IEEE Nuclear Science Symposium and Medical Imaging Conference

CONFERENCE PROGRAM

23-29 October 2011 - Valencia, Spain
Valencia Convention Center

18th International Workshop on
Room-Temperature Semiconductor X-Ray
and Gamma-Ray Detectors

Industrial Exhibition / Short Courses / Special Focus Workshops

David W. Townsend, General Chair
Conference e-mail: nssmic2011@ciemat.es
Conference web-site: www.nss-mic.org/2011
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Color Code

We have implemented a simple color coding scheme in an effort to provide a guide in the use of this program booklet and to consistently indicate the content of any given section.

The program section is divided by weekday to provide a complete package of sessions for each conference day. Each daily section includes oral, poster, joint, and special sessions and workshops.

The page color for oral and poster session content is reversed for clarity: oral presentation listings are contained in colored pages with the day indicated with a lighter watermark. Poster presentation pages are light color with a darker watermark.

At the beginning of each day, a Daily Schedule is presented to give an overview of the events for the respective day. The Daily Schedule uses lighter shades of the same colors used for each respective program. The colors shown below are used as indicated.

Session Titles

NSS Sessions
MIC Sessions
RTSD Sessions
Joint Sessions

Daily Program

Monday
Tuesday
Wednesday
Thursday
Friday
Saturday

Additional Daily Schedule Colors

Industrial Exhibit
Special Sessions and Workshops
Short Courses
Social Activities
<table>
<thead>
<tr>
<th>Day</th>
<th>VCC</th>
<th>Meliá</th>
<th>Sorolla</th>
<th>Off-Site</th>
</tr>
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<tbody>
<tr>
<td>Sat AM</td>
<td>SC1, SC2</td>
<td>xTCA Workshop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sat PM</td>
<td>SC1, SC2</td>
<td>xTCA Workshop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sun AM</td>
<td>SC3, SC4, SC5</td>
<td>xTCA Workshop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sun PM</td>
<td>SC3, SC4, SC5</td>
<td>xTCA Workshop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mon AM</td>
<td>NP1 (NSS Plenary), NP2 (NSS Plenary), R01, R02, SC6, SC7</td>
<td>NSS Refresher Course NSS Luncheon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mon PM</td>
<td>N1, N2, N4, N5, R03, R04, SC6, SC7</td>
<td>N3, N6, N7, N8, N9</td>
<td>NP1.M (Posters)</td>
<td></td>
</tr>
<tr>
<td>Tue AM</td>
<td>N10, N11, N16, N17, R05, R06, Industrial Exhibits</td>
<td>NSS Refresher Course N12, N13, N14, N15, N18, N19, N20, N21, NP3.M</td>
<td>NP2.S (Posters)</td>
<td></td>
</tr>
<tr>
<td>Tue PM</td>
<td>N22, N24, J1, J2, R08, Exhibitor Sessions Industrial Exhibits</td>
<td>N23, N25, NP4.M</td>
<td>RTSD.S</td>
<td>RTSD Luncheon</td>
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<tr>
<td>Wed AM</td>
<td>MIC Refresher Course, MIC1, MIC2, N26, N29, R09, R10, Exhibitor Sessions Industrial Exhibits</td>
<td>NSS Refresher Course N27, N28, N30, N31</td>
<td>NP5.S</td>
<td></td>
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<tr>
<td>Wed PM</td>
<td>MIC3, MIC4, MIC5, MIC6, R12, Exhibitor Sessions Industrial Exhibits Conference Reception</td>
<td>N32, N33, N34, N35, N36, N37, N38, N39</td>
<td>R11</td>
<td></td>
</tr>
<tr>
<td>Thu AM</td>
<td>MIC Refresher Course, MIC7, MIC8, R13, R14, Exhibitor Sessions Industrial Exhibits</td>
<td>N40, N41, N42, N43, N44, N45</td>
<td>MIC9.S</td>
<td></td>
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<tr>
<td>Fri AM</td>
<td>MIC Refresher Course, MIC13, MIC14, R17, R18</td>
<td>3He Workshop MIC15.S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fri PM</td>
<td>MIC16, MIC17, R19, R20, MIC Dinner</td>
<td>MIC18.M 3He Workshop</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sat AM</td>
<td>MIC Refresher Course, MIC19, MIC20</td>
<td></td>
<td>MIC21.S</td>
<td></td>
</tr>
<tr>
<td>Sat PM</td>
<td>MIC22, MIC23</td>
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<tr>
<td>Sun AM</td>
<td>Breast Cancer Workshop</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sun PM</td>
<td>Breast Cancer Workshop</td>
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Welcome from the General Chair

