

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

email: nssmic2010@ametek.com

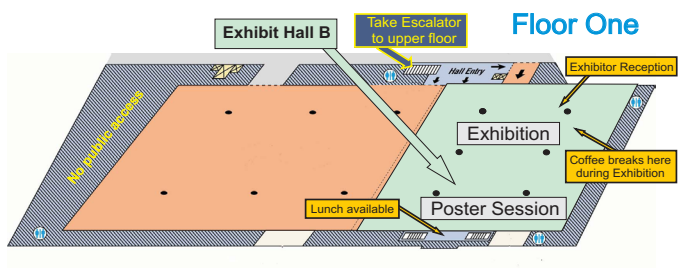
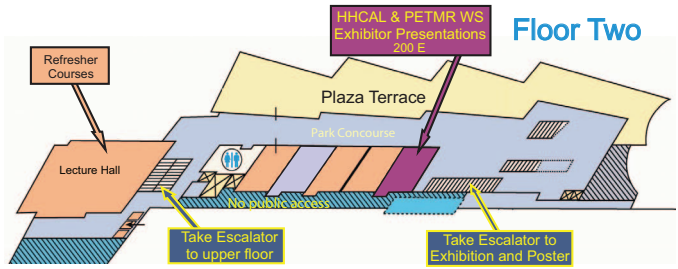
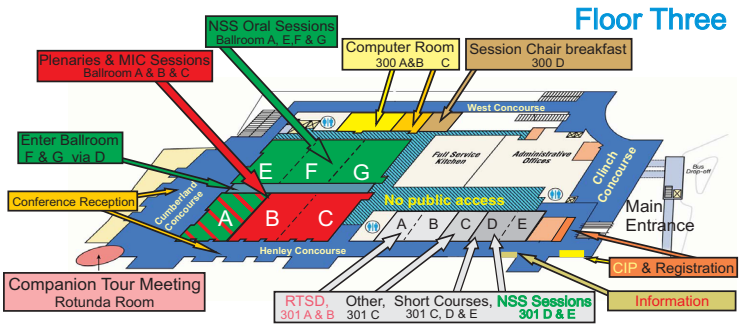




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Knoxville Convention Center

CONFERENCE-AT-A-GLANCE



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

	Monday 1 November Registration 07:30 - 17:00	Tuesday 2 November Registration 07:30 - 19:00
08:30	<u>Short Courses</u> Medical Image Reconstruction Room 301-D ----- Molecular Imaging Room 301-E <u>NSS Plenary Session</u> Ballrooms B+C Starts: 08:15	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 <u>NSS Poster Session</u> Exhibit Hall B
09:30	Coffee Break	
10:00	<u>Short Courses</u> Medical Image Reconstruction Room 301-D ----- Molecular Imaging Room 301-E <u>NSS Plenary Session</u> Ballrooms B + C Ends: 11:30	Coffee Break 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 <u>NSS Poster Session</u> Exhibit Hall B
11:30	Lunch NSS Lunch Ballroom F+G 11:30 - 13:30	<u>NSS Refresher Course</u> Lecture Hall 12:15 - 13:15 Lunch
13:30	<u>Short Courses</u> Medical Image Reconstruction Room 301-D ----- Molecular Imaging Room 301-E <u>Workshop</u> PET-MR Room 200-D+E <u>Oral Sessions</u> NSS Sessions Ballrooms A,B,C,E ----- RTSD Sessions Rooms 301-A+B	Exhibition Exhibit Hall B 12:00 - 21:00 <u>Oral Sessions</u> 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 <u>NSS Poster Session</u> Exhibit Hall B
15:30	Coffee Break	
16:00	<u>Short Courses</u> Medical Image Reconstruction Room 301-D ----- Molecular Imaging Room 301-E Short Courses End: 17:00 <u>Oral Sessions</u> NSS Sessions Ballrooms A,B,C,E ----- RTSD Sessions Rooms 301-A+B <u>Workshop</u> PET-MR Room 200-D+E Ends: 21:00 <u>NSS Poster Session</u> Exhibit Hall B	Exhibition Exhibit Hall B 12:00 - 21:00 <u>Oral Sessions</u> 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 <u>NSS Poster Session</u> Exhibit Hall B
18:00		
19:00		Exhibits Reception Exhibit Hall B 19:00 - 21:00

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

Pre-registration is advisable to save time and money, and to ensure your registration package will be available for collection when you arrive. The preferred registration method is through the conference web site, as it places your details directly into our database, and 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.

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 (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 ¹	\$500	\$600
Non-IEEE Member	\$650	\$750
IEEE Student ^{1,2}	\$200	\$250
Non-IEEE Student ²	\$300	\$350
One Day Only ³	\$200	\$200
IEEE Retired/Unemployed ¹	\$200	\$250
IEEE Life Member ^{1,4}	No Charge	
Continuing Education Program Only	No Charge	
Exhibits Only	No Charge	

¹ IEEE member number required at registration.

² Proof of student status required at registration.

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

⁴ 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

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

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

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.chariotsofhire.com/shuttle.htm> Please check the conference website for further information.

Parking

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

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

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

Smoking Policy

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

Electronic Recording Policy

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

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

Computer Access

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) 544-0537
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
Ollanty'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 Knox- ville 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/Sand- wich 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 Steak- house & 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) 637-4148
Mellow Mushroom	Pizza/Sub Sand- wiches	2109 W. Cumberland Ave.	(865) 524-7979
MK's	American	1109 White Ave.	(865) 971-4663
Moe's Southwest Grill	Mexican/South- western	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
Quizno'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
Sunspot	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. #102	(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.

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.

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.

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.

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.

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

Tour #1 - ORTEC Manufacturing Tour

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.

Tour #2 - ORNL Spallation Neutron Source Tour

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

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).

Tour #3 - Siemens Healthcare Molecular Imaging Factory Tour

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.

Tour #4 - ORNL Spallation Neutron Source Tour

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) 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..

Transactions on Nuclear Science (TNS)

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

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Transactions on Medical Imaging (TMI)

Authors of medical imaging papers may alternatively choose to submit their manuscripts to the IEEE Transactions on Medical Imaging through 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

Comparison of Requirements

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

	Conference Record (CR)	Transactions on Nuclear Science (TNS)
Page layout	Same as TNS, but without running headers and footers	Standard IEEE Transactions and Journal format
Copyright form	Required, electronic submission	Required, electronic submission
Deadline	Nov. 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

SHORT COURSE PROGRAM

An excellent set of short courses will be given at the start of the NSS/ MIC programs, covering a wide range of nuclear and medical 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 Multispectral Imaging	Sun. Oct. 31	301E
5. Medical Image Reconstruction	Mon. Nov. 1	301D
6. Molecular Imaging	Mon. Nov. 1	301E

NSS COURSES

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

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

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.

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.

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
CMC/AMAC
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/Amcrys
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.

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

Workshop on ^3He Alternatives for Neutron Detection

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 ^3He . One of the main uses for ^3He 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 ^3He supply is dwindling and can no longer meet the demand. The objective of this workshop is to provide a forum of discussion for ^3He -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 ^3He .

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 ^3He Alternative group; Karl Zeitelhack (TUM)
- 9:20 ^3He Neutron Detection Alternatives for National Security; Mitch Woodring (PNNL)
- 9:40 ^3He 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 LiCaAlF_6 Single Crystal and Sealed; Noriaki Kawaguchi (Tokuyama Corp)
- 11:10 Neutron Imaging Camera; Stanley Hunter (NASA)
- 11:30 Performance Test of BF_3 as Replacement for ^3He in LPDs; Thomas Wilpert HZB
- 13:00 Preliminary results with a large area BF_3 2D detector for neutron scattering; Martin Platz (ILL)
- 13:20 High-Pressure ^4He 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 ^3He Filled Neutron Detectors and Plan for ^3He Production in Korea; Myungkook Moon (Korea Atomic Energy Research Institute)
- 14:20 Boron-Coated Straw Detectors: a Novel Approach for ^3He Neutron Detector Replacement; Audrey Sivasothy (Proportional Technologies, Inc)
- 14:40 Semiconducting BC: an Attractive Alternative to ^3He Neutron Detectors; Nina Hong (Physics and Astronomy, University of Nebraska-Lincoln)
- 15:00 Summarize and open discussion

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

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*



Barbara Obryk

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:



Sara Pozzi

- 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

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.

Reception for IEEE GOLD Members

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) 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

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

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

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.



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&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&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 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), 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, 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 Ca^{2+} -activated photoproteins aequorin and obelin have been widely used to measure and image free 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 Ca^{2+} in live bacteria, showing how *E. coli* regulates its internal 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 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 uses this to excite young people about cutting edge science (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 Fiedlerle
 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
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Room 200C																											
Room 200D																											
Room 200E																											
Exhibit Hall B																											

NSS Oral Presentations

NP1: NSS Plenary I

Monday, Nov. 1 08:15-09:30 Ballroom B&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&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. Kamada¹, T. Yanagida², T. Endo¹, Y. Fujimoto², Y. Usuki¹, A. Yoshikawa²

¹*Furukawa Co., Ltd., Japan*; ²*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 LiCaAlF₆ 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^{1,2}, J. Treis^{2,3}, P. Lechner^{2,4}, S. Herrmann^{1,2}, T. Lauf^{1,2}, F. Aschauer^{1,2}, D. Miessner^{1,2}, A. Stefanescu^{1,2}, P. Majewski^{2,4}

¹*Max-Planck-Institut fuer extraterrestrische Physik, Germany*;

²*MPI Halbleiterlabor, Germany*; ³*Max-Planck-Institut fuer*

Sonnensystemforschung, Germany; ⁴*PN Sensor, 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. Kurz¹, M. Shayduk¹, R. Mirzoyan¹, J. Hose¹, J. Bolmont², E. Lorenz¹, T. Schweizer¹, J.-P. Tavernet², M. Teshima¹, P. Vincent² *Max-Planck-Institut fuer Physik, Germany*; ²*Universite Pierre et Marie Curie, France*

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

M. Shayduk¹, R. Mirzoyan¹, A. Polyakova², T. Schweizer¹, E. Lorenz¹, M. Teshima¹

¹*Max-Planck-Institute fuer Physik, Germany*; ²*MEPhI, Russia*

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

A. Castoldi¹, C. Guazzoni¹, R. Hartmann^{2,3}, M. Robbiati¹, L. Strueder^{4,5}

¹Politecnico di Milano and INFN, Italy; ²PN Sensor GmbH, Germany; ³Max-Planck-Institut, Germany; ⁴Max-Planck-Institut fuer extraterrestrische Physik, Germany; ⁵Universitat 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. Proctor¹, T. Hendricks², F. W. Garber¹, J. Manges¹, S. Pauly¹

¹Nucsafe, Inc., USA; ²NSTec, 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. Pia¹, H. Seo², C. H. Kim², P. Saracco¹

¹INFN Genova, Italy; ²Hanyang 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. Pia¹, H. Seo², C. H. Kim², L. Quintieri³, P. Saracco¹

¹INFN Genova, Italy; ²Hanyang Univ., Korea; ³INFN 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. Sangiorgio¹, A. Bernstein¹, M. Foxe², C. Hagmann¹, T. Joshi³, I. Jovanovic², K. Kazkaz¹

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

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

M. Foxe^{1,2}, A. Bernstein², C. Hagmann², T. Joshi^{3,2}, I. Jovanovic¹, K. Kazkaz², S. Sangiorgio²

¹Purdue University, USA; ²Lawrence Livermore National Laboratory, USA; ³University 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. Ojareuga, *University of Michigan, 48109*

N07-2 Neutron Detector Optimization Through Characterization and Modeling

M. R. Williamson^{1,2}, I. Sen², A. D. Green², D. Penumadu², G. K. Schweitzer², L. F. Miller²

¹Y12 National Security Complex, *United States*; ²University 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 3He Tube Replacement

E. A. Burgett¹, N. E. Hertel², J. Nause³, C. J. Summers², I. Ferguson⁴, ¹Idaho State University, *USA*; ²Georgia Institute of Technology, *USA*; ³Cermet Inc., *USA*; ⁴University 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^{1,2}, C. Fiorini^{1,2}, A. Marone^{1,2}, M. Laurenza¹, M. Porro^{3,4}, J. Treis^{4,5}, S. Herrmann^{3,4}, A. Wassatsch^{3,6}

¹Politecnico di Milano, *Italy*; ²INFN, *Italy*; ³Max-Planck-Institut für extraterrestrische Physik, *Germany*; ⁴MPI Halbleiterlabor, *Germany*; ⁵Max-Planck-Institute, *Germany*; ⁶Max-Planck-Institut für Physik für Solar System Research, *Germany*

N08-2 Low-Noise CMOS Charge Preamplifier for X-Ray Spectroscopy Detectors

L. Bombelli^{1,2}, C. Fiorini^{1,2}, T. Frizzi³, R. Nava³, A. Greppi¹

¹Politecnico di Milano, *Italy*; ²INFN, *Italy*; ³XGLab s.r.l., *Italy*

N08-3 Charge Sensitive Preamplifier with a Wide Dynamic Range

M. Kurokawa¹, H. Baba¹, T. Morobayashi¹, H. Murakami¹, A. Taketani¹, M. Tanaka², Y. Togano¹, K.-I. Yoneda¹

¹RIKEN, *Nishina Center, Japan*; ²High 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^{1,2}, L. Bombelli^{3,4}, M. Porro^{1,2}, S. Facchinetti³, C. Fiorini^{3,4}, S. Herrmann^{1,2}, A. Wassatsch^{2,5}, F. Erdinger⁶

¹Max Planck Institut fuer extraterrestrische Physik, *Germany*; ²MPI Halbleiterlabor, *Germany*; ³Politecnico di Milano, *Italy*; ⁴Istituto Nazionale di Fisica Nucleare, *Italy*; ⁵Max Planck Institut fuer Physik, *Germany*; ⁶Universitaet Heidelberg, *Germany*

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

T. Yokozawa¹, Y. Hayato¹, M. Ikeno², M. Nakahata¹, S. Nakayama¹, Y. Obayashi¹, M. Shiozawa¹, T. Uchida², S. Yamada¹

¹Institute for Cosmic Ray Research, *University of Tokyo, Japan*; ²KEK, *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. Pia¹, M. Begalli², A. Lechner³, L. Quintieri⁴, P. Saracco¹
¹INFN Genova, Italy; ²UERJ, Brazil; ³Technical Univ. Vienna, Austria;
⁴INFN 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. Clemencic¹, G. Corti¹, H. Degaudenzi², S. Easo³, G. Graziani⁴,
 K. Kruzelecki¹, S. Miglioranza¹, M. Needham², P. Robbe⁵,
 V. Romanovsky⁶
¹CERN, Switzerland; ²Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland; ³STFC Rutherford Appleton Laboratory, United Kingdom; ⁴INFN di Firenze, Italy; ⁵LAL, Université Paris-Sud, CNRS/IN2P3, France; ⁶Institute 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^{1,2}, D. Puglisi^{1,2}, D. Macera^{1,2}, S. Caccia^{1,2}
¹Politecnico di Milano - Polo regionale di Como, Italy; ²INFN-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 Pixelated CdZnTe Detectors

G. S. Camarda¹, A. E. Bolotnikov¹, Y. Cui¹, R. Gul¹, A. Hossain¹, K. Kim¹, L. Marchini², L. Xu³, G. Yang¹, R. B. James¹
¹Brookhaven National Lab, USA; ²IMEM-CNR, Italy; ³Northwestern 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^{1,2}, A. Zappettini¹, M. Zha¹, N. Zambelli¹,

A. E. Bolotnikov², G. Camarda², R. B. James²

¹IMEM - CNR, Italy; ²Brookhaven 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 Loe, *Radiation Monitoring Devices, Inc., USA*

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

N10-1 Synthesis and Characterization of Scintillating Gd₂SiO₅: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^{1,2}, T. Vinogradova¹, V. Shubin^{1,2}, D. Shushakov^{1,2}, C. Sitarsky^{1,2}

¹Amplification Technologies, USA; ²Lebedev 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 LiSrAlF₆ Scintillator for Thermal Neutron Detection

T. Yanagida¹, N. Kawaguchi², Y. Fujimoto¹, Y. Yokota¹, A. Yamazaki³, K. Watanabe³, K. Kamada¹, A. Yoshikawa¹

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

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

T. Yanagida¹, Y. Fujimoto¹, Y. Yokota¹, N. Kawaguchi², K. Kamada¹, J. Pejchal^{1,3}, V. Chani¹, K. Fukuda², D. Totsuka⁴, K. Uchiyama⁵, K. Mori⁵, K. Kitano⁶, M. Nikl⁷, A. Yoshikawa^{1,3}

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

N10-19 Evaluations of ZnO Based Alpha-Ray Imager

T. Yanagida¹, N. Kawaguchi¹, Y. Fujimoto¹, Y. Yokota¹, M. Miyamoto², H. Sekiwa², J. Kobayashi², T. Tokutake², A. Yoshikawa^{1,3}

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

N10-22 Scintillation Properties of Ce³⁺-doped, Pr³⁺-doped Calcium Orthoborate

Y. Fujimoto^{1,2}, T. Yanagida¹, Y. Yokota¹, N. Kawaguchi³, K. Fukuda^{1,3}, D. Totsuka⁴, K. Watanabe⁵, A. Yamazaki⁵, A. Yoshikawa^{1,6}

¹IMRAM, Tohoku University, Japan; ²JSPS, Japan; ³TOKUYAMA Corp, Japan; ⁴NIHON KESSHO KOGAKU CO.,LTD, Japan; ⁵Nagoya University, Japan; ⁶NICHE, Tohoku University, Japan

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

Y. Fujimoto^{1,2}, T. Yanagida¹, Y. Yokota¹, V. V. Kochurikhin³, A. Yoshikawa^{1,4}

¹IMRAM, Tohoku University, Japan; ²JSPS, Japan; ³General Physics Institute, Russian; ⁴NICHE, Tohoku University, Japan

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

F. Camera^{1,2}, F. Birocchi^{1,2}

¹University of Milano, Italy; ²Istituto Nazionale di Fisica Nucleare, Italy

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

F. Camera^{1,2}, A. Camplani^{1,2}

¹University of Milano and INFN, Italy; ²Istituto Nazionale di Fisica Nucleare, Italy

N10-34 Crystal Growth and Scintillation Properties of Nd-Doped Lu₃Al₅O₁₂ Single Crystals

M. Sugiyama¹, Y. Fujimoto¹, T. Yanagida¹, Y. Yokota¹, A. Yoshikawa^{1,2}

¹Tohoku university, Japan; ²New 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^{1,2}, C. L. Melcher^{1,2}, P. D. Rack^{1,2}

¹University of Tennessee, USA; ²Scintillation 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 KLu₂F₇ 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⁺ Co-Doping for Ce³⁺ Doped LiCaAlF₆ Single Crystals

Y. Yokota¹, T. Yanagida¹, N. Kawaguchi^{1,2}, K. Fukuda^{1,2},

A. Yoshikawa^{1,3}, M. Nikl⁴

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

N10-70 Co-Precipitation Synthesis of Nanocrystalline Gd₂O₃(Eu) Scintillators and Their Imaging Characterization for Indirect X-Ray Imaging Detector Applications

B. K. Cha¹, J. Y. Kim², G. Cho², S. Jeon¹, Y. Huh¹

¹KERI(Korea Electrotechnology Research Institute), South Korea;

²KAIST(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. Furuya¹, H. Tanaka¹, Y. Fujimoto¹, N. Kawaguchi^{1,2}, Y. Yokota¹, T. Yanagida¹, A. Yamazaki³, K. Watanabe³, A. Yoshikawa^{1,4}

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

N10-76 Dopant Segregation in Transparent Optical Ceramics

A. Yoshikawa^{1,2}, V. I. Chani¹, T. Yanagida¹, Y. Yokota¹, G. Boulon^{1,3}

¹IMRAM, Tohoku University, Japan; ²NICHE, Tohoku University, Japan;

³LPCML, CB Lyon1 University, France

N10-79 Emission Properties of Lu₂xGd₂(1-x)SiO₅ (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. Avella¹, A. De Santo², A. Lohstroh¹, P. J. Sellin¹

¹University of Surrey, UK; ²University of Sussex, UK

N10-85 CaF₂(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. Seifert¹, H. T. van Dam¹, R. Vinke², H. Loehner², P. Dendooven², F. J. Beekman^{1,3}, D. R. Schaart¹

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

N10-94 The Characterization of Eu²⁺-Doped Mixed Alkaline-Earth Iodide Scintillator Crystals

J. S. Neal¹, L. A. Boatner¹, J. O. Ramey¹, D. Wisniewski², J. A. Kolopus¹, N. J. Cherepy³, S. A. Payne³

¹Oak Ridge National Laboratory, USA; ²Nicolaus Copernicus University, Poland; ³Lawrence 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 Lu₂O₃: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
DxRay, Inc., USA

N10-109 Temperature Response and Thermoluminescence of SrI₂:Eu²⁺ Single Crystals

K. Yang¹, M. Zhuravleva¹, P. Szupryczynski^{1,2}, C. L. Melcher¹
¹University of Tennessee, USA; ²Siemens Medical Solutions, USA

N10-112 Evaluation of Some Essential Silicon Photomultiplier Parameters

M. Shayduk¹, M. Kurz¹, R. Mirzoyan¹, H. Miyamoto¹, B. Dolgoshein², R. Kosyra¹, T. Schweizer¹, M. Teshima¹

¹Max-Planck-Institute fuer Physik, Germany; ²MEPhI, Russia

N10-115 Pulse Shape Results of LaBr₃ and BaF₂ Scintillator Obtained with a 16 Ch. Fast Analog Stretcher Module

C. Boiano¹, F. Camera^{1,2}, S. Riboldi^{1,2}, A. Giaz^{1,2}

¹INFN, Italy; ²University of Milano, Italy

N10-118 Gamma Detection with (Gd,Y)₃(Ga,Al)₅O₁₂:Ce Ceramic Scintillator

J. Glodo¹, R. Farrell¹, U. Shirwadkar¹, Y. Wang¹, S. A. Payne², N. J. Cherepy², K. S. Shah¹

¹Radiation Monitoring Devices, Inc., USA; ²Lawrence 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 La₂Hf₂O₇

J. Trojan-Piegeza, 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. Bouchko, 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 PbF₂ Crystal

R. Dolenec¹, S. Korpar^{1,2}, P. Krizan^{1,3}, R. Pestotnik^{1,3}, A. Stanovnik^{1,3}, R. Verheyden¹

¹J. Stefan Institute, Slovenia; ²University of Maribor, Slovenia;

³University 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 Ce³⁺ and Pr³⁺ 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				R03: Characterization of CZT I					R04: CdZnTe: Detectors and Applications																		
Room 301B																											
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						N23: Semiconductor Detectors				N28: Trigger and Front-End Systems									
																		N29: HEP & NP Instrumentation									
Off-Site Events																		Industrial Exhibit								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 μ PIC Micro-Pixel Gaseous Chamber**J. D. Parker¹, K. Hattori¹, S. Iwaki¹, S. Kabuki¹, Y. Kishimoto¹, H. Kubo¹, S. Kurosawa¹, K. Miuchi¹, H. Nishimura¹, T. Oku², T. Sawano¹, J.-I. Suzuki², T. Tanimori¹, K. Ueno¹¹Kyoto University, Japan; ²Japan 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. Jakubek¹, J. Uher², P. Soukup¹¹Institute of Experimental and Applied Physics of the Czech Technical University, Czech Republic; ²CSIRO Process Science and Engineering, Australia**N11-5 The MIMOTERA: a Monolithic Pixel Detector for Real Time Beam Imaging and Profilometry**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&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. Grodzicka¹, M. Moszynski¹, T. Szczesniak¹, M. Kapusta², M. Szawlowski¹, D. Wolski¹¹Soltan Institute for Nuclear Studies, Poland; ²ICx Technologies GmbH, Germany**NM1-3 A 4D-PET Block Detector Based on Silicon****Photomultipliers**S. Marcatili^{1,2}, N. Belcarì¹, M. G. Bisogni^{1,2}, G. Collazuol², G. Sportelli³, A. Santos³, E. Pedreschi², F. Spinella², A. Del Guerra^{1,2}¹University of Pisa, Italy; ²INFN, Italy; ³BIT, Spain**NM1-4 Arrays of Digital Silicon Photomultipliers - Intrinsic Performance and Application to Scintillator Readout**

