the inside front cover and around the venue. This region has many institutions and companies who have contributed to the science discussed here and worked to make this year a success. To organize a conference of this magnitude and duration requires that all members of the conference committee demonstrate team spirit, hard work, and compromise. I am lucky to have worked with an outstanding group of volunteers who attacked the problems and solved them. The Technical Program Chairs did an outstanding job of organizing the contributed papers so as to maximize the benefit to the attendees. I sincerely appreciate their efforts. It has been a pleasure to have the support and work with the staff of the KCC and KTSC.

Perhaps most importantly, I would like to thank all of the authors and attendees for contributing the results of their intellectual pursuits to this conference. It is this intellectual and scientific content which have given the IEEE NSS-MIC its well-deserved reputation for innovation and quality. I am confident that our NPSS colleagues will continue to maintain and enhance this tradition in the future.

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## ANNOUNCEMENT OF THE 2011 IEEE NSS-MIC-RTSD

Dear Colleagues,

The 2011 IEEE Nuclear Science Symposium and Medical Imaging Conference, together with the Workshop on Room-Temperature Semiconductor X-Ray and Gamma-Ray Detectors will be held in Valencia, Spain, from October 23rd – 29th. As with previous meetings, this will be a great opportunity to get together with old friends and to make new ones, to exchange ideas and share knowledge and experience in the nuclear science and medical imaging fields.

The meeting will be held at the Valencia Convention Center (designed by Sir Norman Foster) and two adjacent hotels: the Hilton Hotel and the Sorolla Hotel. The conference center is located in the northern part of the city, with easy access to the airport, and within walking distance of a variety of other hotels in all categories. It is conveniently linked to the city center and the beaches by public transport.

Since the first IEEE NSS/MIC to be held in Europe took place in Lyon, France to celebrate the millennium in 2000, successful European meetings have been held with a four year cycle, in Rome (2004) and Dresden (2008). However, such has been the success of the European meetings that it was decided to hold the fourth meeting in Europe in 2011, three years after Dresden. Once again, an international Organizing Committee is planning a meeting of high scientific level that will include both oral and poster presentations, short courses and refresher courses on important topics. A commercial exhibition that will showcase state-of-the-art products and services from a wide range of companies will be held in parallel to the scientific sessions.

The city of Valencia is a traditional, average-sized Mediterranean-style Spanish city located on the east coast of Spain. Attendees can experience the atmosphere of an historic city that is a fascinating mixture of different cultures and religions, combining history with a unique vision of the future exemplified by the modern architectural area that has become a reference model for urban expansion. Valencia offers a stimulating scientific environment together with a rich cultural heritage of music, art, gastronomy, architecture and folklore. The attendees can enjoy relaxing walks through the parks and streets of this unique city, as well as visiting the museums, aquarium, biopark (zoo) and beaches. Temperatures will be mild and pleasant at that time of year. A variety of interesting tours will be offered so attendees and their companions can experience Valencia and the surrounding region to the full.

The Organizing Committee is delighted to invite you to join them for the first ever IEEE NSS/MIC/RTSD to be held in Spain. I therefore look forward to welcoming you to Valencia in October 2011.

David Townsend

General Chair





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