T. Frach, C. Degenhardt, 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. Majewski¹, J. Proffitt², J. McKisson³, B. Kross³, P. Martone¹, A. Stolin¹, A. Weisenberger³, P. Judy⁴, Z. Gong⁴, K. Popovic⁴, M. Williams⁴¹West Virginia University, USA; ²Adaptive I/O Technologies, USA;³Thomas Jefferson National Accelerator Facility, USA; ⁴University of Virginia, USA**NM1-6 The HICAM Gamma Camera**R. Peloso^{1,2}, P. Busca^{1,2}, C. Fiorini^{1,2}, A. Abba^{1,2}, A. Geraci^{1,2}, A. Manenti^{1,2}, C. Bianchi³, G. L. Poli³, B. F. Hutton⁴, K. Erlandsson⁴, P. Lechner⁵, H. Soltan⁵, L. Strueder⁶, A. Pedretti⁷, P. Van Mullekom⁸¹Politecnico di Milano, Italy; ²INFN, Italy; ³Ospedali Riuniti di Bergamo, Italy; ⁴University College London, UK; ⁵pnSensor GmbH, Germany; ⁶Max Planck Institut, Germany; ⁷Laccessorio Nucleare S.R.L. LACN, Italy; ⁸Nuclear Fields Holland, Netherlands**NM1-7 SiPM on the Way of Becoming an Ideal Light Sensor**R. Mirzoyan¹, P. Buzhan², B. Dolgoshein², V. Kaplin², E. Popova², M. Teshima¹¹Max-Planck-Institute for Physics, Germany; ²Moscow 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. Pia¹, L. Quintieri², M. Augelli³, S. Hauf⁴, M. Kuster⁵, M. Han⁶, C. H. Kim⁶, H. Seo⁶, P. Saracco¹¹INFN Genova, Italy; ²INFN LNF, Italy; ³CNES, France; ⁴Tech. Univ. Darmstadt, Germany; ⁵XFEL GmbH, Germany; ⁶Hanyang 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 Simulaiton : 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. Andreassen¹, N. Arnaud², D. Brown³, L. Burmistrov², J. Carlson³, C.-H. Cheng⁴, I. Gaponenko³, E. Manoni⁵, A. Perez², M. Rama⁶, D. Roberts⁷, M. Rotondo⁸, G. Simi⁸, M. Sokoloff⁹, A. Suzuki³, J. Walsh⁹, A. Di Simone¹⁰

¹University of Cincinnati, USA; ²Laboratoire de l'Accelérateur Lineaire, France; ³Lawrence Berkeley National Lab, USA; ⁴California Institute of Technology, USA; ⁵INFN Sezione di Perugia, Italy; ⁶INFN Laboratori Nazionali di Frascati, Italy; ⁷University of Maryland, USA; ⁸INFN Sezione di Padova, Italy; ⁹INFN Sezione di Pisa, Italy; ¹⁰INFN 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. Kajiura, 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. Fischer¹, M. Bach², L. Bombelli³, F. Erdinger¹, S. Facchinatti³, C. Fiorini³, K. Hansen², P. Kalavakuru², M. Manghisoni⁴, M. Porro⁵, C. Reckleben², G. De Vita⁵

¹Heidelberg University, Germany; ²Deutsches Elektronen-Synchrotron, Germany; ³Politecnico Di Milano, Italy; ⁴Università di Bergamo, Italy;

⁵Max Planck Institute, Germany

N13-4 Development Status of X-Ray 2D Detectors for SPring-8 XFEL

T. Kameshima¹, T. Hatsui¹, T. Kudo¹, T. Horigome², A. Holland³, K. Holland³, H. Osawa⁴, M. Yabashi¹, N. Yoshinori¹, T. Ishikawa¹

¹RIKEN XFEL Project Head Office, Japan; ²Institute for Molecular Science, Japan; ³Xcam Ltd, United Kingdom; ⁴Japan Synchrotron Research Institute, Japan

N13-5 High-Resolution Superconducting Tunnel Junction Soft X-Ray Spectrometers

S. Friedrich¹, M. H. Carpenter², O. B. Drury¹, J. T. Harris³, W. K. Warburton³, R. Cantor⁴

¹Lawrence Livermore National Laboratory, USA; ²University of California, USA; ³XIA LLC, USA; ⁴Star Cyroelectronics, USA

N13-6 MCPs as Grazing-Incidence Photocathodes for X-Rays

B. W. Adams¹, K. Attenkofer¹, M. Chollet¹, H. J. Frisch^{1,2}, Z. Insepov¹

¹Argonne National Laboratory, U.S.; ²University 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^{1,2}, A. Bagolini³, M. Boscardin³, L. Bosisio^{4,5}, P. Gabos^{1,2}, G. Giacomini³, C. Piemonte³, M. Povoli^{1,2}, E. Vianello³, N. Zorzi³

¹University of Trento, Italy; ²INFN Trento, Italy; ³Fondazione Bruno Kessler, Italy; ⁴University of Trieste, Italy; ⁵INFN 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&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. Kalliopuska¹, A. Cullen², M. Lerch², M. Petasecca², M. Santala³, A. Rozenfeld²

¹VTT, Finland; ²University of Wollongong, Australia; ³Aalto University, Finland

NM2-2 Development of a Monte Carlo Code for Proton Therapy Using Pencil Beam Scanning

S. Dowdell^{1,2}, B. Clasié², J. Flanz², A. Rosenfeld¹, H. Paganetti²

¹University of Wollongong, Australia; ²Massachusetts 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. Moskvina¹, F. Salvat², K. Stewart³, C. DesRosiers¹

¹Indiana University, USA; ²Universitat de Barcelona, Spain; ³Purdue University, USA

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

M. Martisikova¹, B. Hartmann¹, S. Bruns², B. Hesse¹, O. Jaekel^{1,2}

¹German Cancer Research Center, Germany; ²Heidelberger Ionenstrahl-Therapiezentrum, Germany

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

J. Jakubek¹, C. Granja¹, O. Jäkel², M. Martisikova³, S. Pospisil¹

¹Institute of Experimental and Applied Physics, Czech Technical University in Prague (IEAP CTU), Czech Republic; ²Heidelberger Ionenstrahl-Therapiezentrum (HIT), Germany; ³Department 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. Rivetti¹, A. Ceccucci², A. Cotta Ramusino³, S. Chiozzi³, G. Dellacasa¹, M. Fiorini², S. Garbolino¹, P. Jarron², J. Kaplon², A. Kluge², F. Marchetto¹, E. Martin Albarran⁴, S. Martoiu¹, G. Mazza¹, M. Noy², P. Riedler², R. Wheadon¹

¹INFN - Sezione di Torino, Italy; ²CERN, Switzerland; ³INFN-Sezione di Ferrara, Italy; ⁴Universit 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. Hara¹, I. Adachi², R. Dolenec³, T. Iijima¹, M. Imamura¹, S. Iwata⁴, H. Kawai⁵, S. Korpar^{6,3}, P. Krizan^{7,3}, T. Kumita⁴, E. Kuroda⁴, S. Nishida², S. Ogawa⁸, R. Pestotnik³, S. Shiizuka¹, T. Sumiyoshi⁴, M. Tabata^{9,5}, S. Tagai⁸, R. Verheyden³

¹Nagoya University, Japan; ²High Energy Accelerator Research Organization (KEK), Japan; ³J. Stefan Institute, Slovenia; ⁴Tokyo Metropolitan University, Japan; ⁵Chiba University, Japan; ⁶University of Maribor, Slovenia; ⁷University of Ljubljana, Slovenia; ⁸Toho University, Japan; ⁹Japan 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. Bizarri, 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. Gekhtin, 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. Siczynski, 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), CaF₂(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. Gimenez¹, R. Ballabriga², M. Campbell², I. Horswell¹, X. Llopart², J. Marchal¹, K. J. S. Sawhney¹, N. Tartoni¹
¹*Diamond Light Source, UK*; ²*CERN, Switzerland*

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

R. Vinke¹, H. T. van Dam², S. Seifert², F. J. Beekman^{2,3}, H. Loehner¹, D. R. Schaart², P. Dendooven¹
¹*KVI - University of Groningen, The Netherlands*; ²*Delft University of Technology, The Netherlands*; ³*University Medical Centre Utrecht, The Netherlands*

NM3-4 Transparent (Gd, Lu)₃(Al, Ga)₅O₁₂:Ce Ceramic Scintillator for Medical Imaging

Y. Wang¹, G. Baldoni¹, J. Glodo¹, U. Shirwadkar¹, W. H. Rhodes², C. Brecher², E. V. Loeff², S. Miller², K. S. Shah¹
¹*Radiation Monitoring Devices, Inc., USA*; ²*ALEM Associates, USA*

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

F. Alhassen¹, H. Kudrolli², B. Singh², S. Kim¹, R. G. Gould¹, Y. Seo¹, V. V. Nagarkar²

¹*University of California, San Francisco, USA*; ²*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. I. 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. Ullan¹, S. Diez¹, A. A. Grillo², J. Kierstead³, W. Kononenko⁴, F. Martinez-McKinney², F. M. Newcomer⁴, S. Rescia³, M. Ruat¹, H. W. Sadrozinski², A. Seiden², E. Spencer², H. Spieler⁵, M. Wilder²
¹*Centro Nacional de Microelectronicas (IMB-CNM, CSIC), Spain*; ²*Santa Cruz Institute for Particle Physics (SCIPP, UCSC), USA*; ³*Brookhaven National Laboratory, USA*; ⁴*University of Pennsylvania, USA*; ⁵*Lawrence Berkeley National Laboratory, USA*

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

L. Gaioni¹, M. Manghisoni^{2,1}, L. Ratti^{3,1}, V. Re^{2,1}, G. Traversi^{2,1}
¹*INFN, Italy*; ²*Universita' di Bergamo, Italy*; ³*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. Hoeferkamp, 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. Wggesworth
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 LHCA. Oh, *Manchester University, UK*

On behalf of the ATLAS Collaboration

N22-2 A Readout Driver for the ATLAS LAr Calorimeter at Super-LHCG. 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. Grabas¹, E. Oberla¹, M. Bogdan¹, H. Frisch¹, J.-F. C. Genat¹,M. K. Heintz¹, C.-M. Kao², H. Kim², E. May³, S. Meehan¹,L. L. Ruckman⁴, F. Tang¹, G. S. Varner⁴¹University of Chicago, USA; ²Hospital of Chicago, USA; ³ArgonneNational Laboratory, USA; ⁴University of Hawaii, USA**N22-6 The GigaFitter: an Online Track Fitting Processor for CDF Experiment and Beyond**S. Amerio¹, A. Annovi², M. Bettini¹, M. Bucciantonio³, P. Catastini⁴,M. Dell'Orso³, B. Di Ruzza⁴, P. Giannetti⁵, D. Lucchesi⁶,M. Nicoletto¹, M. Piendibene³, G. Volpi³, F. Crescioli³¹INFN Padova, Italy; ²INFN LNF, Italy; ³University of Pisa & INFN,Italy; ⁴Fermilab, USA; ⁵INFN Pisa, Italy; ⁶University of Padova &

INFN, Italy

N22-7 A Serializer ASIC for High Speed Data Transmission in Cryogenic and HiRel EnvironmentG. 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. Howard¹, R. Chandra², G. Davatz¹¹IPP, Switzerland; ²Arktis, 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. Sweany¹, A. Bernstein², N. Bowden², S. Dazeley², S. Ouedraogo²,R. Svoboda¹, M. Tripathi¹¹University of California, Davis, USA; ²Livermore National Laboratory,

USA

N24-7 Field Deployable System for Unexploded Ordinance Detection using the Associated Particle neutron Time-Of-Flight TechniqueY. Shinde^{1,2}, S. Mitra¹, S. Junnarkar¹¹Brookhaven National Laboratory, USA; ²University 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^{1,2}, H. Wu¹, S. Komarov¹, A. Garson³, Q. Guo³,H. Krawczynski³, L.-J. Meng⁴, Y.-C. Tai¹¹Mallinckrodt Institute of Radiology, *Washington University in St. Louis,**USA;* ²School of Nuclear Science and Technology, *Lanzhou University,**China;* ³Washington University in St. Louis, *USA;* ⁴University 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. Takahashi¹, T. Ishitsu², H. Kawauchi¹, J. Yu¹, T. Seino², I. Fukasaku¹, Y. Sunaga¹, S. Inoue¹, N. Yamada¹

¹*Hitachi Cable, Ltd., Japan;* ²*Hitachi, Ltd., Japan*

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

M. Yamaguchi¹, T. Kamiya¹, N. Kawachi¹, N. Suzui¹, S. Fujimaki¹, H. Odaka^{2,3}, S.-N. Ishikawa^{2,3}, M. Kokubun², S. Watanabe^{2,3}, T. Takahashi^{2,3}, H. Shimada⁴, K. Arakawa^{1,4}, Y. Suzuki⁴, K. Torikai⁴, Y. Yoshida⁴, T. Nakano⁴

¹*Japan Atomic Energy Agency, JAPAN;* ²*Japan Aerospace Exploration Agency, JAPAN;* ³*University of Tokyo, Japan;* ⁴*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. Clemencic¹, G. Corti¹, S. Easo², C. Jones³, S. Miglioranza¹, M. Pappagallo⁴, P. Robbe⁵

¹*CERN, Switzerland;* ²*Rutherford Appleton Laboratory, United Kingdom;* ³*University of Cambridge, United Kingdom;* ⁴*Universita' e INFN Bari, Italy;* ⁵*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 Universität 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. Parsons¹, J. G. Bodnarik¹, L. Evans^{1,2}, S. Floyd¹, L. Lim¹, T. McClanahan¹, M. Namkung¹, S. Nowicki^{1,3}, J. Schweitzer⁴, R. Starr^{1,5}, J. Trombka^{1,6}

¹*NASA/ Goddard Space Flight Center, USA;* ²*Computer Sciences Corporation, USA;* ³*University of Michigan, USA;* ⁴*University of Connecticut, USA;* ⁵*Catholic University of America, USA;* ⁶*University of Maryland, USA*

N26-3 A radiation transport code benchmarking study for the EJSM mission

G. Santin^{1,2}, S. S. Kang³, I. Jun³, P. Nieminen¹, C. Erd¹, A. Wielders¹

¹*ESA - ESTEC, The Netherlands;* ²*RHEA System SA, Belgium;* ³*Jet Propulsion Laboratory, California Institute of Technology, United States*

N26-4 A Fast Embedded System for Radio Detection of Cosmic Rays

H. E. H. Gemmeke¹, M. Scherer¹, M. Balzer¹, A. Menshikov¹, K.-H. Kampert², A. Haungs¹

¹*Karlsruhe Institute of Technology, Germany;* ²*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. Dēdič, 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. Raulo¹, L. Marchini², G. Paternoster¹, E. Perillo¹, A. M. Mancini³,
P. Paiano³, M. Zha²

¹*University Federico II and INFN, Italy*; ²*IMEM-CNR, Italy*;

³*University of Salento, Italy*

R03-3 (09:05) CZT Signal Generation Effects in SPECT-MRI Systems

J. W. Hugg¹, D. J. Wagenaar¹, D. Meier², M. J. Hamamura³,
O. Nalcioğlu³, B. M. Tsui⁴, S. Chowdhury¹, B. E. Patr¹

¹*Gamma Medica-Ideas, USA*; ²*Gamma-Medica-Ideas, Norway*;

³*University of California, USA*; ⁴*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^{1,2}, K. Lee^{1,2}, J. Martin^{1,2}, Q. Guo^{1,2},
H. Krawczynski^{1,2}, E. A. Wulff³, E. Novikova³, M. Subramanian³,
J. Hong⁴, J. E. Grindlay⁴

¹Washington University in St. Louis, USA; ²McDonnell Center for the Space Sciences, USA; ³Naval Research Laboratory, USA; ⁴Harvard Smithsonian Center for Astrophysics, USA

R04-4 (11:20) A CZT High Efficiency Detector with Three Dimensional Spatial Resolution for Laue Lens

E. Caroli¹, N. Auricchio¹, C. Budtz-Jorgensen², R. M. Curado da Silva³, S. Del Sordo⁴, I. Kuvvetli², L. Natalucci⁵, E. M. Quadrini⁶, J. B. Stephen¹, M. Zanichelli^{7,8}, A. Zappettini⁷
¹INAF/IASF-Bologna, Italy; ²DTU Space, Denmark; ³Universidade de Coimbra, Portugal; ⁴INAF/IASF-Palermo, Italy; ⁵INAF/IASF-Roma, Italy; ⁶INAF/IASF-Milano, Italy; ⁷IMEM/CNR, Italy; ⁸Universita' di Parma, Italy

R04-5 (11:35) Investigation of CdTe-Medipix Assemblies in a Synchrotron Focusing Its High Flux Behavior

D. Greiffenberg¹, A. Fauler¹, A. Zwerger¹, A. Cecilia², P. Vagovič², J. Butzer², E. Hamann², T. dos Santos Rolo², T. Baumbach², M. Fiederle¹

¹Albert-Ludwigs-Universitt Freiburg, Germany; ²Karlsruhe Institute of Technology (KIT), Germany

R04-6 (11:50) Study of CZT Detectors with a Collimated Gamma Ray Source for the COBRA Experiment

D. Gehre¹, B. Janutta¹, T. Koettig², O. Schulz², K. Zuber¹, C. Goessling²

¹Dresden University of Technology, Germany; ²Dortmund 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. Kroupa¹, Z. Janout¹, M. Kralik², F. Krejci¹, S. Pospisil¹

¹Institute of Experimental and Applied Physics, *Czech Technical University in Prague, Czech Republic*; ²Czech 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. Nishimura¹, T. Takashima², M. Hirahara¹, T. Mitani²

¹Department of Earth and Planetary Science, *Graduate school of Science, The University of Tokyo, Japan*; ²JAXA/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^{1,2}, T. Michel³, G. Alfred¹, J. Martin¹, M. Beilicke¹, K. Lee¹, D. Juergen³, F. Bayer³, G. Anton³, B. Ramsey⁴, L. J. Meng⁵, H. Krawczynski¹

¹Washington University in St. Louis, USA; ²Northwestern Polytechnical University, China; ³Erlangen Centre for Astroparticle Physics, Germany;

⁴Marshall Space Flight Center, USA; ⁵University of Illinois in Urbana-Champaign, USA

N14-36 Development of the Pulse Shape Processor for the Soft X-Ray Spectrometer Onboard ASTRO-H

H. Seta¹, Y. Shimoda¹, M. S. Tashiro¹, Y. Ishisaki², M. Tsujimoto³, Y. Terada¹, Y. Abe², T. Yasuda¹, Y. Takei³, K. Mitsuda³, K. Matsuda⁴, K. Masukawa⁴

¹Saitama University, Japan; ²Tokyo Metropolitan University, Japan;

³Institute of Space and Astronautical Science, Japan; ⁴Mitsubishi Heavy Industries, Ltd., Japan

N14-39 Time-Resolved Gamma Ray Spectral Analysis of Planetary Neutron and Gamma Ray Instrumentation

J. Bodnarik^{1,2}, A. Burger^{2,3}, D. Burger², L. Evans^{1,4}, S. Floyd¹, L. Lim¹, T. McClanahan¹, M. Namkung¹, S. Nowicki^{1,5}, A. Parsons¹, J. Schweitzer⁶, R. Starr^{1,7}, K. Stassun^{2,3}, J. Trombka^{1,8}

¹NASA's Goddard Space Flight Center, USA; ²Vanderbilt University,

USA; ³Fisk University, USA; ⁴Computer Sciences Corporation, USA;

⁵University of Michigan, USA; ⁶University of Connecticut, USA;

⁷Catholic University of America, USA; ⁸University of Maryland, USA

N14-42 Comparison of Radiation Data from the Akebono Satellite Calibrated Using Geant4 with CRRES

K. T. Asai¹, T. Takashima², T. Koi³, T. Nagai¹

¹Tokyo Institute of Technology, Japan; ²JAXA, Japan; ³SLAC, 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. Sato¹, H. Murayama², K. Oda³, F. Nishikido², E. Yoshida², T. Sato⁴, T. Hasegawa², N. Inadama², T. Yamaya², T. Yamada⁶, Y. Unno¹, A. Yunoki¹

¹National Institute of Advanced Industrial Science and Technology,

Japan; ²National Institute of Radiological Sciences, Japan; ³Tokyo

Metropolitan Institute of Gerontology, Japan; ⁴Shimadzu corporation,

Japan; ⁵Kitasato university, Japan; ⁶Japan 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^{1,2}, C. L. Hobbs¹, Z. W. Bell², L. A. Boatner²,

J. O. Ramey², G. E. Jellison², B. Rangarajan¹

¹University of Tennessee, USA; ²Oak 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. Kiff¹, N. Bowden², J. Monahan³, D. Reyna¹

¹Sandia National Laboratories, USA; ²Lawrence Livermore National Laboratory, USA; ³Drexel 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. Baek¹, J. Y. Hwang¹, S. J. An¹, H.-I. Kim¹, S.-W. Kwak²,

Y. H. Chung¹

¹Yonsei University, Republic of Korea; ²Korea Institute of Nuclear

Nonproliferation and Control, Republic of Korea

N18-212 Gamma Camera with a New Diverging Collimator for Safeguard Verification

H.-I. Kim¹, C.-H. Baek¹, J. Y. Hwang¹, S. J. An¹, S.-W. Kwak²,

Y. H. Chung¹

¹Yonsei University, Republic of Korea; ²Korea 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 collaboratiion

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, γ)Zn-65 and Zn-68(n, γ)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}In STANDARDIZATION by MEANS of a 4π β - γ 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. Aguilera¹, E. Martinez-Quiroz¹, F. J. Ramirez-Jimenez², M. C. Fernandez¹, G. M. Murillo¹
¹*Instituto Nacional de Investigaciones Nucleares, Mexico*; ²*Instituto Nacional de Investigaciones Nu, 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. Jackson¹, R. J. Allen¹, J. P. Apruzese¹, R. J. Comisso¹, D. D. Hinshelwood¹, D. Mosher^{1,2}, D. P. Murphy¹, P. F. Ottinger¹, J. W. Schumer¹, S. B. Swanekamp^{1,2}, F. C. Young^{1,2}, G. Cooperstein¹, A. W. Hunt³, H. A. Seipel³, M. A. Gagliardi³
¹*Naval Research Laboratory, USA*; ²*L-3 Communications, USA*; ³*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. Zabriskie
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^{1,2,3}, Y. Yang^{1,2}, Y. Li^{1,2}, B. Wang³
¹*Tsinghua University, China*; ²*Ministry of Education, China*; ³*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. Anghel¹, J. Armitage², K. Boudjemline², D. Bryman³, E. Charles⁴, T. Cousins⁵, A. Erlandson², G. Gallant⁴, C. Jewett¹, G. Jonkmans¹, Z. Liu³, S. Noel⁵, G. Oakham², T. J. Stocki⁶, M. Thompson¹, D. Waller⁷

¹Atomic Energy of Canada Limited, Canada; ²Carleton University, Canada; ³Advanced Applied Physics Solutions, Canada; ⁴Canada Border Services Agency, Canada; ⁵International Safety Research, Canada; ⁶Health Canada, Canada; ⁷Defense 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. Zoglauer¹, M. Galloway¹, M. Amman², S. E. Boggs¹, P. N. Luke²
¹University of California at Berkeley, USA; ²Lawrence 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. Hara¹, Y. Arai², Y. Ikemoto², T. Kohriki², T. Miyoshi², K. Shinsho¹, K. Koike¹

¹University of Tsukuba, Japan; ²High Energy Accelerator Research Org. (KEK), Japan

N23-5 High Count-Rate Silicon Drift Detector for EXAFS Applications

S. Barkan¹, D. Bogg², E. V. Damron¹, G. Dennis³, A. J. Dent³, R. Farrow², L. Feng¹, J. Headspith², W. I. Helsby², J. Horswell³, V. D. Saveliev¹, N. Tartoni³, M. Takahashi¹, C. R. Tull¹

¹SII Nano Technology USA, USA; ²Duresbury Science and Innovation Campus, UK; ³Diamond Light Source, Harwell Science Campus, UK

N23-8 Surface Characterisation and Surface Protection of Germanium Detector Crystals

T. Engert^{1,2}, I. Kojouharov¹, J. Gerl¹, P. Nolan², T. Krings³

¹Helmholtzzentrum für Schwerionenforschung, Germany; ²University of Liverpool, UK; ³SEMIKON Detector GmbH, Germany

N23-11 Test and First Application of Artificial Sapphire Sensors

A. Ignatenko^{1,2}, H. Henschel¹, W. Lange¹, W. Lohmann¹, S. Schuwalow¹

¹Deutsches Elektronen-Synchrotron, Germany; ²National 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. Chatterji¹, A. Lymanets², J. M. Heuser¹

¹GSI Helmholtz Institute for Heavy Ion Research GmbH, Germany; ²University 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. Barrientos¹, I. C. Sagrado¹, A. J. Boston², H. C. Boston², B. Quintana¹, C. Unsworth², S. Moon², J. R. Cresswell²

¹University of Salamanca, Spain; ²University of Liverpool, United Kingdom

N23-26 Test Results from Mimosa-26HR, a Monolithic Active Pixel Sensor with Integrated Zero Suppressing Readout and a High-Resistivity Epitaxial Substrate

G. Baudot¹, G. Bertolone¹, G. Claus¹, C. Colledani¹, Y. Degerli², R. De Masi¹, A. Dorokhov¹, G. Doziere¹, W. Dulinski¹, M. Gelin¹, M. Goffe¹, A. Himmi¹, C. Hu-Guo¹, K. Jaaskelainen¹, M. Koziel¹, F. Morel¹, F. Orsini², I. Valin¹, G. Voutsinas¹, M. Winter¹
¹IPHC/IN2P3/CNRS, France; ²CEA/IRFU/SEDI, France

N23-29 Advanced X-Ray Spectrometers Based on High Performance Read-Out Electronics Coupled with Silicon Drift Detectors

R. Alberti^{1,2}, L. Bombelli^{1,2}, C. Fiorini^{1,2}, T. Frizzi^{1,2}, A. Longoni^{1,2}, S. Moser^{1,2}, R. Nava^{1,2}
¹Politecnico di Milano, Italy; ²XGLab 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. Hemperek, 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^{1,2}, J. I. Collar³, G. K. Giovanetti^{1,2}, R. Henning^{1,2}, M. G. Marino⁴, A. G. Schubert⁴, J. F. Wilkerson^{1,2}
¹University of North Carolina, USA; ²Triangle Universities Nuclear Laboratory, USA; ³University of Chicago, USA; ⁴University of Washington, USA

N23-44 Electrode Response of 3D-Architecture Silicon Sensors

J. Hasi¹, E. Brown², C. J. Kenney¹, S. I. Parker³, A. Thompson⁴, E. Westbrook⁴, C. Da Via⁵, A. Kok⁶, T.-E. Hasen⁶, S. Watts⁵, J. Morse⁷
¹SLAC, USA; ²Reed College, USA; ³University of Hawaii, USA; ⁴Molecular Biology Consortium, USA; ⁵University of Manchester, UK; ⁶SINTEF, Norway; ⁷European 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. Niemela¹, J. Seppala², A. Aurola¹, H. Sipila¹, T. Tuuva³

¹Pixpolar, Finland; ²MIKES, Finland; ³Lappeenranta 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. Kiriha, 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^{1,2}, ¹Max Planck Institut fuer Extraterrestrische Physik, Germany; ²MPI Halbleiterlabor, Germany
On behalf of the DSSC Consortium

N27-169 Real-Time Processing of XPCS Data in an FPGA

T. J. Madden, J. T. Weizerick, A. Sandy, S. Narayanan, B. Tieman, M. Sikorski, X. Jiao
Argonne Laboratory, USA

N27-172 Development of the XFEL Timing System

A. Hidvegi¹, P. Gessler², K. Rehlich², C. Bohm¹
¹Stockholm University, Sweden; ²Deutsches Elektronen-Synchrotron (DESY), Germany

N27-175 Pulsed Proton Beam as a Diagnostic Tool for the Characterization of Semiconductor Detectors at High Charge Densities

L. Carraresi¹, A. Castoldi², N. Grassi¹, C. Guazzoni², R. Hartmann³, D. Mezza², F. Taccetti¹
¹Universita degli Studi di Firenze and INFN, Italy; ²Politecnico di Milano and INFN, Italy; ³pnSensor 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 10⁴ Dynamic Range by Multi-via Pixel with SOI Sensor Technology

T. Hatsui, T. Kudo, T. Kameshima, Y. Kiriha, 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^{1,2}, C. A. Ur², M. Bellato², C. Cattadori², A. D'Andragora², A. Di Vacri², R. Isocrate², C. Manea², A. Pullia^{1,2}, C. Rossi Alvarez², C. Rusu³, F. Zocca^{1,2}

¹Universita' degli Studi di Milano, Italy; ²Istituto Nazionale di Fisica Nucleare, Italy; ³University 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. Stoica¹, N. Kalantar¹, C. Rigollet¹, H. Simon², H. Wortche¹

¹KVI - University of Groningen, Netherlands; ²GSI, 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^{1,2}, G. Carboni^{1,2}, A. Fucci¹, G. Paoluzzi¹, A. Salamon¹, G. Salina¹, E. Santovetti^{1,2}, F. Sargeni^{1,2}

¹INFN Sezione Roma Tor Vergata, Italy; ²Universita' 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*
Jaehoon 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. Gabrielli¹, A. Polini², G. Bruni², M. Bruschi², D. Falchieri¹, A. Zoccoli¹, T. Flick³, J. Joseph⁴, J. Dopke³, A. Kugel⁵, J. Grosse-Knetter⁶, N. Kriger⁶, P. Morettini⁷, M. Rizzi², S. Zannoli¹, N. C. Schroer⁵

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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. Ahluwalia¹, J. Barth¹, S. Bartknecht², J. Bieling¹, H. Fischer², F. Herrmann², F. Klein¹, K. Koenigsmann², L. Lauser², J. Pretz¹, C. Schill², S. Schopferer², H. Wollny²

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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. Crespi¹, V. Vandone¹, F. Camera¹, S. Brambilla², B. Million², S. Riboldi¹, O. Wieland², A. Boston³, C. Unsworth³, H. Boston³, S. Colosimo³, S. Moon³, P. Nolan³

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N29-229 Depletion Region Dynamics of an AGATA Detector

S. Moon¹, D. Barrientos², A. J. Boston¹, H. C. Boston¹, S. J. Colosimo¹, J. R. Cresswell¹, D. S. Judson¹, P. J. Nolan¹, C. Unsworth¹

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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 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. Kopmann¹, A. Beglarian¹, T. Bergmann¹, S. Chilingaryan¹, M. A. Howe^{2,3}, D. G. Phillips II^{2,3}, D. Tcherniakhovski¹, S. Voecking⁴, J. F. Wilkerson^{2,3}, J. Wolf¹, S. Wuestling¹

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N29-250 Studies of the Pattern of Light Emmitted 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. Ambrosino¹, A. Antonelli², F. Costantini¹, D. Di Filippo¹, R. Fantechi¹, G. Lamanna¹, E. Leonardi³, I. Mannelli¹, P. Massarotti¹, M. Moulson², M. Napolitano¹, V. Palladino¹, M. Raggi², G. Saracino¹, T. Spadaro², P. Valente³, S. Venditti¹

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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'vra¹, D. Breton², E. Delagnes³, J. Maalmi², K. Nishimura⁴, L. Ruckman⁴, G. Varner⁴

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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. Proissl¹, B. Azmoun², S. Boose², M. Durham¹,
T. K. Hemmick¹, A. Milov², S. Polizzo², M. Purschke², C. L. Woody²
¹*Stony Brook University, USA*; ²*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. Disch¹, A. Zwerger¹, A. Fauler¹, M. Dambacher¹, U. Stoeckler²,
M. Fiederle¹
¹*Freiburg Materials Research Center (FMF), Germany*; ²*German Federal Office for Radiation Protection, Germany*

R05-2 Effect of Crucible Material on the Synthesis and Purity of LiGaTe2

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 HgI2 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^{1,2}, A. E. Bolotnikov², K. Kim², G. Yang², G. S. Camarda², A. Hossain², Y. Cui², R. B. James², J. Hong¹

¹Korea University, South Korea; ²Brookhaven 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_{0.9}Zn_{0.1}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_{1-x}Zn_xTe: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_{0.9}Zn_{0.1}Te Polished and Cleaned Using Capillary Force Wafer Mounts

J. D. Crocco, H. Bensalah, J. L. Plaza, E. Dieguez, *Crystal Growth Laboratory, University Autònoma, Spain*

R05-26 Vapor Growth of Tetragonal Prismatic Mercuric Iodide Crystals

E. Ariesanti¹, A. Kargar², D. S. McGregor¹

¹Kansas State University, USA; ²Radiation 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. Yurglevych, *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 HgI₂ Material

G. S. Camarda¹, A. E. Bolotnikov¹, Y. Cui¹, R. Gul¹, A. Hossain¹, K. Kim¹, L. Xu², G. Yang¹, R. B. James¹, L. Van Der Berg³, M. R. Saleno³, R. D. Vigil³, J. L. Baker³

¹Brookhaven National Lab, USA; ²Northwestern Polytechnic University, China; ³Constellation Technology Corporation, USA

R05-32 Energy Correction and Characterization of Charge Sharing Events for the CSTD Project Detectors

J. Carrascal¹, J. Castilla¹, J. C. Oller¹, A. Diaz², O. Vela¹, J. M. Perez¹, ¹CIEMAT, Spain; ²CEADEN, Cuba

R05-33 Design of the Focal Plane CdTe Double Side Strip Detector for ART-XC Telescope of SPECTRUM-ROENTGEN-GAMMA Mission

V. V. 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 cm³ 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. Komarov¹, Y. Yin¹, L.-J. Meng², H. Wu¹, Y.-C. Tai¹
¹Washington University in St. Louis, USA; ²University of Illinois at Urbana-Champaign, USA

R05-39 Results from Operating Pixelated CZT at Low-Background for the COBRA Experiment

J. W. Martin¹, M. Beilicke¹, O. Schulz², T. Neddermann², A. Garson III¹, Q. Guo¹, K. Lee¹, Q. Li¹, H. Krawczynski¹
¹Washington University in Saint Louis, United States; ²Technische Universität Dortmund, Germany

R05-40 Precision Measurements of the Response of a Pixelated CZT Detector with an Al₂O₃ Insulated Steering Grid

K. Lee¹, J. Matteson², Q. Li¹, A. Garson III¹, Q. Guo¹, J. Martin¹, M. Beilicke¹, H. Krawczynski¹
¹Washington University in St. Louis, United States; ²University 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. Lansley¹, G. T. Betzel¹, F. Baluti², L. Reinisch³, J. Meyer¹
¹University of Canterbury, New Zealand; ²Christchurch Hospital, New Zealand; ³Jacksonville 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, *Redlen Technologies, Canada*

R05-45 Large Area Integrated Circuit for Spectroscopic Readout of Small Pixel CdZnTe X-Ray Detectors

P. Seller¹, L. L. Jones¹, P. J. Sellin², S. L. Thomas¹, M. C. Veale¹, M. D. Wilson¹
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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^{1,2}, T. Aoki², O. I. Vlasenko¹, S. N. Levytskyi¹
¹National Academy of Sciences of Ukraine, Ukraine; ²Shizuoka 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. Zheng¹, F. Dierre¹, O. Vela², V. Corregidor³, R. Fernandez-Ruiz⁴, E. Alves³, J. M. Perez², E. Dieguez¹
¹Crystal Growth Laboratory, Spain; ²CIEMAT, Spain; ³Institute Tecnologia Nuclear, Portugal; ⁴SIDI, Spain

R05-50 Study of Passivation with Time on CdZnTe Bulk Crystal by XPS and I-V

H. Bensalah¹, V. Carcelen¹, J. D. Crocco¹, J. L. Plaza¹, G. Rodriguez², L. Soriano², E. Dieguez¹
¹Crystal Growth Laboratory, Spain; ²Spectroscopy Laboratory, Spain

R05-51 Improving the Detection Performance of Heavy Metal Halides Films by Surface Treatment

L. Fornaro¹, I. Aguiar², N. Sassen², M. E. Perez², A. L. Noguera¹
¹CURE, Uruguay; ²Facultad 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. Ayoub¹, F. Dierre², R. L. Thompson³, A. T. G. Pym¹, I. Radley¹, A. Basu¹
¹Kromek Ltd., U.K.; ²Universidad Autonoma de Madrid, Spain; ³University 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. Tumer, T. O. Tumer
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. Dambacher¹, A. Zwerger¹, C. Disch¹, A. Fauler¹, U. Stoeckler², M. Fiederle¹
¹Freiburg Materials Research Center, Germany; ²German 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. Karafasoulis¹, K. Zachariadou², S. Seferlis¹, I. Papadakis², D. Loukas², C. Potiriadis¹
¹Greek Atomic Energy Commission, Greece; ²National 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
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R05-62 Polarization degree and vector angle effects on a CdZnTe focal plane prototype

R. M. Curado da Silva¹, E. Caroli², J. B. Stephen², N. Auricchio³, J. M. Maia¹, S. Del Sordo², A. Donati², F. Schiavone², J. B. Campos¹, C. P. Gloster¹, A. Trindade¹, V. Honkimaki⁴
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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. Procz¹, J. Luebke², A. Zwerger¹, M. Mix², M. Fiederle¹
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R05-67 Adaptation of Pixelated CdZnTe Gamma-Ray Imaging Technology for in Situ Planetary Science Applications

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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. Hamann¹, A. Cecilia¹, D. Greiffenberg², J. Butzer¹, P. Vagovic¹, T. dos Santos Rolo¹, A. Ershov¹, A. Minkevich¹, A. Zwerger², V. Altapova¹, M. Fiederle², T. Baumbach¹
¹*Karlsruhe Institute of Technology (KIT), Germany*; ²*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

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R05-71 Coincidence Measurement of 350µm Pitched Pixelated CdZnTe Detector with LSO PET Module

Y. Yin^{1,2}, H. Wu¹, S. Komarov¹, A. Garson³, Q. Guo³, H. Krawczynski³, L.-J. Meng⁴, Y.-C. Tai¹

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R05-72 Energy Dispersive X-Ray Diffraction Spectral Resolution Considerations for Security Screening Applications

C. Cozzini¹, G. Harding², P. Edic³, D. Beque¹, D. Kosciesza³, Y. Du³, H. Strecker²

¹*GE Global Research, Germany*; ²*Morpho Detection, Germany*; ³*GE Global Research, USA*

R05-73 First X-Ray Detection with Semi-Insulating 4H-Silicon Carbide

G. Bertuccio^{1,2}, D. Puglisi^{1,2}, D. Macera^{1,2}, A. Pullia^{2,3}, C. Lanzieri⁴, S. Lavanga⁴

¹*Politecnico di Milano - Polo Regionale di Como, Italy*; ²*INFN - sez. Milano, Italy*; ³*University of Milan, Italy*; ⁴*Selex Sistemi Integrati, Italy*

R05-74 Energy Resolution of Compton Electrons in CZT Measured by the Wide Angle Compton Coincidence Technique

M. Szawlowski¹, L. Swiderski¹, M. Moszynski¹, T. Szczesniak¹, M. Grodzicka¹, M. Kapusta², D. Wolski¹, A. Celler³

¹*Soltan Institute for Nuclear Studies, Poland*; ²*ICx Technologies, Germany*; ³*UBC & Vancouver Coastal Health Research Institute, Canada*

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. Swanekamp¹, J. P. Apruzese², R. J. Commisso², D. Mosher¹, J. W. Schumer²
¹Naval Research Laboratory (L3 Contractor), USA; ²Naval 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. Agelou¹, A. Binet², F. Carrel¹, D. Dore³, E. Dupont³, M. Gmar¹, F. Laine¹, J.-P. Negre²
¹CEA, LIST, France; ²CEA, DAM, DIF, France; ³CEA, 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. Revol¹, C. Kottler¹, R. Kaufmann¹, I. Jerjen², T. Luethi², F. Cardot¹, P. Niedermann¹, U. Straumann³, U. Sennhauser², C. Urban¹¹Centre Suisse d'Electronique et Microtechnique, Switzerland;²Eidgenössische Materialprüfungs- und Forschungsanstalt, Switzerland;³University 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^{1,2}, R. Arlt³, A. Berlizov⁴, J. Magill²¹Vienna University of Technology, Austria; ²European Commission, Joint Research Center, Germany; ³Consultant for the International Atomic Energy Agency, Austria; ⁴Kiev 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 HPGe Detectors: Tests with Calculated and Experimental Signal Basis**F. C. L. Crespi¹, V. Vandone¹, F. Camera¹, S. Brambilla², B. Million², S. Riboldi¹, O. Wieland²¹Universit di Milano / INFN Milano, ITALY; ²INFN Milano, Italy**N31-5 Geant4 Calculations of the Effective Neutron Multiplication Factor**L. J. Bignell^{1,2}, D. Alexiev²¹The University of Sydney, Australia; ²Australian 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 SimulationsM. 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 CollisionsT. B. Arranged, *CERN, Switzerland*

On behalf of the CMS Collaboration

N32-4 First Results from the LHCb VELOC. J. Pakes, *University of Glasgow, UK*

On behalf of the LHCb VELO

N32-5 CMS Silicon Strip Tracker Operations and PerformanceT. 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 μ -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. Kalliopuska¹, L. Tlustos², S. Eränen¹, T. Virolainen¹, A. Gadda¹
¹VTT, Finland; ²CERN, Switzerland

N37-5 Development of Radiation-hard Silicon-based Pixel Sensors for the ATLAS Upgrade

V. 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

V. Kozlov¹, A. Zagumennyi², Y. Zavartsev², M. Zavertyaev¹, F. Zerrouk³

¹P.N.Lebedev Physical Institute of Russian Academy of Science, Russia;

²Prohorov General Physics Institute of Russian Academy of Science, Russia; ³Zecotek 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- CollidersL. Andricek, *MPI Halbleiterlabor, Germany*

On behalf of the DEPFET collaboration

N39-3 Test of the First Prototype of the Time Stamping Monolithic CMOS Pixel DetectorN. B. Sinev¹, C. Baltay², J. E. Brau¹, W. Emmet², D. Rabinowitz², D. Strom¹¹University of Oregon, USA; ²Yale 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 & 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. Fiedler¹, T. Kormoll², A. Miller¹, W. Enghardt^{1,2}¹Forschungszentrum Dresden-Rossendorf, Germany; ²TU Dresden, Germany**N40-2 CMOS Monolithic Sensors in a Homogeneous 3D Process for Low Energy Particle Imaging**L. Ratti^{1,2}, M. Caccia^{3,2}, L. Gaioni^{4,2}, A. Manazza^{1,2}, M. Manghisoni^{4,2}, V. Re^{4,2}, G. Traversi^{4,2}, S. Zucca^{1,2}¹University of Pavia, Italy; ²INFN, Italy; ³University of Insubria, Italy;⁴University 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. Adams¹, M. Mellor², M. J. Joyce¹¹Lancaster University, UK; ²REACT 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. Hauf¹, M. Kuster¹, D. H. H. Hoffmann¹, A. Stefanescu^{2,3}, L. Strueder^{2,4}, M. G. Pia⁵

¹TU Darmstadt, Germany; ²Max-Planck-Institut fuer extraterrestrische Physik, Germany; ³Johannes Gutenberg University, Germany; ⁴Max-Planck-Institut Halbleiter Labor, Germany; ⁵INFN, Italy

N44-3 R&D on the Geant4 Radioactive Decay Physics

S. Hauf¹, M. Kuster¹, D. H. H. Hoffmann¹, Z. W. Bell², M. M. Guenther¹, K. Harres¹, F. Nuernberg¹, M. G. Pia³, M. Roth¹, G. Weidenspointner⁴, A. Zoglauer⁵

¹TU Darmstadt, Germany; ²Oak Ridge National Laboratory, USA;

³INFN, Sezione di Genova, Italy; ⁴Max Planck Institut, Germany;

⁵University 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. Weller¹, M. H. Mendenhall^{1,2}, R. A. Reed¹, K. M. Warren², B. D. Sierawski², R. D. Schrimpf¹, L. W. Massengill¹, M. Asai³

¹Vanderbilt University, USA; ²Institute for Space and Defense Electronics, Vanderbilt U., USA; ³Stanford 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^{1,2}, P. Finnerty^{1,2}, R. Henning^{1,2}, M. A. Howe^{1,2}, M. G. Marino³, J. Strain^{1,2}, J. F. Wilkerson^{1,2}

¹University of North Carolina at Chapel Hill, USA; ²Triangle Universities Nuclear Laboratory, USA; ³University 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. Anderson¹, M. P. Carpenter¹, D. Doering², C. Hoffman¹, A. S. Kreps¹, T. Lauritsen¹, I.-Y. Lee², C. A. Lionberger², C. J. (. Lister¹, P. Wilt¹, S. Zhu¹, S. Zimmermann²

¹Argonne National Laboratory, USA; ²Lawrence 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 Eu²⁺-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 Lu₂SiO₅

D. Totsuka^{1,2}, T. Yanagida¹, Y. Fujimoto¹, Y. Yokota¹, A. Yoshikawa^{1,3}

¹Institute of Multidisciplinary Research for Advanced Materials, *Tohoku University, JAPAN*; ²NIHON KESSHO KOGAKU CO.,LTD, *Japan*;

³New Industry Creation Hatchery Center (NICHe), *JAPAN*

N46-4 Crystal Growth and Scintillation Characterization of Cs₃CeX₆ and CsCe₂X₇ (X = Cl, Br)

M. Zhuravleva¹, K. Yang¹, H. Rothfuss², C. Melcher¹

¹University of Tennessee, USA; ²Siemens Medical Solutions Molecular Imaging, USA

N46-5 Influence of Eu Concentration on Growth and Performance of SrI₂: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 AGd₂Cl₇:Ce³⁺ (A=K, Cs) New Scintillators for Gamma/Neutron Detection

K. Yang¹, M. Zhuravleva¹, H. Rothfuss^{1,2}, C. Melcher¹

¹University of Tennessee at Knoxville, USA; ²Siemens Medical Solutions Molecular Imaging, USA

N46-7 Optical and Scintillation Characterization of Europium Doped BaBrI and Ba₂CsI₅

G. A. Bizarri, 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. Chivers¹, A. Coffey¹, B. Plimley¹, K. Vetter^{1,2}

¹University of California, Berkeley, USA; ²Lawrence Berkeley National Laboratory, USA

N50-2 Design and Fabrication of Silicon CCD-Strip Hybrid Detectors

L. Avci¹, D. H. Chivers¹, C. Tindall², K. Vetter^{1,2}

¹University of California, Berkeley, USA; ²Lawrence 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. Pangaud¹, D. Arutinov², M. Barbero², B. Chantepie¹, J.-C. Clemens¹, R. Fei¹, D. Fougeron¹, M. Garcia-Sciveres³, S. Godiot¹, T. Hemperek², M. Karagounis², H. Kruger², A. Mekkaoui³, S. Rozanov¹, N. Wermes³

¹Centre de Physique des Particules de Marseille, France; ²Physikalisches Institut der Universität Bonn, Germany; ³Lawrence Berkeley National Laboratory, USA

N51-4 Details of the First 3D-IC Multi-Project Wafer Run

G. W. Deptuch¹, M. Demarteau¹, J. Hoff¹, F. Khalid¹, R. Lipton¹, R. Patti², A. Shenai¹, M. Trimpl¹, R. Yarema¹, T. Zimmerman¹
¹Fermilab, USA; ²Tezzaron Semiconductor, USA

N51-5 A Front-End ASIC for CdTe Detectors Readout in Battery Powered Capsule for Colon 3D-Imaging

G. Bertuccio^{1,2}, S. Caccia^{1,2}, D. Macera^{1,2}, M. Troiani¹, Y. Kimcký³, I. Klein³

¹Politecnico di Milano - Polo regionale di Como, Italy; ²INFN-sez. Milano, Italy; ³Check 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. Schirru¹, S. B. S. Nara Singh², L. Scruton², M. A. Bentley², S. Fox²,
A. Lohstroh¹, P. J. Sellin¹, A. Banu³, M. McCleskey³, B. R. Roeder³,
E. Simmons³, A. A. Alharbi³, L. Trache³

¹University of Surrey, UK; ²University of York, UK; ³Texas A & M University, USA

N52-4 Beam Monitors Using Diamond Detectors

B. Dehning¹, D. Dobos¹, E. Effinger¹, E. Griesmayer², H. Pernegger¹

¹CERN, Switzerland; ²CIVIDECE 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. Granja¹, J. Jakubek¹, Y. Kopatch², U. Köster³, P. Masek¹,
M. Platkevich¹, S. Pospisil¹, S. Telezhenikov², I. Tomandl⁴, J. Vacik⁴

¹Institute of Experimental and Applied Physics, Czech Technical University in Prague (IEAP CTU), Czech Republic; ²Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research (JINR), Russia; ³Institute Laue Langevin (ILL), France; ⁴Nuclear 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 Cs₂LiYBr₆

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 SrI₂:Eu²⁺

M. S. Alekhin¹, J. T. M. de Haas¹, K. W. Kraemer², I. V. Khodyuk¹,
L. de Vries¹, P. Dorenbos¹

¹Delft University of Technology, Netherlands; ²University of Bern, Switzerland

N53-3 Scintillation of Nanoparticles: Case Study of Rare Earth Dope Fluorides

L. G. Jacobsohn¹, C. J. Kucera¹, K. B. Sprinkle¹, S. A. Roberts¹,
E. G. Yukihiro², T. A. DeVol¹, J. Ballato¹

¹Clemson University, USA; ²Oklahoma State University, USA

N53-4 Optical and Scintillation Properties of Single Crystal CsSr_{1-x}Eu_xI₃

K. Yang¹, M. Zhuravleva¹, H. Rothfuss^{1,2}, C. L. Melcher¹

¹University of Tennessee, USA; ²Siemens Medical Solutions, USA

N53-5 Evaluation of Large Volume SrI₂(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 CeCl₃ and Ce Doped LaBr₃ Single Crystals Grown by Modified Micro-Pulling-down Method

Y. Yokota¹, N. Kawaguchi^{1,2}, K. Fukuda^{1,2}, D. Totsuka^{1,3},
T. Yanagida¹, A. Yoshikawa^{1,4}

¹Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan; ²Tokuyama Corporation, Japan; ³Nihon Kessho Kogaku Corporation, Japan; ⁴New Industry Creation Hatchery Center (NICHe), Tohoku University, JAPAN

N54: Instrumentation for Hadron Therapy and Biological Research

Wednesday, Nov. 3 16:00-18:00 301D & 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. Zhang¹, M. Jin¹, Z. Huang¹, Y. Xiao¹, H. Yin², Z. Wang², T. Xiao³

¹Tsinghua University, China; ²Beijing Tongren Hospital, Capital Medical University, China; ³Chinese 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. Rosenfeld¹, I. E. Anokhin², O. S. Ziner², A. L. Ziebell¹, J. Poder¹, E. Simpson¹, S. Dowdell¹, S. Guatelli¹, M. L. Lerch¹, M. Petasecca¹, B. Clasic³, J. Flanz³, A. Wroe⁴, R. Schulte⁴, M. Reinhard⁵, D. Prokopovich⁵, V. Perevertaylo⁶

¹Centre for Medical Radiation Physics, University of Wollongong, Australia; ²Institute for Nuclear Research, Ukraine; ³Massachusetts General Hospital, USA; ⁴Loma Linda University Medical Center, USA; ⁵Australian Nuclear Science and Technology Organisation, Australia; ⁶Institute of the Microdevices, Ukraine

N54-6 Spatial Distribution of Dose Deposition by Proton and Carbon Beams for Hadron Therapy

M. Martisikova¹, C. Granja², J. Jakubek², O. Jäkel³, S. Pospisil²

¹German Cancer Research Center (DKFZ), Germany; ²Institute of Experimental and Applied Physics, Czech Technical University in Prague (IEAP CTU), Czech Republic; ³Heidelberger 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. Ojha¹, Z. Hu¹, L. Shao¹, D. Izquierdo², J. Machac², V. Fuster², H. Zaidi³, O. Ratib³, Z. Fayad²

¹Philips Healthcare, USA; ²Mt Sinai Medical Center, USA; ³Hopitaux Universitaires de Geneve, Switzerland

M03-3 (14:00) Simultaneous PET/MR Imaging and Electromagnetic Interference Studies in 9.4 T MRI

S. H. Maramba¹, S. D. Smith², S. Rescia², S. Junnarkar², S. Stoll², M. Purschke², B. Ravindranath¹, D. Schulz², P. Vaska², C. Woody², D. Schlyer²

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

M03-4 (14:15) Simultaneous preclinical PET/MR insert using novel digital PET detectors

V. Schulz^{1,2}, T. Solf¹, B. Weissler¹, P. Gebhardt¹, M. Zinke¹, P. Fischer³, M. Ritzert³, V. Mlotok³, C. Piemonte⁴

¹Philips Research Europe - Aachen, Germany; ²RWTH University, Germany; ³University of Heidelberg, Germany; ⁴Fondazione Bruno Kessler, Italy

M03-5 (14:30) A MR Insertable Brain PET Using Tileable GAPD Arrays

K. J. Hong¹, Y. Choi¹, J. Kang^{1,2}, W. Hu^{1,2}, H. K. Lim¹, Y. S. Huh^{1,2}, S. Kim¹, J. W. Jung¹, K. B. Kim¹, M. S. Song³, H.-W. Park³
¹Sogang University, Republic of Korea; ²Sungkyunkwan University School of Medicine, Republic of Korea; ³Korea Advanced Institute of Science and Technology, Republic of Korea

M03-6 (14:45) Imaging Results of a Simultaneous PET-MRI Breast Scanner

B. Ravindranath¹, S. Junnarkar², M. L. Purschke², S. Stoll², S. H. Maramraju¹, X. Hong³, D. Bennett³, K. Cheng³, D. Tomasi², P. Vaska², C. Woody², D. Schlyer²
¹Stony Brook University, USA; ²Brookhaven National Laboratory, USA; ³Aurora 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^{1,2}, C. T. Metz², M. Schaap², S. Klein², W. J. Niessen^{2,3}, M. Grass¹
¹Philips Research Europe - Hamburg, Germany; ²Erasmus MC, University Medical Center Rotterdam, The Netherlands; ³Delft 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. Meyer¹, R. Raupach², M. Baer¹, B. Schmidt², M. Kachelriess¹
¹Institute of Medical Physics, Germany; ²Siemens Healthcare, Germany

M04-5 (17:00) Preliminary Experience in Sparse-view Reconstruction from Clinical Patient Data in Offset-detector CBCT

J. Bian¹, X. Han¹, J. Wang², E. Y. Sidky¹, L. X. Shao², X. Pan¹
¹The University of Chicago, US; ²Philips Healthcare, US

M04-6 (17:15) A Statistical Image Reconstruction Algorithm for Polyenergetic X-Ray CT: Preliminary Results on a Small Animal Scanner

M. Abella¹, J. J. Vaquero¹, M. Desco^{1,2,3}, J. A. Fessler⁴
¹Hospital General Universitario Gregorio Marañon, Spain; ²CIBERSAM, Instituto de Salud Carlos III, Spain; ³Universidad Carlos III, Spain; ⁴The University of Michigan, USA

M04-7 (17:30) Low-Dose Phase-Related Cone-Beam Micro-CT of Small Animals

S. Sawall¹, F. Bergner¹, R. Lapp², M. Mronz², M. Karolczak¹, A. Hess¹, M. Kachelriess¹
¹University Erlangen-Nuremberg, Germany; ²CT Imaging GmbH, Germany

M04-8 (17:45) Preliminary Investigation of Optimal Imaging Parameters for Dose-reduction in Cone-Beam CT

X. Han¹, E. Pearson¹, J. Bian¹, S. Cho², E. Y. Sidky¹, C. A. Pelizzari¹, X. Pan¹
¹The University of Chicago, USA; ²Korea Advanced Institute of Science and Technology, Korea

RTSD Oral Presentations

R07: Characterization of CZT II

Wednesday, Nov. 3 08:30-09:50 301A & 301B

Session Chair: Arnold Burger, *Fisk University, USA***R07-1 (08:30, invited) Correlations Between Crystal Defects and Performance of CdZnTe Detectors**A. E. Bolornikov¹, S. Babalola², G. S. Camarda¹, Y. Cui¹, R. Gul¹, S. U. Egarievwe², P. M. Fochuk³, A. Hossain¹, K. H. Kim¹, O. O. Kopach³, L. Marchini⁴, G. Yang¹, L. Xu⁵, R. B. James¹¹Brookhaven National Laboratory, USA; ²Alabama A&M University, USA; ³Chernivtsi National University, Ukraine; ⁴IMEM-CNR, Italy; ⁵Northwestern Polytechnic University, China**R07-2 (08:50) Charge Collection and Depth Sensing Investigation on CZT Drift Strip Detectors**L. Kuvvedi¹, C. Budtz-Jrgensen¹, E. Caroli², J. B. Stephen², E. Kalemci³, N. Auricchio²¹DTU Space National Space Institute, Technical University of Denmark, Denmark; ²INAF/IASF-Bologna, Italy; ³Sabanci University, Turkey**R07-3 (09:05) Internal Electric Field Estimation, Charge Transport and Detector Performance of as-Grown Cd_{0.9}Zn_{0.1}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 mm³ 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 & 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- π -n CdTe Pixel Detector Coupled to Medipix2 Readout Chip**J. J. Kalliopuska¹, S. Nenonen², R. Penttilä¹, H. Pohjonen¹, A. Gadda¹, L. Tlustos³, I. Vanttaja¹, H. Andersson², P. Laakso¹, J. Likonen¹¹VTT, Finland; ²Oxford Instruments Analytical Oy, Finland; ³CERN, 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. Luebke¹, S. Procz², A. Zwerger², M. Fiederle², M. Mix¹¹Universitaetsklinikum Freiburg, Germany; ²Albert-Ludwigs-Universitaet Freiburg, Germany

R09: CdTe and CdZnTe

Wednesday, Nov. 3 13:30-15:05 301A & 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. Sato¹, T. Fukuyama^{1,2}, K. Hagino^{1,2}, H. Ikeda¹, S. Ishikawa^{1,2}, J. Katsuta^{1,2}, M. Kokubun¹, K. Nakazawa², H. Odaka^{1,2}, M. Ohta¹, S. Saito^{1,2}, T. Sato^{1,2}, T. Takahashi^{1,2}, S. Takeda¹, T. Tanaka³, S. Watanabe¹¹JAXA, JAPAN; ²The University of Tokyo, Japan; ³Stanford 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. Rinkel¹, G. Beldjoudi¹, G. Nonon¹, A. Brambilla¹, V. Rebuffel¹, C. Boudou², P. Ouvrier-Buffer¹, L. Verger¹¹CEA, France; ²Thales, 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 & 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, *Redlen Technologies, Canada***R10-4 (16:50) The COCAE Detector: An Instrument for Localization - Identification of Radioactive Sources**C. P. Lambropoulos¹, T. Aoki², J. Croco³, E. Dieguez³, C. Disch⁴, A. Fauler⁴, M. Fiederle⁴, D. S. Hatzistratis¹, V. A. Gnatyuk⁵, K. Karafasoulis⁶, L. A. Kosyachenko⁷, S. N. Levytskyi⁵, D. Loukas⁸, O. L. Maslyanchuk⁹, A. Medvids⁹, T. Orphanoudakis¹, I. Papadakis⁸, A. Papadimitriou⁸, C. Potiriadis⁶, T. Schulman¹⁰, V. M. Sklyarchuk⁹, K. Spartiotis¹⁰, G. Theodoratos¹, O. I. Vlasenko⁵, K. Zachariadou⁸, M. Zervakis¹¹Technological Educational Institute of Chalkida, Greece; ²Shizuoka university, Japan; ³Universidad Autonoma de Madrid, Spain; ⁴Albert Ludwigs University, Germany; ⁵National Academy of Sciences of Ukraine, Ukraine; ⁶Greek Atomic Energy Commission, Greece; ⁷Chernivtsi Yury Fedkovych National University, Ukraine; ⁸National Center for Scientific Research, Greece; ⁹Riga Technical University, Latvia; ¹⁰Oy Ajat Ltd, Finland**R10-5 (17:05) Preliminary Results on Elimination of Secondary Phases in Cd1-xZnxTe 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:Eu²⁺ 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:LiCaAlF₆ Neutron Scintillator Using Pulse Shape Discrimination Technique**K. Watanabe¹, A. Yamazaki¹, A. Uritani¹, T. Iguchi¹, N. Kawaguchi², T. Yanagida³, Y. Fujimoto³, Y. Yokota³, K. Kamada³, K. Fukuda², T. Suyama², A. Yoshikawa³¹Nagoya University, Japan; ²Tokuyama Corporation, Japan; ³Tohoku University, Japan**N34-286 Study of a Thermal Neutron Scintillation Detector Prototype with Wavelength Shifting Fiber Readout**R. Engels¹, U. Clemens¹, A. Houben², G. Kemmerling¹, W. Schweika¹, J. Schelten¹¹Forschungszentrum Juelich GmbH, Germany; ²RWTH Aachen, Germany**N34-289 Spatial Resolution Research on ¹⁵²Gd₂O₃ Coated MCP Thermal Neutron Converter**N. Lu^{1,2}, Y. Yang^{1,2}, Y. Li^{1,2}¹Tsinghua University, P.R.China; ²Ministry 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. Hughes¹, M. A. Coplan², A. K. Thompson², M. Arif², R. E. Vest², C. W. Clark^{1,2,3}¹National Institute of Standards and Technology, U.S.A.; ²University of Maryland, U.S.A.; ³Joint 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. Tanaka¹, Y. Sakurai¹, M. Suzuki¹, S. Masunaga¹, T. Mitsumoto², G. Kashino¹, Y. Kinashi¹, Y. Liu¹, Y. Kawabata¹, T. Yagi¹, T. Misawa¹, K. Ono¹, A. Maruhashi¹

¹Kyoto University Research Reactor Institute, Japan; ²Sumitomo 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. Masuda¹, T. Matsumoto¹, H. Harano¹, J. Nishiyama¹, Y. Iwamoto², M. Hagiwara³, D. Satoh², H. Iwase³, H. Yashima⁴, T. Nakamura⁵, T. Sato², T. Itoga⁶, Y. Nakane², H. Nakashima², Y. Sakamoto², C. Theis⁷, E. Feldbaumer⁷, L. Jaegerhofer⁷, C. Picoh⁸, V. Mares⁸, A. Tamii⁹, K. Hatanaka⁹

¹National Institute of Advanced Industrial Science and Technology, JAPAN; ²Japan Atomic Energy Agency, JAPAN; ³High Energy Accelerator Research Organization(KEK), Japan; ⁴Kyoto University, Japan; ⁵Tohoku University, Japan; ⁶RIKEN, Japan; ⁷European Organization for Nuclear Research(CERN), Switzerland; ⁸National Research Center for Environment and Health, Germany; ⁹Osaka 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 $^{10}\text{B}(n,\gamma)^7\text{Li}$ Nuclear Reaction

J. Vacik^{1,2}, V. Hnatowicz¹, S. Posta²

¹Nuclear Physics Institute, Academy of Sciences of the Czech Republic, Czech Republic; ²Research Centrum Rez, Czech Republic

N34-334 (08:00) 2-Dimensional He-3 M-MSGC with Floating Pads

T. Fujiwara¹, H. Takahashi¹, B. Shi¹, N. Torikai², N. Yamada³, M. Uesaka¹

¹The University of Tokyo, Japan; ²Mie University, Japan; ³High Energy Accelerator Research Organization, Japan

N34-337 Neutron Response of Rare-Earth-Doped $^6\text{LiF/CaF}_2$ Eutectic Composites with the Ordered Lamellar Structure

N. Kawaguchi^{1,2}, K. Fukuda¹, T. Yanagida², Y. Fujimoto², Y. Yokota², K. Watanabe³, A. Yamazaki³, T. Suyama¹, A. Yoshikawa²

¹Tokuyama Corporation, Japan; ²Tohoku University, Japan; ³Nagoya University, Japan

N34-340 Thermal Neutron Imaging Tests with Rare-Earth-Ion-Doped LiCaAlF_6 and Sealed ^{252}Cf Source

N. Kawaguchi^{1,2}, T. Yanagida², Y. Fujimoto², Y. Yokota², K. Kamada², K. Fukuda¹, T. Suyama¹, K. Watanabe³, A. Yamazaki³, A. Yoshikawa^{1,2}

¹Tokuyama corp., Japan; ²Tohoku univ., Japan; ³Nagoya 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 Loef¹, J. Glodo¹, U. Shirwadkar¹, N. Zaitseva², K. S. Shah¹

¹Radiation Monitoring Devices, Inc., USA; ²Lawrence 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 $\text{Li}_6\text{Gd}(\text{BO}_3)_3$ 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. Korjik¹, A. Borisevich¹, A. Fedorov¹, Y. Kubota², R. Rusack², T. Kuske³, V. Mechinski¹, V. Dornenev³, O. Missevitch¹, R. Novotny³, A. Singovski²

¹RINP, Minsk, Belarus, Belarus; ²School of Physics and Astronomy University of Minnesota, USA; ³Justus Liebig University, Germany

N36-186 A Study on Thin Films of (TeO₂)0.9 (In₂O₃)0.1 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. Park¹, H. S. Kim¹, C. H. Lee², J. H. Ha¹, H.-S. Shin¹

¹KAERI, Republic of Korea; ²Hanyang 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 γ -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 μ m X 17 μ 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. Lansley¹, J. Meyer¹, P. H. Butler¹, M. Fiederle², O. A. Williams³, R. J. Hall-Wilton⁴

¹University of Canterbury, New Zealand; ²Albert-Ludwigs-Universitaet, Germany; ³Fraunhofer Institute for Applied Solid State Research, Germany; ⁴CERN, 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, Université 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. Coffer¹, D. H. Chivers¹, B. Plimley¹, K. Vetter^{1,2}

¹University of California - Berkeley, USA; ²Lawrence 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. Karafasoulis¹, K. Zachariadou², S. Seferlis¹, I. Kaissas¹, C. Lambropoulos³, C. Potiriadis¹
¹Greek Atomic Energy Commission, Greece; ²National Center for Scientific Research Demokritos, Greece; ³Technological 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-Gotcher¹, L. Mihailescu², D. Chivers¹, J. Siegrist^{1,2}, K. Vetter^{1,2}
¹University Of California, Berkeley, USA; ²Lawrence Berkeley National Lab, USA

N41-168 Spectral Analysis for the High Efficiency Multimode Imager

M. L. Galloway¹, A. Zoglauer¹, M. Amman², S. Boggs¹, P. N. Luke²
¹University of California, USA; ²Lawrence 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 ³He

R. L. Varner¹, P. S. Friedman², J. R. Beene¹
¹Oak Ridge National Laboratory, USA; ²Integrated Sensors, USA

N41-177 Digital X-Ray Image Sensor Using Plasma Display Panel (PDP) Structure

K. S. Song¹, D. H. Lee², S.-H. Kim¹
¹Kumoh National Institute of Technology, Korea; ²Korea 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-Vertex-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. Pia¹, M. Augelli², M. Begalli³, M. Han⁴, S. Hauf⁵, C. H. Kim⁴, M. Kuster⁶, P. Queiroz⁷, L. Quintieri⁸, P. Saracco¹, D. Souza-Santos⁷, H. Seo⁴, G. Weidenspointner⁹, A. Zoglauer¹⁰
¹INFN Genova, Italy; ²CNES, France; ³UERJ, Brazil; ⁴Hanyang Univ., Korea; ⁵Darmstadt Univ. of Technology, Germany; ⁶XFEL GmbH, Germany; ⁷IRD, Brazil; ⁸INFN LNF, Italy; ⁹MPI Halbleiterlabor and MPE, Germany; ¹⁰Univ. of California at Berkeley, USA

N42-284 Handling of the Generation of Primary Events in Gauss, the LHCb Simulation Framework

I. Belyaev¹, T. Brambach², G. Corti³, N. Gauvin⁴, K. Harrison⁵, P. Harrison⁶, J. He⁷, C. Jones³, M. Lieng², G. Manca⁸, S. Miglioranza³, P. Robbe⁷, V. Vagnoni⁹, M. Whitehead⁶, J. Wishah²
¹Institute of Theoretical and Experimental Physics (ITEP), Russia; ²Technische Universität Dortmund, Germany; ³CERN, Switzerland; ⁴Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland; ⁵University of Cambridge, United Kingdom; ⁶University of Warwick, United Kingdom; ⁷LAL, Université Paris-Sud, CNRS/IN2P3, France; ⁸Universita' e INFN Cagliari, Italy; ⁹INFN 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 Timpix

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^{1,2}, A. Dorokhov², C. Hu-Guo², Z. Tang¹, M. Winter²
¹Dalian University of Technology, P.R.China; ²Institut 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. Brown¹, M. Corvo², A. Di Simone³, A. Fella⁴, E. Luppi⁵, E. Paoloni⁶, R. Stroili², L. Tomassetti⁵
¹Lawrence Berkeley National Laboratory, USA; ²University of Padua and INFN, Italy; ³University of Rome Tor Vergata, Italy; ⁴INFN CNAF, Italy; ⁵University of Ferrara and INFN, Italy; ⁶INFN 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. Martins¹, S. S. O. Fonseca-Rodrigues¹, M. Begalli², P. P. Queiroz Filho¹, D. Souza-Santos¹
¹Institute for Radiation Protection and Dosimetry, CNEN, Brazil; ²State 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. Insepov¹, V. Ivanov², J. Elam¹, B. Adams¹, H. Frisch^{1,3}
¹Argonne National Laboratory, USA; ²Muons Inc., USA; ³University of Chicago, USA

N42-323 Anthropomorphic Phantoms and Geant4-Based Implementations for Dose Calculations

M. C. Martins¹, R. S. Silva², M. Begalli², P. P. Queiroz-Filho¹, D. Souza-Santos¹, M. G. Pia³
¹Institute for Radiation Protection and Dosimetry, Brazil; ²State University of Rio de Janeiro, Brazil; ³National 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^{1,2}, D. M. Hamby¹
¹Oregon State University, USA; ²Avicenna Instruments LLC, USA

N47-65 High Accuracy Injection Circuit for Pixel-Level Calibration of Readout Electronics

M. Manghisoni^{1,2}, E. Quartieri^{3,2}, L. Ratti^{3,2}, G. Traversi^{1,2}

¹Università degli Studi di Bergamo, Italy; ²INFN, Italy; ³Università degli Studi di Pavia, Italy

N47-68 A New Distributed and Programmable Voltage Control System for the CHIMERA Silicon Detectors

G. Sacca¹, M. D'Andrea¹, F. Fichera¹, N. Guardone², G. Lo Faro¹, D. Nicotra¹, S. Riggio¹

¹INFN Sezione di Catania, Italy; ²Università 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. Petulla¹, 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^{1,2}, Z. Wang²

¹University of Science and Technology of China, China; ²Institute of High Energy Physics, China

N47-86 Independent Channel Readout System for a 2x2 Array of H8500 with SBA Photocathode

A. Fabbri¹, V. Cencelli¹, F. de Notaristefani¹, R. Pani², P. Bennati¹, M. N. Cinti², G. Moschini³, F. Navarra⁴, R. Pellegrini²

¹INFN - Department of Electronic Engineering University of Rome, Italy; ²INFN - Department of Experimental Medicine, University, Italy; ³INFN - Laboratori Nazionali di Legnaro, Italy; ⁴INFN - 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^{1,2}, F. Zocca²

¹University of Milano, Italy; ²INFN, Italy

N47-101 Single-Power-Supply Differential-Output Circuit-Architecture for Digitized Preamplifiers of Semiconductor Detector Signals

A. Pullia^{1,2}, F. Zocca², L. Marchetti¹

¹University of Milano, Italy; ²INFN, Italy

N47-104 Development of a Read-Out System Using CMOS ASICs for a μ PIC Micro-Pixel Gaseous Chamber

S. Iwaki¹, H. Kubo¹, M. Tanaka², H. Ohwada³, N. Higashi¹,

S. Kabuki¹, S. Kuosawa¹, K. Miuchi¹, K. Nakamura¹, J. D. Parker¹, T. Sawano¹, A. Takada⁴, M. Takahashi¹, T. Tanimori¹, K. Taniue¹, K. Ueno⁵, Y. Fujita²

¹Kyoto University, Japan; ²High Energy Accelerator Research Organization (KEK), Japan; ³BeeBeans Technologies Co. Ltd., Japan; ⁴JAXA/ISAS, Japan; ⁵RIKEN, 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. Arutinov¹, M. Barbero¹, R. Beccherle², G. Darbo², S. Dube³, D. Elledge⁴, J. Fleury⁴, D. Fougeron⁵, M. Garcia-Sciveres³, D. Gnani³, F. Gensolen⁵, V. Gromov⁶, T. Hemperek¹, M. Karagounis¹, R. Kluit⁶, A. Kruth¹, A. Mekkaoui³, M. Menouni⁵, J. D. Schipper⁶, N. Wermes¹, V. Zivkovic⁶

¹University of Bonn, Germany; ²University of Genova, Italy; ³LBNL, USA; ⁴LAL, France; ⁵CPPM Aix-Marseille University, France; ⁶NIKHEF, 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. Howard¹, R. Chandra², G. Davatz¹, H. Friederich¹, D. Murer¹

¹ETH, Switzerland; ²Arktis, 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^{1,2}, G. De Vita^{1,2}, S. Herrmann^{1,2}, A. Wassatsch^{1,3}, D. Bianchi^{1,2,4}, P. Lechner⁵, A. Meuris^{1,2}, A. Stefanescu^{2,6}, J. Treis^{2,7}, L. Bombelli^{4,8}, C. Fiorini^{4,8}
¹Max Planck Institut fuer Extraterrestrische Physik, Germany; ²MPI Halbleiterlabor, Germany; ³Max-Planck-Institut fuer Physik, Germany; ⁴Politecnico Di Milano, Italy; ⁵PNSensor GmbH, Germany; ⁶Johannes-Gutenberg-Universitaet, Germany; ⁷Max-Planck-Institut fuer Sonnensystemforschung, Germany; ⁸INFN, 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. Celani¹, L. Bombelli^{1,2}, C. Fiorini^{1,2}, T. Frizzi³, R. Nava³, J. Pavlick⁴, M. Morichi⁴, B. Roberson⁴, B. Zakrzewski⁴, O. Evrard⁵
¹Politecnico di Milano, Italy; ²INFN, Italy; ³XGLab s.r.l., Italy; ⁴Canberra - BUMN AREVA, USA; ⁵Canberra 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^{1,2}, F. Zocca^{1,2}, A. Pullia^{1,2}, M. Barnabe-Heider³, D. Budjas³, A. D'Andragora², C. Cattadori²
¹Universita' degli Studi di Milano, Italy; ²Istituto Nazionale di Fisica Nucleare, Italy; ³Max Planck Institute, Germany

N47-146 A 16-Channel Programmable Antialiasing Amplifier

C. Boiano¹, C. Guazzoni^{1,2}, P. Guazzoni^{1,2}, L. Zetta^{1,3}, A. Pagano¹
¹INFN, Italy; ²Politecnico di Milan, Italy; ³University of Milan, Italy

N47-149 Data Handling Processor for Belle2 Vertex Detector

T. Hemperek¹, A. Comerma², A. Dieguez², L. Freixes², H. Krueger¹, A. Kruth¹, E. Vilella², N. Wermes¹
¹University Bonn, Germany; ²University of Barcelona, Spain

N47-152 The CDMS Test Stand Warm Electronics Card

S. U. Hansen¹, J. C. Hall¹, B. Hines², M. E. Huber², T. E. Kiper¹, V. Mandic³, W. Rau⁴, T. Saab⁵, D. Seitz⁴, K. Sundqvist⁴
¹Fermilab, USA; ²U.C. Denver, USA; ³University of Minnesota, USA; ⁴U.C. Berkeley, USA; ⁵University of Florida, USA

N47-155 An FPGA Based DAQ System for the Readout of Madeira PET Probe.

V. Stankova, C. Lacasta, G. Llosa, V. Linhart, Instituto de Fisica Corpuscular (IFIC/CSIC-UVEG), Spain; M. Mikuz, A. Studen, D. Zontar, V. Cindro, B. Grosicar, 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 II¹, T. Bergmann², M. A. Howe¹, M. Kleifges², A. Kopmann², M. Leber³, A. Menshikov², D. Tcherniakhovski², B. VanDevender⁴, B. Wall⁴, J. F. Wilkerson¹, S. Wustling²
¹University of North Carolina at Chapel Hill, USA; ²Karlsruhe Institute of Technology, Germany; ³University of California at Santa Barbara, USA; ⁴University 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. Fysikopoulos¹, M. Georgiou², N. Efthimiou³, S. David³, G. Loudos⁴, G. Matsopoulos¹
¹National Technical University of Athens, Greece; ²University of Thessaly, Greece; ³University of Patras, Greece; ⁴Technological 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. Kenney¹, D. Christian², S. I. Parker³, J. Hasi¹, C. Da Via⁴, E. Westbrook⁵, A. Thompson⁵, E. Mandelli⁶, G. Meddeler⁶, E. Brown⁷
¹SLAC National Accelerator Laboratory, USA; ²Fermi National Laboratory, USA; ³University of Hawaii, USA; ⁴University of Manchester, UK; ⁵Molecular Biology Consortium, USA; ⁶Lawrence Berkeley National Laboratory, USA; ⁷Reed 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. Fabbri,

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. Musico¹, V. Bellini², M. Capogni³, D. Castelluccio⁴, S. Colilli⁵, E. Cisbani⁵, R. De Leo⁶, R. Fraton⁵, S. Frullani⁷, F. Garibaldi⁷, F. Giuliani⁵, A. Giusa², M. Gricia⁵, M. Lucentini⁵, F. Meddi⁸, S. Minutoli¹, F. Noto², R. de Oliveira⁹, F. Santavenere⁵, G. Urcioli⁷
¹*I.N.F.N. Genova, Italy*; ²*Universita' and I.N.F.N. Catania, Italy*; ³*Enea and I.N.F.N. gruppo Sanita', Italy*; ⁴*I.N.F.N. gruppo Sanita', Italy*; ⁵*I.S.S. and I.N.F.N. gruppo Sanita', Italy*; ⁶*Universita' and I.N.F.N. Bari, Italy*; ⁷*I.N.F.N. Roma, Italy*; ⁸*Universita' and I.N.F.N. Roma, Italy*; ⁹*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 CF₄ 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. Uchida¹, M. Ikeno¹, T. Koike², K. Miyama³, T. Murakami¹, E. Nakano⁴, H. Ohwada⁵, M. Sekimoto¹, M. Shoji⁶, S. Uno¹, M. Wada⁷
¹*HIGH ENERGY ACCELERATOR RESEARCH ORGANIZATION, JAPAN*; ²*Tokyo University of Science, Japan*; ³*Tokyo University of Agriculture and Technology, JAPAN*; ⁴*Osaka City University, JAPAN*; ⁵*Bee Beans Technologies Co., Ltd., JAPAN*; ⁶*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. Conde¹, J. A. S. Barata^{1,2}, L. M. N. Tavora^{1,3}, P. N. B. Neves¹, T. H. V. T. Dias¹, F. I. G. M. Borges¹
¹*Universidade de Coimbra, Portugal*; ²*Universidade da Beira Interior, Portugal*; ³*Instituto Politecnico de Leiria, Portugal*

N48-249 Experimental Measurement of the Mobilities of Ne Ions in Ne

P. N. B. Neves¹, L. M. N. Tavora^{1,2}, C. A. N. Conde¹, J. A. S. Barata^{1,3}, T. H. V. T. Dias¹, F. I. G. M. Borges¹, A. M. F. Trindade¹, T. D. P. Oliveira¹
¹*Universidade de Coimbra, Portugal*; ²*Instituto Politecnico de Leiria, Portugal*; ³*Universidade da Beira Interior, Portugal*

N48-252 Elastic Cross-Sections for Low Energy Collision of Ar⁺ with Ne and Monte Carlo Simulation of the Transport of Ar⁺ Ions in Gaseous Ar/Ne Mixtures

J. A. S. Barata^{1,2}, C. A. N. Conde²
¹*Universidade da Beira Interior, Portugal*; ²*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^{1,2}, Y. Chen¹, Z. Wu³, J. Zhu^{1,2}, X. Wang^{1,2}, D. Xi^{1,2}, J. Zhao¹
¹*Huazhong University of Science and Technology, China*; ²*Wuhan National Laboratory for Optoelectronics, China*; ³*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. Lee¹, W. S. Sul^{2,3}, H. Kim¹, C. Kim¹, W. G. Lee³, G. Cho¹
¹*KAIST, KOREA*; ²*Dongguk University, KOREA*; ³*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. Fabbri¹, V. Cencelli¹, F. de Notaristefani¹, R. Pani², P. Bennati², M. N. Cinti², G. Moschini³, F. Navarra⁴, R. Pellegrini², P. Boccaccio⁴
¹*INFN - Dipartimento di Ingegneria Elettronica, Università degli Studi Roma Tre, Italy*; ²*INFN - Department of Experimental Medicine, University, Italy*; ³*INFN - Department of Physics, University of Bologna, Italy*; ⁴*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. Sun¹, K. A. Lan¹, C. Bircher¹, Z. Deng², Y. Liu², Y. Shao¹

¹The University of Texas MD Anderson Cancer Center, USA; ²Tsinghua University, China

N49-276 Evaluation of a Time Based Readout ASIC for PET Applications

X. Sun¹, K. A. Lan¹, Z. Deng², Y. Liu², Y. Shao¹

¹The University of Texas MD Anderson Cancer Center, USA; ²Tsinghua 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^{1,2}, T. Kamiya¹, N. Kawachi¹, N. Suzui¹, S. Fujimaki¹, H. Odaka^{2,3}, S.-N. Ishikawa^{2,3}, M. Kokubun^{2,3}, S. Watanabe^{2,3}, T. Takahashi^{2,3}, H. Shimada⁴, K. Arakawa^{1,4}, Y. Suzuki⁴, K. Torikai⁴, Y. Yoshida⁴, T. Nakano⁴

¹Japan Atomic Energy Agency, JAPAN; ²Japan Aerospace Exploration Agency, JAPAN; ³University of Tokyo, JAPAN; ⁴Gunma University, JAPAN

N49-288 An Evaluation of Image Reconstruction Methods for the ProSPECTus Compton Camera

J. A. Sampson¹, A. J. Boston¹, H. C. Boston¹, J. R. Cresswell¹, L. J. Harkness¹, D. S. Judson¹, P. J. Nolan¹, D. P. Scraggs¹, I. Burrows², J. Groves², J. Headspith², I. H. Lazarus², J. Simpson², W. E. Bimson¹, G. J. Kemp¹, D. Gould³

¹University of Liverpool, United Kingdom; ²STFC Daresbury Laboratory, United Kingdom; ³Royal 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

V. Gonzalez Millan, C. A. Marin Tobon, J. Torres Pais, E. J. Sanchis Peris, University of Valencia, Spain; M. Haguenaier, P. Poulleux, S. Chollet, LLR/CNRS/IN2P3/Ecole polytechnique, France

N49-297 UV Response of a Transition Metal Oxide Diode

A. Subahi¹, J. A. Griffiths¹, L. Petaccia², J. Boardman³, P. Moir-Riches³, G. J. Royle¹

¹University College London, U.K.; ²Elettra Sincrotron Source, Italy; ³Atmos Technologies Ltd., U.K.

N49-300 Radiobiology with Cyclotron Proton Beams: a Viability Study

M. Cunha¹, M. Pinto¹, F. Alves², P. Crespo^{3,2}, R. Ferreira Marques^{1,3}

¹University of Coimbra, Portugal; ²Instituto Politécnico de Coimbra, Portugal; ³LIP - Laboratório de Instrumentação e Física Experimental de Partículas, Portugal

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NSS Oral Presentations

N55: Radiation Imaging Detectors III

Thursday, Nov. 4 08:00-10:00 Ballroom A

Session Chair: Klaus P. Ziock, *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. Ryan¹, C. Bancroft¹, P. F. Bloser¹, U. Bravar¹, D. Fourquette², C. Frost¹, L. Larocque², J. S. Legere¹, M. L. McConnell¹, G. Ritter², G. Wassick², J. Wood¹, R. S. Woolf²¹*University of New Hampshire, USA*; ²*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. Lee¹, J. Kim^{1,2}, J. Kim^{1,3}, M. Moon¹¹*Korea Atomic Energy Research Institute, Republic of Korea*; ²*Korea Advanced Institute of Science and Technology, Republic of Korea*; ³*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 μ W 12-Bit Dynamic Range Charge Measuring Front-End in 0.13 μ m CMOST. Kugathasan^{1,2}, A. Rivetti², G. Mazza², L. Toscano²¹*Università di Torino, Italy*; ²*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^{1,2}, A. K. Lan³, X. Sun³, Y. Liu^{1,2}, Y. Shao³¹*Tsinghua University, China*; ²*Ministry of Education, China*; ³*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. Hervas, *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. Seifert¹, L. J. H. Steenberg¹, H. T. van Dam¹, R. Vinke², P. Dendooven², H. Loehner², F. J. Beekman^{1,3}, P. Dorenbos¹, E. van der Kolk¹, D. R. Schaart¹
¹*Delft University of Technology, Delft, The Netherlands*; ²*Kernfysisch Versneller Instituut (KVI), The Netherlands*; ³*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. Pepin¹, M. Bergeron¹, J. Cadorette¹, J.-F. Beaudoin¹, X. Jacques-Bedard², M. Couture², H. Dauter², R. Lecomte¹
¹*Universite de Sherbrooke, Canada*; ²*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. Pulko¹, F. Schneider¹, D. Renker², S. Ziegler¹
¹*Nuklearmedizinische Klinik und Poliklinik, Klinikum rechts der Isar, Technische Universitaet Muenchen, Germany*; ²*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. Liksonov¹, J. Chavanne², B. Barbier¹
¹*Imacisio, France*; ²*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. Weisenberger¹, A. V. Stolin², B. J. Kross¹, S. Majewski², J. E. McKisson¹, C. R. Howell^{3,4}, A. S. Crowell^{3,4}, C. D. Reid³
¹*Thomas Jefferson National Accelerator Facility, USA*; ²*West Virginia University, USA*; ³*Duke University, USA*; ⁴*Triangle University Nuclear Laboratory, USA*

N59-2 Report on the MADEIRA PET Probe

A. Studen¹, E. Ches², V. Cindro¹, N. H. Clinthorne³, E. Cochran², B. Grosicar¹, K. Honscheid², S. S. Huh³, H. Kagan², C. Lacasta⁴, G. Llosa⁴, V. Linhart⁴, M. Mikuz¹, V. Stankova⁴, P. Weilhammer³, D. Zontar¹
¹*Jozef Stefan Institute, Slovenia*; ²*The Ohio State University, USA*; ³*The University of Michigan, USA*; ⁴*IFIC/CSIC-UVeG, Spain*

N59-3 Initial Implementation of LYSO-PSPMT Block Detector with An All Digital DAQ System

Q. Xie^{1,2}, Y. Chen¹, J. Zhu^{1,2}, X. Wang^{1,2}, N. Guo^{1,2}, M. Niu^{1,2}, Z. Wu^{1,2}, D. Xi^{1,2}, P. Xiao^{2,1}, J. Gao¹, C.-T. Chen³, Y. Wang¹, C.-M. Kao³
¹*Huazhong University of Science and Technology, China*; ²*Wuhan National Laboratory for Optoelectronics, China*; ³*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. Bergeron¹, C. M. Pepin¹, J. Cadorette¹, J.-F. Beaudoin¹, M.-A. Tetrault¹, M. Davies², H. Dauter², P. Deschamps², H. Ishibashi³, Y. Kurata³, R. Lecomte¹
¹*Universite de Sherbrooke, Canada*; ²*PerkinElmer Optoelectronics, Canada*; ³*Hitachi Chemical Co, Japan*

N59-7 Liquid Xenon Detectors for Positron Emission Tomography

A. Miceli¹, P. Amaudruz¹, F. Benard², D. A. Bryman³, C. Clements³, J. Glister¹, L. Kurchaninov¹, F. Retiere¹, T. Ruth¹, V. Sossi³, A. Stoessl³, H. Zhu³
¹*triumf, canada*; ²*BC Cancer Research, canada*; ³*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. Riley¹, L. Ovechkina¹, S. Palamakumbura¹, Z. Bell², S. Miller¹, V. V. Nagarkar¹
¹*Radiation Monitoring Devices, Inc., USA*; ²*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. White¹, E. Baldelomar¹, K. Park², M. Sosebee¹, J. Yu¹, S. Park¹
¹University of Texas at Arlington, USA; ²KAERI, 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. Jendrisyk, 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 4x4mm² 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. Chen¹, E. B. Johnson¹, R. Miskimen², D. Von Maluski², C. J. Staples¹, F. Augustine³, J. F. Christian¹
¹Radiation Monitoring Devices, Inc., U.S.A.; ²University of Massachusetts, Amherst, U.S.A.; ³Augustine 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. Blasi¹, S. Brambilla¹, A. Camplani^{2,1}, C. Boiano¹, F. Camera^{2,1}, F. L. Crespi^{2,1}, A. Giaz^{2,1}, B. Million¹, R. Nicolini^{2,1}, L. Pellegrini^{2,1}, S. Riboldi^{2,1}, O. Wieland¹
¹Istituto Nazionale di Fisica Nucleare, Italy; ²Universita' degli Studi di Milano, Italy

N62-5 Growth and Characterization of Visible and UV Photocathodes

K. Attenkofer¹, B. Adams¹, K. Broughton^{1,2}, J. Buckley³, M. Choller^{1,4}, R. Dowdy⁵, H. Frisch^{1,4}, E. Indacochea², Z. Insepov¹, S. Jokela^{1,4}, S. W. Lee¹, D. Leopold³, X. Li⁵, A. Paramonov^{1,4}, S. Ross¹, O. Siegmund⁶, A. Tremsin⁶, I. Vervovkin¹, H.-H. Wang¹, M. Wetstein^{1,4}, Z. Yusof¹
¹Argonne National Laboratory, XSD, USA; ²University of Illinois Chicago, USA; ³Washington University, USA; ⁴University of Chicago, USA; ⁵University of Illinois Urbana/Champaign, USA; ⁶Space 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 ⁶LiF/CaF₂ Eutectic Composites with the Ordered Lamellar Structure

N. Kawaguchi^{1,2}, K. Fukuda¹, T. Yanagida², Y. Fujimoto², Y. Yokota², K. Watanabe³, A. Yamazaki³, T. Suyama¹, A. Yoshikawa²
¹Tokuyama Corporation, Japan; ²Tohoku University, Japan; ³Nagoya University, Japan

N63-6 Neutron Detection by Measuring Capture Gammas in a Calorimetric Approach

C.-M. Herbach¹, G. Pausch¹, A. Kreuels¹, Y. Kong¹, R. Lentering¹, C. Plettner¹, K. Roemer¹, F. Scherwinski¹, P. Schotanus², J. Stein¹, N. Teofilov¹, T. Wilpert³

¹ICx Technologies GmbH, Germany; ²SCIONIX Holland B.V., The Netherlands; ³Helmholtz-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^{1,2}, V. Fanti^{1,2}, G. R. Foisi^{1,2}, R. Marzeddu^{1,2}, C. Pili^{1,2}, P. Randaccio^{1,2}, J. Spiga^{1,2}, A. Szostak^{1,2}
¹INFN, Italy; ²University 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. Martins¹, M. Begalli², P. P. Queiroz-Filho¹, D. Souza-Santos¹
¹Institute for Radiation Protection and Dosimetry, Brazil; ²State 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. Zatterklyaniy, *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. Balla¹, G. Bencivenni¹, M. Capodiferro², S. Cerioni¹, P. Ciambrone¹, E. De Lucia¹, G. De Robertis³, A. Di Domenico², D. Domenici¹, J. Dong¹, G. Felici¹, M. Gatta¹, M. Jacewicz¹, N. Localamita³, S. Lauciani¹, R. Liuzzi³, F. Loddo³, M. Mongelli³, G. Morello⁴, V. Patera¹, A. Pelosi², M. Pistilli¹, L. Quintieri¹, A. Ranieri³, M. Schioppa⁴, E. Tshadadze¹, V. Valentino³, A. Budano⁵, P. Branchini⁵

¹Laboratori Nazionali di Frascati - INFN, Italy; ²Dipartimento di Fisica, Italy; ³INFN Sezione di Bari, Italy; ⁴INFN gruppo collegato di Cosenza, Italy; ⁵INFN Sezione di Roma 3, Italy

N66-2 Development of Gas Electron Multipliers with Resistive Kapton Electrodes

A. Yoshikawa^{1,2}, A. Nukariya³, H. Hamagaki³, T. Tamagawa^{1,2}, A. Hayato¹, T. Gunji³, R. Akimoto³, S. Hayashi³, T. Iwashashi^{1,2}, F. Asami^{1,2}, A. Ochi⁴, R. D. Oliveria⁵

¹RIKEN, Japan; ²Tokyo Univ. of Sci., Japan; ³CNS, Univ. of Tokyo, Japan; ⁴Kobe Univ., Japan; ⁵CERN, Switzerland

N66-3 First Results from Spherical GEMs

S. Duarte Pinto^{1,2}, I. C. Brock², E. David¹, R. de Oliveira¹, L. Ropelewski¹, M. van Stenis¹, H. Taureg¹

¹CERN, Switzerland; ²Physikalisches Institut, Germany

N66-4 Development of Large Scale Gas Electron Multiplier (GEM) Chambers

J. Yu¹, E. Baldeomar¹, K. J. Park², S. Park¹, M. Sosebee¹, A. P. White¹
¹University of Texas at Arlington, USA; ²Korea 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. Li¹, V. Jorjadze¹, C. Thorn², R. Galea³, T. Liu¹, P. Rehak², J. Sondericker¹, R. Stroynowski¹, V. Tcherniatine², W. J. Willis³, J. Ye¹
¹Southern Methodist University, USA; ²Brookhaven National Laboratory, USA; ³Columbia 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. Dulinski¹, J. Baudot¹, N. Chon-Sen¹, M. Deveau², M. Goffe¹, K. Minoglou³, P. De Moor³, C. Mntz², T. Sterken⁴, J. Stroth⁴, J. Vanfleteren³, M. Winter¹
¹IPHC/IN2P3/CNRS, France; ²Goethe University, Germany; ³IMEC, Belgium; ⁴University 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^{1,2}, N. Meidinger^{1,2}, J. Elbs^{1,2}, A. Ziegler^{1,2}, R. Hartmann³, P. Holl³, L. Strueder^{1,2}, H. Soltau³, F. Schopper^{1,2}, N. Kimmel^{1,2}, S. Ebermayer^{1,2}, G. Schaechner^{1,2}, O. Haelker^{1,2}, S. Herrmann^{1,2}, J. Reiffers^{1,2}, W. Assmann⁴, S. Reinhardt⁴
¹Max-Planck-Institut Halbleiterlabor, Germany; ²Max-Planck-Institut fuer extraterrestrische Physik, Germany; ³pnSensor GmbH, Germany; ⁴Ludwig-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 γ -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. Tarkhanov¹, S. Binet², P. Calafiura¹, K. Jackson¹, W. Lavrijsen¹, C. Leggett¹, D. Levinthal³, Y. Yao¹

¹Lawrence Berkeley National Laboratory, USA; ²Laboratoire de l'Accelérateur Lineaire, Université Paris-Sud XI, France; ³Intel 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. Abbaneo¹, S. Bally¹, H. Postema¹, A. Conde Garcia¹, J.-P. Chatelain¹, G. Faber¹, L. Ropelewski¹, S. Duarte Pinto¹, G. Croci¹, M. Alfonsi¹, M. Van Stenis¹, A. Sharma¹, S. Colfranceschi^{1,2}, S. Bianco³, L. Benussi³, F. Fabbri³, D. Piccolo³, G. Saviano^{3,2}, A. Marinov^{1,4}, M. Tytgat⁴, N. Zaganidis⁴, M. Hohlmann⁵, K. Gnanvè⁵, N. Turini⁶, E. Oliveri⁶, G. Magazzu⁶, Y. Ban⁷, H. Teng⁷, J. Cai⁷

¹CERN, Switzerland; ²also at Sapienza Università di Roma - Facoltà di Ingegneria, Italy; ³Laboratori Nazionali di Frascati dell'INFN, Italy; ⁴Universiteit Gent, Belgium; ⁵Florida Institute of Technology, United States of America; ⁶Università Degli Studi di Siena, Italy; ⁷Peking 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. Bousse¹, N. Fuin¹, K. Erlandsson¹, S. Pedemonte², S. Ourselin², S. Arridge², B. Hutton¹¹*Institute of Nuclear Medicine, UCL, UK;* ²*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. Yamaya¹, E. Yoshida¹, S. Kinouchi^{2,1}, M. Suga², S. Sato¹, T. Inaniwa¹, Y. Nakajima³, D. Kokuryo¹, I. Aoki¹, A. Tsuji¹, T. Mitsuhashi¹, H. Wakizaka¹, H. Tashima¹, F. Nishikido¹, N. Inadama¹, H. Murayama¹¹*National Institute of Radiological Sciences, Japan;* ²*Chiba University, Japan;* ³*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. Furumiyu, 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/SHFJ, 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-Perez¹, C. Garcia-Villalba¹, M. Dae², M. Abella¹, M. Desco^{1,3,4}, J. J. Vaquero¹¹*Hospital General Universitario Gregorio Marañon, Spain;* ²*University of California San Francisco, USA;* ³*Instituto de Salud Carlos III, Spain;*⁴*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. Chatzioannou*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. Andreyev¹, A. Sitek², A. Celler¹¹*University of British Columbia, Canada;* ²*Harvard Medical School and Brigham and Women's Hospital, USA***M07-2 (10:45) Applications of the HICAM Gamma Camera**P. Busca^{1,2}, C. Fiorini^{1,2}, R. Peloso^{1,2}, A. Gola^{1,2}, A. Abba^{1,2}, C. Bianchi³, G. L. Poli³, U. Guerra³, B. F. Hutton⁴, K. Erlandsson⁴, L. Ottobriani⁵, C. Martelli⁵, G. Lucignani⁵¹*Politecnico di Milano, Italy;* ²*INFN, Italy;* ³*Ospedali Riuniti di Bergamo, Italy;* ⁴*University College London, Italy;* ⁵*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. Hu¹, S. Renisch², B. Schweizer², N. Ojha¹, V. Schulz², I. Torres³, T. Guo¹, C.-H. Tung¹, J. Kaste¹, P. Maniowski¹, L. Shao¹

¹Philips Medical Systems, USA; ²Philips Research, Germany; ³Aachen 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. Nuyts¹, C. Michel², M. Fenchel³, G. Bal², C. Watson²

¹K.U.Leuven, Belgium; ²Siemens Medical Solutions, USA; ³Siemens AG, Germany

M08-4 (11:15) Comparative Quantitative Evaluation of MR-Based Attenuation Correction Methods in Combined Brain PET/MR

F. Mantlik^{1,2}, M. Hofmann^{1,2,3}, I. Bezrukov^{1,2}, A. Kolb¹, T. Beyer⁴, M. Reimold⁵, B. J. Pichler¹, B. Schoelkopf²

¹Dept. of Radiology, Eberhard Karls University, Germany; ²Max-Planck-Institute for Biological Cybernetics, Germany; ³University of Oxford, United Kingdom; ⁴cmi-experts GmbH, Switzerland; ⁵Eberhard Karls University, Germany

M08-5 (11:30) Improved Lesion Detection with B-Spline Nonrigid Motion Correction in Simultaneous PET/MR

S. Y. Chun^{1,2}, T. Reese^{1,2}, B. Guerin^{1,2}, X. Zhu^{1,2}, C. Catana^{1,2}, G. El Fakhri^{1,2}

¹Massachusetts General Hospital, USA; ²Harvard 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&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^{1,2}, Z. Burbar², C. Michel², R. Leahy³

¹Korea Polytechnic University, Korea; ²Siemens Medical Solutions, USA; ³USC, 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. Chaux, 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. Rong¹, Y. Du¹, M. Ljungberg², E. C. Frey¹

¹Johns Hopkins University, USA; ²Lund University, Sweden

RTSD Oral Presentations

R11: CdZnTe Growth and Annealing

Thursday, Nov. 4 08:30-09:55 301A & 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, *INAF-IASF, Italy***R11-3 (09:10) Effects of Thermal Annealing on Cadmium Zinc Telluride (CZT) Crystals**G. Yang¹, A. E. Bolotnikov¹, P. M. Fochuk², K. H. Kim¹, G. Camarda¹, Y. Cui¹, A. Hossain¹, R. Gul¹, L. Xu³, J. Suh⁴, R. B. James¹¹Brookhaven National Laboratory, USA; ²Chernivtsi National University, Ukraine; ³Northwestern Polytechnical University, China;⁴Korea 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. Crocco¹, F. Dierre¹, H. Bensalah¹, Q. Zheng¹, P. Hidalgo², J. Piqueras², E. Dieguez¹¹Crystal Growth Laboratory, University Autònoma, Spain; ²University Complutense, Spain

R12: CdMnTe

Thursday, Nov. 4 10:30-11:05 301A & 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. Mycielski¹, M. Witkowska-Baran¹, D. M. Kochanowska¹, A. Szadkowski¹, B. Witkowska¹, W. Kaliszek¹, B. Kowalski¹, A. Reszka¹, R. Jakiela¹, V. Domukhovski¹, T. Wojtowicz¹, M. Wiater¹, M. Wegrzycki², L. Kilański¹¹Institute of Physics, Polish Academy of Sciences, Poland; ²Institute 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
Universite 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 - Universite de Strasbourg, France

M09-16 Controlling the Morphology of Ce-Doped Lu_2SiO_5 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, *Digirad 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_3 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. Roncali¹, J. P. Schmall¹, Y. Wu¹, C. Stapels², J. Christian², P. Dokhale², K. Shah², S. R. Cherry¹

¹University of California-Davis, USA; ²Radiation 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^{1,2}, J. A. Rowlands^{1,2}

¹University of Toronto, Canada; ²Thunder Bay Research Institute, Canada

M09-61 Key Physical Factors for DOI-Compensated ToF PET: Understanding Scintillation-Photodetector Features

V. 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. Schneider¹, A. B. Mann², I. Konorov², S. Paul², G. Delso¹, J. Pulko¹, S. I. Ziegler¹

¹Technische Universitaet Muenchen, Klinikum rechts der Isar, Nuklearmedizinische Klinik und Poliklinik, Germany; ²Technische Universitaet Muenchen, Germany

M09-76 Non-Invasive Determination of Input Function using Wrist PET Scanner

B. Ravindranath¹, S. Junnarkar², S. Stoll², M. L. Purschke², S. H. Maramraju¹, P. Vaska², C. Woody², D. Schlyer²

¹Stony Brook University, USA; ²Brookhaven 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. Yao¹, J.-F. Beaudoin², J. Cadorette³, Z. Cao², X. Deng¹, T. Ma⁴, R. Lecomte²

¹State University of New York at Buffalo, USA; ²Universit de Sherbrooke, Canada; ³Gamma Medica Ideas (GM-I), Inc., Canada; ⁴Tsinghua 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. Villena¹, G. Tapias¹, R. Kreuger¹, F. J. Beekman^{1,2,3}

¹Section of Radiation Detection and Medical Imaging, Applied Sciences, Delft University of Technology, The Netherlands; ²Image Sciences Institute and Rudolf Magnus Institute, University Medical Center Utrecht, The Netherlands; ³Molecular 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. Maass¹, F. Dennerlein², F. Noo³, M. Kachelriess¹

¹Institute of Medical Physics, Germany; ²Siemens AG, Germany; ³University 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. Brambilla¹, V. Rebuffel¹, M. Mronz², H. Bruenner^{2,3}

¹CEA, LETI, France; ²CT Imaging GmbH, Germany; ³University of Erlangen-Nuremberg, Germany

M09-146 Direct Measurement of Mammographic X-Ray Spectra with a Digital CdTe Detection System

L. Abbene¹, G. Gerardi¹, S. Del Sordo², F. Principato¹, G. Raso¹

¹Dipartimento di Fisica e Tecnologie Relative, Università di Palermo, Italy; ²INAF/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. Lee¹, C. P. Hong¹, M. W. Lee², S. H. Kim², B. S. Han¹

¹Yonsei University, Korea; ²Advanced 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. Rafaei, 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 1mm³ Resolution PET Camera Based on Avalanche Photodiodes: Design, Simulation and Experimental Verification

J. Zhai^{1,2}, A. Vandenbroucke², C. S. Levin^{2,1}

¹Stanford University, US; ²Stanford 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. Miyaoka
University of Washington, USA

M09-181 Properties of a CdTe Medipix Hexa Detector Designed for Small Animal Imaging

T. Koenig¹, A. Zwerger¹, P. Schuenke¹, M. Zuber¹, M. Steinke¹, S. Nill¹, A. Fauler², M. Fiederle², U. Oelfke¹

¹German Cancer Research Center, Germany; ²Freiburg Materials Research Center, Germany

M09-186 Characterization of low energy Lu background on continuous LYSO blocks

C. Lois¹, P. Aguiar², B. Couce¹, A. Iglesias¹

¹Universidade de Santiago de Compostela. Espaa, Spain; ²Fundacion IDICHUS, Complejo Hospitalario Universitario de Santiago de Compostela, Spain

M09-191 A Positron Projection Imager for Whole-Body Mouse Imaging

J. Seidel^{1,2}, W. Xi^{1,2}, J. Kakareka³, T. Pohida³, M. V. Green^{1,2}, P. L. Choyke¹

¹National Cancer Institute/NIH, USA; ²SAIC-Frederick, USA; ³CIT/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. Sipilä, 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. Mannheim¹, M. S. Judenhofer¹, J. Tillmanns², T. Kull³, S. N. Reske³, D. Stiller², B. J. Pichler¹

¹Laboratory for Preclinical Imaging and Imaging Technology of the Werner Siemens-Foundation, University of Tuebingen, Germany; ²Drug Discovery Support, Boehringer Ingelheim Pharma GmbH & Co. KG, Germany; ³University 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. Visser¹, J. A. Disselhorst¹, M. G. J. T. B. van Lier², P. Laverman¹, G. M. De Jong¹, W. J. G. Oyen¹, O. C. Boerman¹

¹Radboud University Nijmegen Medical Centre, the Netherlands;

²University 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. Lajtos¹, M. Emri¹, S. A. Kis¹, G. Opposits¹, J. Molnar², L. Balkay¹

¹Institute of Nuclear Medicine, University of Debrecen, Hungary;

²Institute 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^{1,2}, L. Li^{1,2}, Z. Chen^{1,2}, L. Zhang^{1,2}, Y. Xing^{1,2}

¹Tsinghua University, China; ²Ministry of Education, China

M09-241 A Filter Model to Analyze Reconstruction Artifacts in Perfusion C-arm CT

A. Fieselmann^{1,2}, F. Dennerlein², Y. Deuerling-Zheng², J. Boese²,

R. Fahrig³, J. Hornegger¹

¹University of Erlangen-Nuremberg, Germany; ²Siemens AG, Germany;

³Stanford 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^{1,2}, T. Yamaya², E. Yoshida², H. Tashima², H. Kudo³, M. Suga¹

¹Chiba University, Japan; ²National Institute of Radiological Sciences, Japan; ³Tsukuba 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. Ma¹, X. Deng², R. Lecomte³, R. Yao²

¹Tsinghua University, China; ²University at Buffalo, SUNY, USA;

³Universit de Sherbrooke, Canada

M09-306 A Common Approach to Image Reconstruction for Different Applications of Compton Cameras

S. Schöne¹, G. Shakirin², T. Kormoll², C.-M. Herbach³, G. Pausch³, W. Enghardt²

¹Research Center Dresden-Rossendorf, Germany; ²OncoRay - Center for Radiation Research in Oncology, Germany; ³ICx Technologies, Germany

M09-311 Comparison Between Reconstruction-Incorporated Super-Resolution and Super-Resolution as a Post-Processing Step for Motion Correction in PET

D. Wallach¹, F. Lamare², C. Roux¹, D. Visvikis¹

¹INSERM, LaTIM U650, France; ²CHU 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-Garcia¹, J. F. Oliver², J. Cabello², S. Tortajada³, M. Rafecas²
¹Universitat Internacional Valenciana, Spain; ²Instituto de Fisica Corpuscular (Universidad de Valencia / CSIC), Spain; ³Universitat Politècnica de Valencia, Spain

M09-336 Uniformity Correction Using Non-Uniform Floods

F. P. Jansen¹, L. Tsukerman², L. Volokh², I. Bleviš², J. Hugg¹, J.-P. Bouhnik²
¹GE Global Research, USA; ²GE Healthcare, Israel

M09-341 Scatter Correction in 3D PET Using STIR

I. Polycarpou¹, K. Thielemans², R. Manjeshwar³, P. K. Marsden¹, C. Tsoumpas¹
¹King's College London, UK; ²General Electric, UK; ³General 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. Fitzgerald¹, F. O'Sullivan¹, J. Huang¹, M. Muzi², G. S. Newman³, J. D. Unadkat², T. L. Richards², K. A. Krohn²
¹University College Cork, Ireland; ²University of Washington, USA; ³Albert 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. Ichihara¹, R. T. George², Y. Ikeda³, J. A. C. Lima², A. C. Lardo²
¹Fujita Health University School of Health Science, Japan; ²Johns Hopkins University School of Medicine, USA; ³Toshiba 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. David¹, M. Hatt¹, N. Bousson¹, P. Fernandez², M. Allard², O. Barret², D. Visvikis¹
¹U650 INSERM, Laboratoire de Traitement de l'Information Medicale (LaTIM), France; ²Service 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. Schmidlein, 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. Marin¹, P. H. Pretorius², Y. Yang¹, M. N. Wernick¹, J. G. Brankov¹
¹Illinois Institute of Technology, USA; ²University 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. Isola¹, H. Schmitt¹, U. van Stevendaal¹, P. G. Begemann², M. Grass¹
¹Philips Research Europe - Hamburg, Germany; ²University 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. Sato¹, S. Kadowaki², H. Madokoro¹, M. Ito³, A. Inugami⁴
¹Akita Prefectural University, Japan; ²SmartDesign Co., Ltd, Japan; ³The University of Tokushima, Japan; ⁴Akita 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

M09-441 Adapting Dose Prescription to Tumour Heterogeneities: Influence of the Functional Contrast

A. Le Maitre¹, M. Hatt¹, C. Cheze Le Rest², O. Pradier², D. Visvikis¹
¹INSERM U650, LaTIM, France; ²CHU 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-Gonzalez¹, J. Lopez-Herraz¹, S. Espana², M. Desco^{3,4,5}, J. J. Vaquero³, J. M. Udias¹
¹Universidad Complutense Madrid, Spain; ²Massachusetts General Hospital and Harvard Medical School, USA; ³Hospital General Universitario Gregorio Maraon, Spain; ⁴Instituto de Salud Carlos III, Spain; ⁵Universidad Carlos III, Spain

M09-461 Monte Carlo Studies on a Novel PET Block Detector Design Scheme with Cross-Shape PMT Layout

Q. Wei^{1,2}, Y. Liu^{1,2}, T. Ma^{1,2}, Y. Xia^{1,2}, S. Wang^{1,2}, Z. Wu^{1,2}, Y. Jin^{1,2}
¹Tsinghua University, China; ²Ministry 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. Zeraatkar¹, M. R. Ay¹, S. Sarkar¹, P. Geramifar¹, A. Rahmim²
¹Tehran University of Medical Sciences, Iran; ²Johns 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. Uribe¹, Y. Shrem², J. Sachs², E. Asma¹, R. M. Manjeshwar¹, A. Ganin¹
¹General Electric, USA; ²GENERAL 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*

RTSD Poster Presentations

R14: RTSD Poster II (Repeat of R05)

Thursday, Nov. 4 14:00-15:15 Exhibition Hall B
Session Chair: Ernesto Dieguez, *Spain*

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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. Garibaldi¹, R. De Leo², A. Ranieri³, F. Loddo², M. Floresta², C. Tamma², A. Gabrielli³, F. Giorgi³, R. Fonte⁴, F. Librizzi⁴, F. Cusanno¹, P. Musico⁵, R. Perrino⁶, P. Finocchiario⁷, L. Cosentino⁷, A. Pappalardo⁷, F. Meddi¹, B. Maraviglia⁸, F. Giobe⁸, T. Gili⁸, N. Clinthorne⁹, S. Huhss⁹, S. Majewski⁹, M. Lucentini¹⁰, M. Gricia¹⁰, F. Giuliani¹⁰¹INFN Roma1, Italy; ²INFN Bari, Italy; ³INFN Bologna, Italy; ⁴INFN Catania, Italy; ⁵INFN Genova, Italy; ⁶INFN Lecce, Italy; ⁷INFN LNS, Italy; ⁸University of Rome La Sapienza, Italy; ⁹University of Michigan, USA; ¹⁰Istituto Superiore di Sanita', Italy**M11-2 (08:45) Near-Field Collimation for Dose Reduction in Molecular Breast Imaging**D. J. Wagenaar¹, M. K. O'Connor², A. Weinmann², C. B. Hruska², R. A. Moats³, J. Li¹, K. B. Parnham¹, J. W. Hugg¹, S. Chowdhury¹, B. E. Patt¹¹Gamma Medica-Ideas, Inc., USA; ²Mayo Clinic, USA; ³Children's Hospital of Los Angeles, USA**M11-3 (09:00) Phase Sensitive X-Ray Imaging: Towards Medical Applications**C. Kottler¹, V. Revol¹, R. Kaufmann¹, C. Maake², C. Urban¹¹CSEM SA, Switzerland; ²University 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^{1,2}, B. Eiben¹, D. Graessel¹, J. Dammers¹, M. Kleiner¹, T. Huetz¹, K. Amunts^{1,3}, U. Pietrzyk^{1,2}¹Research Centre Juelich, Germany; ²University of Wuppertal, Germany; ³RWTH Aachen, Germany**M11-6 (09:45) Hardware Setup for the Next Generation of a 3D Ultrasound Computer Tomography**H. E. H. Gemmeke, N. V. Ruiter, M. Zapf, M. Birk, L. Berger, A. Menshikov, D. Tcherniakhovski, G. Goebel
Karlsruhe Institute of Technology, Germany

M12: Data Corrections for PET Imaging

Friday, Nov. 5 08:30-10:00 Ballroom B&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. Fayad¹, T. Pan², C. Roux^{1,3}, D. Visvikis¹¹INSERM U650, LaTIM, France; ²M.D. Anderson Cancer Center, USA; ³Institut Telecom - Telecom Bretagne, France**M12-2 (08:45) Statistical Motion Modelling of the Thorax Applied to Respiratory Gated FDG PET**R. Barnett^{1,2,3}, S. Meikle^{1,2}, R. Fulton^{1,2,3,4}¹Faculty of Health Sciences, Sydney University, Australia; ²Brain & Mind Research Institute, Sydney University, Australia; ³Westmead Hospital, Australia; ⁴School of Physics, Sydney University, Australia**M12-3 (09:00) Respiratory Motion Modelling and Prediction Using Probability Density Estimation**M. R. Alnowami¹, E. Lewis¹, M. Guy², K. Wells¹¹University of Surrey, UK; ²Medway 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. Akhtar¹, A. Kyme¹, V. Zhou¹, R. Fulton^{1,2}, W. Lehnert¹, W. N. P. Man¹, S. Meikle¹¹The University of Sydney, Australia; ²Westmead Hospital, Australia**M12-6 (09:45) TOF Scatter Estimation Through TOF True Distribution Generation from Non-TOF Image Reconstruction**V. 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&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. Goorden¹, F. van der Have^{1,2}, R. Kreuger¹, F. J. Beekman^{1,3,2}¹Delft University of Technology, The Netherlands; ²Molecular Imaging Laboratories, The Netherlands; ³University Medical Center Utrecht, The Netherlands**M15-2 (16:15) Geometrical Optimization and Calibration for an Animal PET Converted to SPECT**X. Deng¹, T. Ma², J. Cadorette³, Z. Cao⁴, R. Lecomte⁴, R. Yao¹¹University at Buffalo, USA; ²Tsinghua University, China; ³Gamma Medica-Ideas, Inc., Canada; ⁴Universit 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. Goertzen¹, Q. Bao², M. Bergeron³, E. Blankemeyer⁴, M. Canadas⁵, A. Chatzioannou², R. Lecomte³, V. Sossi⁶, S. Surti⁴, Y.-C. Tai⁷, J. J. Vaquero⁸, R. Laforest⁷
¹University of Manitoba, Canada; ²University of California, Los Angeles, USA; ³Universite de Sherbrooke, Canada; ⁴University of Pennsylvania, USA; ⁵Centro de Investigaciones Energeticas, Medioambientales y Tecnologicas, Spain; ⁶University of British Columbia, Canada; ⁷Washington University School of Medicine, USA; ⁸Hospital 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. Szanda¹, J. E. Mackewn¹, G. Patay², P. Major², K. Sunassee¹, G. E. D. Mullen¹, G. Nemeth², Y. Haemisch³, P. K. Marsden¹
¹King's College London, United Kingdom; ²MEDISO Ltd., Hungary; ³Bioscan 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. Zhou¹, A. Kyme¹, J. Eisenhuth¹, M. Akhtar¹, R. Fulton^{1,2}, S. R. Meikle¹
¹Sydney University, Australia; ²Westmead 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. Hitomi¹, T. Tada¹, T. Tanaka², S.-Y. Kim¹, H. Yamazaki¹, T. Shoji², K. Ishii¹
¹Tohoku University, Japan; ²Tohoku Institute of Technology, Japan

R16-2 (08:50) Recent Progress in Thallium Bromide Gamma-Ray Spectrometer Development

H. Kim¹, A. Kargar¹, A. Churilov¹, G. Ciampi¹, L. Cirignano¹, W. Higgins¹, F. Olschner², B. Donmez³, C. Thrall³, Z. He³, K. Shah¹
¹Radiation Monitoring Devices Inc., USA; ²Cremat Inc., USA; ³University of Michigan, USA

R16-3 (09:05) High Resolution Study of Polarisation Effects in Thallium Bromide X-Ray Detectors

A. G. Kozorezov¹, V. Gostilo², A. Owens³, F. Quararti³, M. Shorohov², A. Webb⁴, J. K. Wigmore¹
¹Lancaster University, United Kingdom; ²Bruker Baltic, Latvia; ³ESA/ESTEC, Netherlands; ⁴HASYLAB 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 HgI₂ Semiconductor Detectors

Y. J. Li¹, L. Zhang², X. C. Zheng², Z. Deng¹
¹Tsinghua University, China; ²Nuctech 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. Wilson¹, L. L. Jones¹, P. Seller¹, P. J. Sellin², M. C. Veale¹, P. Veeramani²
¹Rutherford Appleton Laboratory, UK; ²University of Surrey, UK

R17-3 (11:05) Charge Transport Properties in CZT Detectors Grown by the Vertical Bridgman Technique

N. Auricchio¹, L. Marchini², E. Caroli¹, J. B. Stephen¹, M. Zanichelli³, A. Zappettini², L. Abbene⁴, S. Del Sordo¹
¹INAF, Italy; ²CNR, Italy; ³University of Parma, Italy; ⁴University 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. Dreisike, R. Bommene, F. Aqariden, *EPIR Technologies, Inc., IL*

R17-5 (11:35) X-Ray Imaging Using Photon Counting CMOS-DPS™ and CdZnTe Arrays

R. Sia¹, G. Prekas¹, S. Kleinfelder², V. Nagarkar¹

¹Radiation Monitoring Devices, Inc, USA; ²University of California Irvine, USA

R17-6 (11:50) Positron Annihilation Studies of Ga2Te3 and Ga-Se-Te Semiconductors

N. M. Abdul-Jabbar¹, E. D. Bourret-Courchesne², D. Xu¹,

B. D. Wirth¹

¹University of California, USA; ²Lawrence Berkeley National Laboratory, USA

R18: Application CdZnTe

Friday, Nov. 5 13:30-15:00 301A & 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. Barber¹, E. Nygard², J. C. Wessel², N. Malakhov²,

N. E. Hartsough¹, J. S. Iwanczyk¹

¹DxRay Inc., USA; ²Interon AS, Norway

R18-2 (13:45) Large 12cm² Monolithic CdTe Pixel Sensors with Medipix Readout

A. Zwinger, 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
Redlen Technologies, USA

R18-4 (14:15) Compact CZT-Based Gamma Camera for Prostate Cancer Imaging

Y. Cui¹, T. Lall², A. Bolotnikov¹, B. Tsui³, K. Weisman⁴,

Y. Seo⁵, P. Vaska¹, G. Meinken¹, G. Mahler¹, P. O'Connor¹,

G. De Geronimo¹, G. Camarda¹, A. Hossain¹, K. H. Kim¹, G. Yang¹,
R. B. James¹

¹Brookhaven National Laboratory, USA; ²Hybridyne Imaging Technologies, Inc., Canada; ³Johns Hopkins University, USA; ⁴Midstate Hospital, USA; ⁵University 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 Sordo¹, L. Abbene², E. Caroli¹, C. da Silva³

¹Stefano Del Sordo, Italy; ²Leonardo Abbene, Italy; ³Ezio Caroli, Italy

R19: Characterization of CZT IV

Friday, Nov. 5 16:00-17:00 301A & 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 HgI2 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^{1,2}, D. Puglisi^{1,2}, D. Macera^{1,2}, R. Di Liberto³, L. Mantovani³, M. Lamborizio³
¹Politecnico di Milano - Polo regionale di Como, Italy; ²INFN- sez. Milano, Italy; ³Policlinico San Matteo, Italy

M13-12 PET Detector Module with Thick Light Guide and GAPD Array Having Large-Area Microcells

J. Kang^{1,2}, Y. Choi¹, K. J. Hong¹, W. Hu^{1,2}, J. Y. Hwang³, H. K. Lim¹, Y. S. Huh^{1,2}, S. Kim¹, K. B. Kim¹, J. W. Jung¹, Y. H. Chung³, B.-T. Kim²
¹Sogang University, Korea; ²SungKyunKwan University, Korea; ³Yonsei University College of Health Science, Korea

M13-17 Lu₂O₃: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^{1,2}, Q. Xie^{1,2}, Y. Chen¹, M. Niu^{1,2}, Z. Wu³, J. Zhu^{1,2}, D. Xi¹, J. Gao¹, Y. Wang¹
¹Huazhong University of Science and Technology, China; ²Wuhan National Laboratory for Optoelectronics, China; ³Chongqing University, China

M13-27 Energy and Timing Measurement of a PET Detector with Time Based Readout Electronics

Y. Shao¹, X. Sun¹, A. Lan¹, Z. Deng², Y. Liu²
¹The University of Texas M.D. Anderson Cancer Center, USA; ²Tsinghua 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. Dokhale, 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. Junnarkar¹, M. L. Purschke¹, C. Woody¹, D. Schlyer¹, P. O'Connor¹, E. Gualtieri², J. Karp², P. Vaska¹
¹Brookhaven National Laboratory, USA; ²University 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^{1,2}, J. A. Rowlands¹, D. R. Green^{1,2,3}, F. Taghibakhsh^{1,2,3}
¹Sunnybrook Health Sciences Centre, Canada; ²University of Toronto, Canada; ³Thunder 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. Janeczek, 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. Bjaalie¹, E. Bolle², J. I. Buskenes², O. Dorholt², M. T. Rissi², O. Roehne², A. Skretting³, S. Stapnes^{2,4}
¹Department of Anatomy & CMBN, Norway; ²Universitetet i Oslo, Norway; ³Rikshospitalet-Radiumhospitalet Medical Center, Norway; ⁴CERN, Switzerland

M13-82 Performance Evaluation Standards for Positron Emission Mammography (PEM)

W. Luo¹, M. Dahlbom², L. MacDonald³, X. Lu¹, O. R. Mawlawi⁴
¹Naviscan Inc., USA; ²UCLA, USA; ³University of Washington, USA; ⁴The 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^{1,2}, J. W. Moore², L. R. Furenli², H. H. Barrett²
¹Ghent University, Belgium; ²University 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^{1,2}, J. A. Rowlands^{1,2}
¹University of Toronto, Canada; ²Thunder 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. Bezrukov¹, M. Hofmann^{1,2,3}, P. Aschoff⁴, T. Beyer⁵, F. Mantlik^{1,2}, B. J. Pichler¹, B. Schoelkopf²
¹*Dept. of Radiology, Eberhard Karls University, Germany*; ²*Max-Planck-Institute for Biological Cybernetics, Germany*; ³*University of Oxford, United Kingdom*; ⁴*Eberhard Karls University, Germany*; ⁵*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. Ichihara¹, R. T. George², R. Mather³, C. Silva³, J. A. C. Lima², A. C. Lardo²
¹*Fujita Health University School of Health Science, Japan*; ²*Johns Hopkins University School of Medicine, USA*; ³*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. Nculaes, 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^{1,2}, M. Bello¹, G. Moschini¹, G. Baldazzi³, A. Rosato^{4,5}, M. B. Rondina^{4,5}, I. M. Montagner^{4,5}, D. Boldrin^{4,5}, P. C. Muzzio^{4,5}, P. Rossi¹

¹*INFN, Italy*; ²*Shumen University, Bulgaria*; ³*University of Bologna, Italy*; ⁴*Veneto Institute of Oncology, Italy*; ⁵*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. Lee¹, C. P. Hong¹, M. W. Lee², S. H. Kim², B. S. Han¹
¹*Yonsei University, Korea*; ²*Advanced Imaging Laboratory Cooperation, Korea*

M13-157 The Optimal Design and Evaluation of a (RMSVASH) Collimator for Clinical Myocardial Perfusion SPECT

A. J. Rittenbach¹, J. Xu¹, S. Chen¹, L. Shao², B. M. W. Tsui¹
¹*Johns Hopkins University, USA*; ²*Philips Healthcare, USA*

M13-162 Performance Characteristics of the MAMMI PEMT 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. Yang¹, Y. Wu¹, R. Farrell², P. A. Dokhale², K. S. Shah², S. R. Cherry¹
¹*University of California at Davis, USA*; ²*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. James¹, M. Spurrier Koschan², C. L. Melcher², S. R. Cherry¹
¹*University of California, Davis, U.S.A.*; ²*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-Milimeter 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. Kyme¹, S. R. Meikle¹, C. Baldock¹, R. R. Fulton^{1,2}
¹*University of Sydney, Australia*; ²*Westmead Hospital, Australia*

M13-222 Maximum-Likelihood Calibration of an X-Ray Computed Tomography System

J. W. Moore¹, R. Van Holen², H. H. Barrett¹, L. R. Furenlid¹
¹University of Arizona, USA; ²Ghent 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. Sidky¹, Y. Duchin¹, L. Pesce¹, C. Ullberg², X. Pan¹
¹University of Chicago, United States; ²XCounter 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. Wubbeling, 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. Cui¹, G. Pratz¹, S. Prevhal², C. S. Levin¹
¹Stanford University, USA; ²Philips 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. Caucci¹, W. C. J. Hunter², L. L. Furenlid¹, H. H. Barrett¹
¹University of Arizona, USA; ²University of Washington, USA

M13-277 A Proposal and Evaluation of Spatio-Temporal Reconstruction Method Based on DRAMA

T. Kon¹, T. Obi¹, H. Tashima², N. Ohyama¹
¹Tokyo Institute of Technology, Japan; ²National 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. Pedemonte¹, A. Bousse², K. Erlandsson², M. Modat¹, S. Arridge¹, B. F. Hutton², S. Ourselin¹

¹University College London, UK; ²University 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. Xu¹, S. Chen¹, J. Yu¹, D. Meier², D. J. Wagenaar², J. W. Hugg², B. M. Tsui¹
¹Johns Hopkins University, USA; ²Gamma Medica-Ideas, Inc, USA

M13-307 Image Reconstruction from Sparse Phase-decorated Synchrotron Radiation Micro-CT Data

D. Xia¹, X. Xiao², E. Y. Sidky³, F. De Carlo², X. Pan³
¹Academia Sinica, China; ²Argonne National Laboratory, U.S.A.; ³The University of Chicago, U.S.A.

M13-312 Automatic Thresholding for Frame-Repositioning Using External Tracking

O. V. Olesen^{1,2,3}, S. H. Keller¹, M. Sibomana¹, R. Larsen², B. Roed³, L. Hoejgaard¹
¹Rigshospitalet, Copenhagen University Hospital, Denmark; ²Technical University of Denmark, Denmark; ³Siemens Healthcare, Denmark

M13-317 Performance Evaluation of a Particle Filter Framework for Respiratory Motion Estimation in Nuclear Medicine Imaging

A. A. Abd. Rahni¹, E. Lewis¹, M. Guy^{2,1}, B. Goswami¹, K. Wells¹
¹University of Surrey, England; ²Medway Maritime Hospital, England

M13-322 Image Space Identification of a Motion Tracking Tool in PET and PET/CT

P. J. Noonan^{1,2}, W. A. Hallett², T. F. Coates¹, R. Hinz¹
¹University of Manchester, UK; ²GlaxoSmithKline, UK

M13-327 Evaluation of an OSEM-Based PVC Method for SPECT with Clinical Data

K. Erlandsson¹, B. Thomas¹, J. C. Dickson², B. F. Hutton¹
¹University College London, UK; ²University College London Hospital, UK

M13-332 Estimation of Gap Data Using Bow-Tie Filters for 3D Time-of-Flight PET

R. Ren¹, Q. Li¹, S. Ahn¹, S. Cho², R. M. Leahy¹
¹University of Southern California, United States; ²Siemens, 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. Huisman¹, J. E. M. Mourik¹, F. H. P. van Velden¹, M. Sibomana², S. H. Keller², S. Wang³, J. Anton³, D. van Assema¹, F. E. A. M. Froklage¹, N. J. Hoetjes¹, R. W. Kloet¹, B. N. M. van Berckel¹, R. C. Schuit¹, M. Lubberink¹, R. Boellaard¹, A. A. Lammertsma¹

¹VU University Medical Center, The Netherlands; ²PET Center, Copenhagen University Hospital, Rigshospitalet, Denmark; ³School 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-Gilcrist, 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. Pepper¹, A. Gibson¹, A. Castoldi², C. Guazzoni², G. Royle¹
¹University College London, UK; ²Politecnico di Milano, Italy

M14-13 Design Considerations for Application of SiPMs in Nuclear Imaging

N. Efthimiou¹, G. Argiropoulos¹, G. Loudos², G. Panayiotakis¹
¹Univ. of Patras, Greece; ²TEI of Athens, Greece

M14-18 Spectroscopy of BaHfO₃:Eu, Li - Activated Phosphors under Excitation with UV/VUV and X-Rays

A. Dobrowolska, E. Zych
University of Wroclaw, Faculty of Chemistry, Poland

M14-23 An FPGA Based Data Acquisition System for High Resolution PET Using Flat-Panel PMT

H. S. Yoon¹, G. B. Ko¹, S. I. Kwon¹, C. M. Lee¹, M. Ito², D. S. Lee¹, S. J. Hong³, J. S. Lee¹

¹Seoul National University College of Medicine, KOREA; ²Korea University, Korea; ³Eulji 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 Gil¹, J. L. Villena¹, R. Kreuger¹, F. J. Beekman^{1,2}

¹Delft University of Technology, Netherlands; ²University Medical Center Utrecht, Netherlands

M14-38 External Motion Tracking for Brain Imaging: Structured Light Tracking with Invisible Light

O. V. Olesen^{1,2,3}, R. R. Paulsen¹, L. Hoejgaard², B. Roed³, R. Larsen¹

¹Technical University of Denmark, Denmark; ²Rigshospitalet, Copenhagen University Hospital, Denmark; ³Siemens, 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. Nishikido¹, T. Mitsuhashi², N. Inadama¹, E. Yoshida¹, H. Murayama¹, T. Yamaya¹

¹National Institute of Radiological Sciences, Japan; ²Chiba 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 Corpuscolar (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. Tabacchini¹, G. Mettivier¹, M. Conti², P. Russo¹

¹INFN and Univ. of Napoli, Italy, Italy; ²Siemens, 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. Jaszczak¹, K. L. Greer¹, B. Kross², S. Majewski³, J. McKisson², V. Popov², J. Proffitt⁴, M. F. Smith⁵, A. G. Weisenberger², R. Wojcik⁶
¹Duke University Medical Center, USA; ²Thomas Jefferson National Accelerator Facility, USA; ³West Virginia University, USA; ⁴Adaptive I/O Inc., USA; ⁵University of Maryland, USA; ⁶Ray 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. Beer¹, C. Windt², M. Dautzenberg², G. Roeb², C. Parl¹, M. Streun¹, D. van Dusschoten², S. Jahnke²
¹Central Institute for Electronics, Forschungszentrum Juelich, Germany;
²ICG3: Phytosphere, Forschungszentrum Juelich, Germany

M14-123 CT-Based Evaluation of Segmented Head Regions for Attenuation Correction in MR-PET Systems

G. Wagenknecht¹, E. Rota Kops¹, J. Kaffanke¹, L. Tellmann¹, F. Mottaghy², M. D. Pithot², H. Herzog¹
¹Research Center Juelich, Germany; ²University Hospital Aachen, Germany

M14-128 Design and Prototyping of a Human Brain PET Scanner Based on Monolithic Scintillators

P. Rato Mendes¹, J. Alberdi¹, M. Canadas¹, P. Garcia de Acilu¹, J. Navarrete¹, L. Nunez², J. M. Perez¹, L. Romero¹, I. Sarasola¹, C. Willmott¹
¹CIEMAT, Spain; ²Hospital Universitario Puerta de Hierro - Majadahonda, 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. Bruyndonckx¹, A. Tapfer², X. Liu¹, B. Pauwels¹, A. Sasov¹, J. Kenntner³, J. Schulz³, J. Mohr², M. Bech², K. A. Achterhold², F. Pfeiffer²
¹SkyScan, Belgium; ²Technische Universität München, Germany;
³Karlsruhe Institute of Technology, Germany

M14-148 Three-Dimensional Diffuse Optical Tomography: System Implementation and Validation of Reconstruction Algorithms

S. K. Biswas, R. Kanhirojan, 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. Iatrou¹, R. Bhagalia¹, D. Beque¹, S. John², J. D. Pack¹
¹General Electric Global Research, USA; ²General 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. Boutchko¹, V. Rayz², F. Neacsu¹, J. P. O'Neil¹, N. T. Vandehey¹, P. S. Nico¹, J. Druhan¹, T. F. Budinger¹, D. Saloner², G. T. Gullberg¹, W. W. Moses¹
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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^{1,2}, M. A. N. Korevaar^{1,2}, J. Huizenga¹, R. Kreuger¹, D. R. Schaart¹, M. C. Goorden^{1,2}, F. J. Beekman^{1,2,3}
¹Delft University of Technology, Netherlands; ²University Medical Center Utrecht, Netherlands; ³Molecular 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. Bousselham, 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. Strydom, 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. Weiss¹, M. Benoit², J.-C. Clemens¹, B. Dinskespiller¹, S. Fieux³, B. Janvier⁴, M. Jevaud¹, P. Gisquet-Verrier³, S. Karkar¹, M. Menouni¹, P. Ollive¹, F. Pain⁴, L. Pinot⁴, K. Sietambie Ngnekou¹, L. Zimmer⁵, C. Morel¹, P. Laniece⁴

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M14-208 Imaging Study of a Phantom and Small Animal with a Two-Head Electron-Tracking Compton Gamma-Ray Camera

S. Kabuki¹, H. Kimura¹, H. Amano¹, H. Kubo¹, K. Miuchi¹, H. Kawashima², M. Ueda³, K. Ogawa⁴, S. Hideo¹, T. Tanimori¹
¹Kyoto University, Japan; ²National Cerebral and Cardiovascular Center, Japan; ³Kyoto University Hospital, Japan; ⁴Hosei University, Japan

M14-213 Performance Evaluation of a MultiModality SPECT/CT Scanner

J. G. Mannheim¹, 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. Visser¹, A. A. Harteveld², A. A. Meeuwis¹, J. A. Disselhorst¹, W. J. G. Oyen¹, O. C. Boerman¹

¹Radboud University Nijmegen Medical Centre, the Netherlands;
²University of Twente, the Netherlands

M14-223 Timing Calibration Method for NanoPET/CT System

P. Major¹, G. Hesz², T. Bukki¹, B. Benyo², G. Nemeth¹

¹Mediso Ltd., Hungary; ²Budapest Univ. of Technology and Economics, Hungary

M14-228 Organ Delineation Using Factor Analysis on the Genisys Preclinical PET System

F. R. Daver¹, 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. Han¹, E. Pearson¹, S. Cho², J. Bian¹, E. Y. Sidky¹, C. A. Pelizzari¹, X. Pan¹

¹The University of Chicago, USA; ²Korea Advanced Institute of Science and Technology, Korea

M14-238 Block-Based Iterative Coordinate Descent

T. M. Benson¹, 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. Zamyatin¹, 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. Xu¹, K. Mueller, Stony Brook University, USA

M14-253 System Matrix Calibration with Point Source Measurements for Preclinical PET

M. Chen¹, 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. Ha¹, Z. Zhang¹, S. Matej², K. Mueller¹

¹Stony Brook University, USA; ²University of Pennsylvania, PN

M14-263 Direct Parametric Estimation of Blood Flow in Abdominal PET/CT Within an EM Reconstruction Framework

F. A. Kotasidis¹, A. J. Reader², G. I. Angelis¹, P. J. Markiewicz¹, M. D. Walker¹, P. M. Price³, W. R. Lionheart¹, J. C. Matthews¹

¹University of Manchester, United Kingdom; ²McGill University, Canada; ³Christie 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^{1,2}, J. J. Scheins³, P. Almeida¹, J. Seabra², H. Herzog³

¹Instituto de Biofisica e Engenharia Biomedica, Portugal; ²Siemens Healthcare, Portugal; ³Institute 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. Cheng¹, X. He¹, R. Hobbes¹, W. E. Bolch², G. Sgouros¹, E. C. Frey¹

¹Johns Hopkins University School of Medicine, USA; ²University 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. Alnowami¹, D. Okwechime¹, E. Lewis¹, M. Guy², K. Wells¹
¹University of Surrey, UK; ²Medway Maritime Hospital, UK

M14-323 Event-Based Motion Correction in PET Transmission Measurements with a Rotating Point Source

V. W. Zhou¹, A. Kyme¹, S. R. Meikle¹, R. Fulton^{1,2}
¹School of Physics, Sydney University, Australia; ²Department of Medical Physics, Australia

M14-328 MR-Based Partial Volume Correction for PET Using Geometric Transfer Matrices

K. Buescher¹, M. S. Judenhofer², B. J. Pichler², K. Bolwin¹, M. A. Schaefer¹, L. Stegger³
¹University of Muenster, Germany; ²University of Tuebingen, Germany; ³University Hospital of Muenster, Germany

M14-333 New Calibration and Evaluation Method for PET Scanners using Point-like Radioactive Sources

T. Hasegawa¹, K. Oda², Y. Wada³, T. Yamada⁴, E. Yoshida⁵, H. Murayama⁵, K. Saito¹, T. Takeda¹, T. Kikuchi⁶
¹Kitasato Univ., Japan; ²TMIG, Japan; ³RIKEN, Japan; ⁴JRIA, Japan; ⁵NIRS, Japan; ⁶Kitasato Univ. Hospital, Japan

M14-338 Efficient Point Clouds Based Scatter Correction for Fully 3D PET

F. Gao¹, H. Liu², P. Shi¹
¹Rochester Institute of Technology, USA; ²Zhejiang University, China

M14-343 Investigation of Motion Induced Errors in Scatter Correction for the HRRT Brain Scanner

J. M. Anton-Rodriguez¹, M. Siboman², M. C. Huisman³, M. D. Walker^{1,4}, J. C. Matthews¹, M. Feldmann^{1,4}, S. H. Keller², M.-C. Asselin¹
¹Manchester University, United Kingdom; ²Rigshospitalet, Copenhagen University Hospital., Denmark; ³VU University Medical Center, The Netherlands; ⁴University College London, United Kingdom

M14-348 Attenuation Map Segmentation in Low-Dose PET/CT

J. J. Hamill¹, B. Bai², R. L. Eisner³, M. Ichese², J. A. Nye⁴
¹Siemens Medical Solutions, USA; ²Columbia Presbyterian Medical Center, USA; ³Emory University Hospital Midtown, USA; ⁴Emory 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 [¹⁵O]H₂O

M. D. Walker^{1,2}, M. Feldmann^{1,2}, J. M. Anton-Rodriguez², S. Wang², J. C. Matthews², M. J. Koepp¹, M.-C. Asselin²
¹University College London, UK; ²University 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. Mabrouk¹, L. Bentabet², F. Dubeau¹, M. Bentourkia¹
¹Universite de Sherbrooke, Canada; ²Bishop'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. Mukherjee¹, B. F. Hutton², M. A. King¹
¹University of Massachusetts, USA; ²University 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. Coello¹, T. Hjernevik¹, F. Courivaud², F. Willoch¹
¹Akershus University Hospital, Norway; ²Rikshospitalet, Norway

M14-428 Evaluation of Automatic Striatal Segmentation for the ECAT HRRT Images

U. Tuna¹, J. Tohka¹, R. J. P. C. Farinha², U. Ruotsalainen¹
¹Tampere University of Technology, Finland; ²Ramboll 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. Nijssen, 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. Haghighat, 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^{1,2}, D. Rorich², K. Ullaland², R. Gruner^{1,2}
¹Haukeland University Hospital, Norway; ²University 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. Bowen¹, Q. Huang², G. T. Gullberg³, Y. Seo¹
¹University of California, United States; ²Shanghai Jiao Tong University, China; ³Lawrence 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																											
Ballroom F																											
Ballroom G																											
Room 301A																											
Room 301B																											
Room 301D																											
Room 301E																											

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Room 200A																											
Room 200B																											
Room 200C																											
Room 200D																											
Room 200E																											
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. Wang¹, D. Meier², J. Hugg², S. Chowdhury², D. Wagenaar², B. Patt², E. Frey¹

¹Johns Hopkins University, USA; ²Gamma 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. Fung¹, W. P. Segars², T.-S. Lee¹, T. Higuchi¹, A. I. Veress³, G. T. Gullberg⁴, B. M. W. Tsui¹

¹Johns Hopkins University, USA; ²Duke University, USA; ³University of Washington, USA; ⁴E.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. Guerra¹, W. Gonzalez², M. J. Ledesma-Carbayo^{3,1}, J. Cal-Gonzalez⁴, E. Herranz⁴, J. M. Udias⁴, A. Lallena², A. Santos^{3,1}

¹Biomedical Research Center in Bioengineering, Biomaterials and Nanomedicine, Spain; ²Universidad de Granada, Spain; ³Universidad Politécnica de Madrid, Spain; ⁴Universidad Computense de Madrid, Spain

M17: Enhancing PET, SPECT and CT Imaging

Saturday, Nov. 6 08:30-10:00 Ballroom B&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^{1,2}, S. J. McQuaid^{1,2}, S. C. Moore^{1,2}

¹Brigham and Women's Hospital, USA; ²Harvard 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

V. Y. Panin¹, M. Defrise², M. E. Casey¹

¹Siemens Medical Solutions, USA; ²Vrije 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&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. Tong¹, A. M. Alessio¹, K. Thielemans², C. Stearns³, S. Ross³, P. E. Kinahan¹

¹University of Washington, United States; ²Hammersmith Imanet, UK; ³GE Healthcare, United States

M20-3 (16:30) Reduction in Variability of Clinical Lesion Quantification with TOF-PET Imaging

A. E. Perkins¹, M. E. Daube-Witherspoon², S. Surti², E. Clementel³, J. S. Karp²

¹Philips Healthcare, USA; ²University of Pennsylvania, USA; ³University 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^{1,2}, S. C. Moore^{1,2}, A. Sitek^{1,2}, M. F. Kijewski^{1,2}

¹Brigham and Women's Hospital, USA; ²Harvard 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. Wilson¹, S. G. Ross², T. W. Deller², E. Asma³,
R. M. Manjeshwar³, T. G. Turkington^{1,4}

¹Duke University, USA; ²GE Healthcare, USA; ³GE Global Research Center, USA; ⁴Duke University Medical Center, USA

M20-8 (17:45) Evaluation of Accuracy and Precision of Organ Activity Estimates for Quantitative I-131 SPECT

N. Song¹, Y. Du¹, B. He², E. C. Frey¹

¹Johns Hopkins Medical Institution, U.S.A.; ²New 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 Dam¹, S. Seifert¹, R. Vinke², H. L&couml;nhner²,
P. Dendooven², F. J. Beekman^{1,3}, D. R. Schaart¹

¹Delft University of Technology, The Netherlands; ²Kernfysisch Versneller Instituut (KVI), The Netherlands; ³University 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. Jokela¹, I. V. Veryovkin¹, A. V. Zinovev¹, H. J. Frisch²,
J. W. Elam¹, Q. Peng¹, A. U. Mane¹, I. Z. Zinetula¹

¹Argonne National Laboratory, USA; ²University of Chicago, USA

M18-14 1 mm Isotropic Detector Resolution Achieved by X'tal Cube Detector

T. Mitsuhashi^{1,2}, N. Inadama², F. Nishikido², E. Yoshida²,
H. Murayama², H. Kawai¹, M. Suga^{1,2}, H. Haneishi^{1,2}, K. Shibuya³,
M. Watanabe⁴, T. Yamaya²

¹Chiba University, Japan; ²National Institute of Radiological Sciences, Japan; ³Tokyo university, Japan; ⁴Hamamatsu Photonics K.K., Japan

M18-19 Readout Design and Validation for a 1 mm³ 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. Alnowami¹, E. Lewis¹, M. Guy², K. Wells¹

¹University of Surrey, UK; ²Medway Maritime Hospital, UK

M18-44 LuYAP/LSO Phoswich Detectors for High Resolution Positron Emission Tomography

L. A. Eriksson^{1,2,3,4}, M. Conti¹, C. L. Melcher², H. Rothfuss^{1,2},
M. L. Eriksson³, M. Zhuravleva²

¹Molecular Imaging, USA; ²Scintillation Materials Research Center, USA; ³Clinical Neuroscience, Sweden; ⁴Department of Physics, Sweden

M18-49 A Dual-Layer LYSO Crystal PET Detector Using a SPM Array and a 16:3 Signal Multiplexor

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. Yoshida¹, F. Nishikido¹, N. Inadama¹, H. Murayama¹, H. Mashino², T. Yamaya¹

¹National Institute of Radiological Sciences, Japan; ²Espec 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^{1,2}, J. M. Wilson²

¹Duke University Medical Center, USA; ²Duke University, USA

M18-89 A new module-level parameter Interfusion 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. Huang¹, T. Zeniya², H. Kudo³, H. Iida², G. T. Gullberg⁴
¹Shanghai Jiaotong University, China; ²National Cardiovascular Center Research Institute, Japan; ³University of Tsukuba, Japan; ⁴Lawrence Berkeley National Laboratory, USA

M18-104 Collimator Design in SPECT, an Optimisation Tool

N. Fuin¹, A. Bousse¹, S. Pedemonte², S. Arridge², S. Ourselin², B. F. Hutton¹

¹UCLH University College London Hospitals, UK; ²UCL University College London, UK

M18-109 InSPECT a Multi-Modular Micro-SPECT System Based on the BazookaSPECT Technology

M. I. Peterson¹, K. Ljunggren¹, L. Andersson-Ljus², B. Miller³, S.-E. Strand¹

¹Lund University, Sweden; ²Sknes Universitetssjukhus, Sweden;

³University of Arizona, USA

M18-114 Performance Evaluation of a LYSO-SSPM PET Detector Module for Combined PET/MRI Applications

P. Dokhale¹, Y. Wu², Y. Yang², R. Robertson¹, C. Stapels¹, J. Christian¹, S. Cherry², K. Shah¹

¹Radiation Monitoring Devices Inc., USA; ²University of California-Davis, USA

M18-119 PET/MRI: Observation of Non-Isotropic Positron Distribution in High Magnetic Fields and Its Diagnostic Impact

A. Kolb¹, M. Hofmann^{1,2}, A. Sauter¹, C.-C. Liu¹, L. Eriksson³, B. Schoelkopf², B. J. Pichler¹

¹University of Tuebingen, Germany; ²Max Planck Institute, Germany;

³Siemens Healthcare, USA

M18-124 MR-based attenuation correction using clinical whole-body MR and PET/CT

J. Ouyang¹, S. Y. Chun¹, C. Catana^{1,2}, T. Benner^{1,2}, G. El Fakhri¹

¹Massachusetts General Hospital, USA; ²Athinoula 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. Pearson¹, S. Cho², C. A. Pelizzari¹, X. Pan¹

¹University of Chicago, USA; ²Kaist University, Republic of Korea

M18-144 Performance Analysis of X-Ray Phase-Contrast Interferometers with Respect to Grating Layouts

W. Haas¹, P. Bart², F. Bayer², J. Durst², T. Grund³, J. Kenntner³, T. Michel², A. Ritter², T. Weber², G. Anton², J. Hornegger¹

¹Pattern Recognition Lab, Germany; ²ECAP, Germany; ³Institute for Microstructure Technology, Germany

M18-149 Three-Dimensional Diffusion Weighted Imaging of the Acute Cerebral Ischemia Rat Using 3D MP-RAGE MRI

T. Numano¹, A. Marushima², K. Hyodo³, K. Homma³, K. Suzuki², A. Matsumura²

¹Tokyo Metropolitan University, Japan; ²Tsukuba University, Japan;

³National Institute of Advanced Industrial Science and Technology, Japan

M18-154 Monte Carlo Simulation of Positron-Emitting Nuclei Distributions in Proton Therapy

C. Van Ngoc Ty¹, L. De Marzi², S. Jan¹, L. Lestand³, R. Ferrand², C. Comtat¹, R. Trebessen¹

¹CEA, France; ²Institut Curie, France; ³IN2P3, France

M18-159 Simulation of Left Ventricular Dyssynchrony Using the XCAT Phantom

A. A. Cheung¹, T. Niu¹, T. L. Faber², W. P. Segars³, L. Zhu¹, J. Chen²

¹Georgia Institute of Technology, USA; ²Emory University, USA; ³Duke University, USA

M18-164 Experimental Feasibility of Multi-Material Decomposition Imaging in Small Animal SPECT/CT System

H.-M. Cho^{1,2}, M. Pivovarov³, H.-J. Kim^{1,2}, C.-L. Lee^{1,2}, Y. Seo¹

¹University of California, San Francisco, USA; ²Yonsei University, Korea;

³Lawrence 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

V. Linhart¹, V. Borshchov², D. Burdette³, E. Chesi³, V. Cindro⁴, N. H. Clinthorne⁵, E. Cochran³, B. Grosicar⁴, K. Honscheid³, H. Kagan³, C. Lacasta¹, O. Listratenko², G. Llosa¹, M. Mikuz⁶, M. Protsenko², V. Stankova¹, A. Studen⁴, I. Tymchuk², P. Weilhammer³, D. Zontar⁴

¹IFIC/CSIC-UVEG, Spain; ²State Enterprise Scientific Research Technological Institute of Instrument Engineering (SE SRTIIE), Ukraine;

³Ohio State University, OH, USA; ⁴Joef Stefan Institute, Slovenia;

⁵University of Michigan, MI, USA; ⁶University of Ljubljana, Slovenia

M18-174 The First Generation Prototype of the Surgical PET Imaging Probe System

S. S. Huh¹, E. Cochran², K. Honscheid², H. Kagan², S. Smith², W. L. Rogers¹, N. H. Clinthorne¹

¹University of Michigan, USA; ²The Ohio State University, USA

M18-179 A Depth-Encoding PET Detector Module Based on GAPD Having Large-Area Microcells

J. Kang^{1,2}, Y. Choi¹, K. J. Hong¹, W. Hu^{1,2}, Y. S. Huh^{1,2}, H. K. Lim¹, B.-T. Kim²

¹Sogang University, Korea; ²SungKyunKwan University, Korea

M18-184 Exploring the Limits of PET Resolution with a Monolithic Scintillator Detector

S. Stoll¹, S. Krishnamoorthy², M. L. Purschke¹, C. L. Woody¹, D. J. Schlyer¹, P. Vaska¹

¹Brookhaven National Laboratory, U.S.A.; ²Stony Brook University, U.S.A.

M18-189 High Resolution PET Utilizing Concentric Silicon and Scintillator Rings

E. Cochran¹, E. Chesi¹, N. H. Clinthorne², K. Honscheid¹, S. S. Huh², H. Kagan¹, C. Lacasta³, M. Mikuz⁴, J. Rackers¹, S. Smith¹, A. Studen⁴, P. Weilhammer¹, E. Wolf¹

¹The Ohio State University, USA; ²University of Michigan, USA; ³IFIC/CSIC/University of Valencia, Spain; ⁴University of Ljubljana, Slovenia

M18-194 Verification of Prototype Geiger-Mode APD Small Animal PET Scanner by Comparing with PMT-Based PET

S. I. Kwon¹, J. S. Lee¹, H. S. Yoon¹, M. Ito², G. B. Ko¹, S.-H. Lee¹, I. C. Song³, D. S. Lee¹, S. J. Hong⁴

¹Seoul National University, Korea; ²Korea University, Korea; ³Seoul National University Hospital, Korea; ⁴Eulji 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. Klatte, 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. Kyme¹, S. R. Meikle¹, C. Baldock¹, R. R. Fulton^{1,2}

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

M18-214 Imaging Performance of Two Multiple-Pinhole Small-Animal SPECT Systems: Multiplexed Vs. Non-Multiplexed Data Acquisition

M.-A. Park^{1,2}, E. P. Lunsford^{3,2}, R. E. Zimmerman^{1,2}, S. Southekal^{1,2}, J. V. Frangioni^{3,2}, S. C. Moore^{1,2}

¹Brigham and Women's Hospital, USA; ²Harvard Medical School, USA;

³Beth Israel Deaconess Medical Center, USA

M18-219 Adsorption of TcO₄⁻ by Zeolites and Other Crystalline Minerals for Testing Small-Animal Imaging System Performance

R. E. Zimmerman¹, M.-A. Park¹, R. D. Andrews², S. C. Moore¹

¹Harvard Medical Sch Brigham & Women's H Radiology, USA; ²Boulder 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. Ens¹, J. Ulrici², E. Hell², T. Buzug¹

¹University of Luebeck, Germany; ²Sirona Dental Systems GmbH, Germany

M18-249 Theoretical Noise Estimation in 3D X-Ray CT Reconstruction

D. Cai^{1,2}, Y. Xiao^{1,2}, Y. Xing^{1,2}

¹Tsinghua, China; ²Ministry of Education, China

M18-254 Polar Voxelization Schemes Combined with a Monte-Carlo Based System Matrix for Image Reconstruction in High Resolution PET

J. Cabello¹, J. F. Oliver¹, I. Torres-Espallardo², M. Rafecas¹

¹Institute for Corpuscular Physics (IFIC), University of Valencia/CSIC, Spain; ²Institute 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. Tsai¹, I.-T. Hsiao^{1,2}

¹Chang Gung University, Taiwan; ²Chang 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 Politécnica 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. Pedemonte¹, M. J. Cardoso¹, A. Bousse², C. Panagiotou¹, D. Kazantsev¹, S. Arridge¹, B. F. Hutton², S. Ourselin¹

¹University College London, UK; ²University College London Hospitals NHS Trust, UK

M18-299 ET Bayesian Reconstruction Using Automatic Bandwidth Selection for Joint Entropy Optimization

D. Kazantsev¹, S. Pedemonte¹, A. Bousse², C. Panagiotou¹, S. R. Arridge¹, B. F. Hutton², S. Ourselin¹

¹University College London, United Kingdom; ²University College London Hospitals, United Kingdom

M18-304 System Matrix Based on Analytical Models for Multipinhole SPECT Reconstructions

H. Hsieh^{1,2}, C.-H. Hsu³, G. S. P. Mok⁴, I.-T. Hsiao^{1,2}

¹Chang Gung University, Taiwan; ²Chang Gung Memorial Hospital, Taiwan; ³National Tsing Hua University, Taiwan; ⁴The Chinese University of Hong Kong, China

M18-309 Respiratory Motion-Corrected Rb-82 Myocardial Perfusion PET Imaging

A. Rahmim¹, J. Tang², M. R. Ay³, F. M. Bengel¹

¹Johns Hopkins University, USA; ²Philips Healthcare, USA; ³Tehran 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^{1,2}, L. Ruthotto^{3,4}, M. Burger³, C. H. Wolters⁴, X. Jiang², K. Schaefer¹

¹European Institute for Molecular Imaging (EIMI), Germany; ²Institute for Computer Science, Germany; ³Institute for Computational and

Applied Mathematics, Germany; ⁴Institute 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. Ichihara¹, T. Natsume¹, I. Yoshida², G. Asanuma³, Y. Azumi⁴, S. Isaji⁴, H. Sakuma³

¹Fujita Health University School of Health Sciences, Japan; ²Fujita Health University Graduate School of Health Sciences, Japan; ³Mie University Hospital, Japan; ⁴Mie 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^{1,2}, M. Martisikova¹, B. Hesse¹, O. Jaekel^{1,3}
¹German Cancer Research Center, Germany; ²Heidelberg University Hospital, Germany; ³Heidelberg Ion Beam-Therapy Center (HIT), Germany

M19-15 A DOI PET Detector Having Extended Xtal Cube Structure

N. Inadama¹, T. Mitsuhashi^{2,1}, H. Murayama¹, F. Nishikido¹, E. Yoshida¹, H. Tashima¹, M. Suga^{2,1}, M. Watanabe³, T. Yamaya¹
¹National Institute of Radiological Sciences, Japan; ²Chiba University, Japan; ³Hamamatsu 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^{1,2}, Y. Choi¹, K. J. Hong¹, J. H. Kang^{1,2}, Y. S. Huh^{1,2}, H. K. Lim¹, S. S. Kim¹, J. W. Jung¹, K. B. Kim¹, B. T. Kim²
¹Sogang University, Korea; ²Sungkyunkwan University School of Medicine, Korea

M19-30 Improving SNR with a Maximum Likelihood Compressed Sensing Decoder for Multiplexed PET Detectors

G. Chinn^{1,2}, P. D. Olcott^{1,2,3}, C. S. Levin^{1,2,3}
¹Stanford School of Medicine, USA; ²Molecular Imaging Program at Stanford (MIPS), USA; ³Stanford University, USA

M19-35 Real-Time Imaging System for a Small OpenPET Prototype

H. Tashima¹, E. Yoshida¹, S. Kinouchi^{1,2}, M. Suga², F. Nishikido¹, N. Inadama¹, H. Murayama¹, T. Yamaya¹
¹National Institute of Radiological Sciences, Japan; ²Chiba University, Japan

M19-40 Exact Formulation of Stackgram Filters in Sinogram Domain

S. Peltonen, U. Ruotsalainen
Tampere University of Technology, Finland

M19-45 LaBr₃:Ce and SiPMs for Time-of-Flight PET: New Results

S. Seifert¹, H. T. van Dam¹, R. Vinke², M. R. de Boer¹, J. Huizenga¹, F. J. Beekman¹, H. Loehner², P. Dendooven², D. R. Schaart¹
¹Delft University of Technology, The Netherlands; ²University 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. Hohberg¹, T. Kuestner², J. Weidendorfer², S. Ziegler¹
¹Klinikum rechts der Isar, Germany; ²Institut 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. Panse¹, A. Jain¹, W. Wang¹, R. Yao², D. R. Bednarek¹, S. Rudin¹
¹Toshiba Siroke Research Center, SUNY University at Buffalo, USA; ²SUNY 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. Nishikido¹, T. Mitsuhashi², N. Inadama¹, T. Inaniwa¹, S. Satoh¹, H. Tashima¹, E. Yoshida¹, H. Murayama¹, T. Yamaya¹
¹National Institute of Radiological Sciences, Japan; ²Chiba University, Japan

M19-80 Tomographic and Planar Evaluation of Dual Head Small Animal PET

N. Efthimiou¹, S. Maistros¹, C. Tripolitis¹, A. P. Samartzis², G. Loudos³, G. Panayiotakis¹
¹Univ. of Patras, Greece; ²Evangelismos General Hospital, Greece; ³TEI 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^{1,2}, J. Lockwood², J. Strydhorst^{1,2}, M. Kordos², T. D. Ruddy², R. G. Wells^{1,2}
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M19-95 ProSPECTus: Towards an MRI Compatible, High-Sensitivity SPECT System

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M19-105 Performance of the SPECT System Based on PS PMT with Pin-Hole Collimator and Reduced Initial Projections

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M19-110 Planar and Tomographic (SPECT) Imaging of Small Volume Targets Using a Cross-Slit Collimator

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M19-120 Influence from High and Ultra-High Magnetic Field on Positron Range Measured with a 9.4TMR-BrainPET

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M19-125 Dual PET-TRUS Prostate Image Registration

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M19-135 Improved Contrast-to-Noise Ratio of Photon Counting Clinical X-Ray CT Images Using a Model-Selection Based Approach

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M19-140 Monte Carlo Characterization of Scattered Radiation Profile in Volumetric 64 Slice CT Using GATE

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M19-145 Phase-Contrast Imaging of Dental Samples

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M19-160 A Method for Improving the Efficiency of Myocardial Perfusion Imaging Using Conventional SPECT and SPECT/CT Imaging Systems

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M19-165 Feasibility Studies of Compton Camera System for Tomographic Imaging

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M19-175 The Tumor Resection Camera, a Gamma Imaging Probe for Radio-Guided Surgery

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M19-205 High Speed Imaging in Vivo with Synchrotron Radiation-Time Structure of a Bolus Injection in a Beating Heart

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M19-210 Performance Evaluation for 68Ga and 18F of the ARGUS Small-Animal PET Scanner Based on the NEMA NU-4 Standard

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M19-215 Evaluation of Attenuation and Scatter Correction Requirements as a Function of Object Size in PET Small Animal Imaging

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M19-220 Task-specific Evaluation of Low-dose, High-throughput Micro-CT Specimen Imaging

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M19-240 Investigation on 4D Statistical Image Reconstruction for Dynamic X-Ray Computed Tomography

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M19-255 Analytic reconstruction methods for list-mode time-of-flight (TOF) PET

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T.-S. Lee, B. M. W. Tsui, Johns Hopkins University, USA

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M19-315 Estimation of Rigid Body Motion Parameters for the ECAT HRRT Data Without Image Reconstruction

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M19-335 Cross-Talk Correction for Dual-Isotope Imaging with a Dedicated Cardiac SPECT Camera

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M19-340 Validation of NEMA NU4-2008 Scatter Fraction Estimation with 18F and 68Ga for the ARGUS Small-Animal PET Scanner

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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

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M19-350 Estimation of MR-Coil Attenuation in the Simultaneous PET/MR BrainPET

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M19-375 Extraction of Brain Regions for Image Diagnosis of Alzheimer-type Dementia Based on Atrophy Progress Speeds

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M19-380 System and Reconstruction Optimization in SPECT Using Model Observers for Different Tasks

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M19-385 EM Clustering for Holistic Search in Human-Model Observers

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M19-390 Spatial Resolution and Count-Dependent Assessment of Kinetic Parameter Estimates When Using 3D and 4D Reconstruction of Single PET Data Sets

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M19-395 Image Based Extraction of the Arterial Input Function in Cerebral PET Studies with O-15 Water

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M19-400 A Level Set Approach to Segmenting a Deforming Myocardium from Dynamically Acquired SPECT Projection Data

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M19-415 Improving the Convergence Rate in Affine Registration of PET Brain Images Using Histogram Matching

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M19-420 Deformation and Summation of Breath-Hold PET Images

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

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M19-430 Automatic Characterization and Segmentation of Classic Choroidal Neovascularization Using AdaBoost for Supervised Learning

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M19-435 Median Non-Local Means Filtering for Low SNR Image Denoising

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M19-450 Hardware Image Processing System Optimized for Biometrical Applications

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M19-460 Validation of a GATE Model of ¹⁷⁶Lu Intrinsic Activity in a Preclinical LSO PET System

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M19-465 Monte Carlo optimization of SiPM readout configurations for continuous LYSO blocks

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M19-470 Pushing the Spatial Resolution Limits in Positron Emission Tomography: the Effect of Inter-Crystal Scatter and Event Mispositioning with Sub-mm Crystals

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M19-475 Detector Response Function of the NanoPET/CT System

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M19-490 3D Extension for a Deformable Mesh Model of Cardiac Motion from Tagged and Untagged MRI Data

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Ron Keyser

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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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