Welcome to the 2011 IEEE Nuclear Science Symposium and Medical Imaging Conference, and the Workshop on Room-Temperature Semiconductor X-Ray and Gamma-Ray Detectors that will be held in the beautiful Spanish city of Valencia from October 23rd – 29th.

As with previous meetings, this will be a wonderful 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 Meliá Valencia Palacio Congresos and the Sorolla Palace Hotel. The conference center is located in the northern part of 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 and I would encourage you to explore the city during your stay in Valencia.

The first IEEE NSS/MIC to be held in Europe took place in Lyon, France to celebrate the millennium in 2000, and since then successful European meetings have been held with a four-year cycle, in Rome (2004) and Dresden (2008). However, such has been the outstanding success of the European meetings that it was decided to hold the fourth meeting again in Europe in 2011, only three years after Dresden. Consequently, an international Organizing Committee has planned a meeting of high scientific level that includes oral and poster presentations, short courses and refresher courses on interesting scientific 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. As an attendee you will 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. You 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 this time of
year. A variety of interesting tours are offered so attendees and their companions can experience Valencia and the surrounding region to the full extent.

On behalf of the Organizing Committee, I am delighted to invite you to join us for the first ever IEEE NSS/MIC/RTSD to be held in Spain. The meeting is dedicated to the memory of our dear friend and colleague Professor Juan Antonio Rubio, and I very much look forward to welcoming you to Valencia in October 2011.

David Townsend
General Chair
Juan Antonio Rubio began his career as an intern of the former JEN (Spanish Nuclear Energy Council) in 1965. He continued his training at CERN in 1968. In the early days of democracy in Spain, he was appointed Head of the Nuclear Physics and Elementary Particle Division of the JEN. His experience enabled him to join one of the most exciting experiments at the time – the MARKJ in DESY under the direction of Nobel Prize winner Samuel C. C. Ting. In 1983 he was appointed Director of Basic Research and later Scientific Director at JEN. From this position, he promoted diversification of the Center, which ultimately became CIEMAT (Center for Research on Energy, Environment and Technology), to perform research in technological fields other than nuclear power, such as renewable energies, magnetic confinement fusion, environment, and information technologies. It was at this time that his Group joined the proposal for the L3 experiment at the LEP particle accelerator at CERN. In 1987, he joined CERN as a senior researcher, CERN Group leader for L3 and Scientific Advisor to the then Director General and Nobel Prize winner, Prof. Carlo Rubbia. He contributed to the original program of the LHC (Large Hadron Collider), was appointed coordinator of CERN for Latin America, and continued to take part in the L3 experiment.

As Head of the CERN Education and Technology Transfer Division during the period when Prof. L. Maiani was Director General, he promoted multiple Outreach and Technology Transfer programs, which contributed to producing technological applications from results of CERN research into basic sciences. His personal dedication was decisive in intensifying and consolidating relations with developing countries, particularly those in Latin America. He was Vice President of two national companies, ENUSA and
ENRESA, was an “ad personam” member of the STC (Scientific and Technical Committee) of EURATOM, the AGE (Advisory Group on Energy) of the European Commission, and founding member of EERA (European Energy Research Alliance). In 2001, he was honoured by His Majesty the King of Spain with the distinction of the "Encomienda de la orden del Mérito Civil" in recognition of his scientific and technical career as well as his contribution to the international presence of Spain. In June 2009, he received the Jaime-I Award in the area of New Technologies.

More recently, as the Director General of CIEMAT he promoted the development of Medical Imaging research, reallocating resources from related technologies such as solid-state radiation detectors, integrated electronics, Monte Carlo simulation and accelerators to medical imaging. To emphasize his growing interest in medical imaging, he was a major proponent of holding an IEEE NSS MIC conference in Spain and successfully secured the 2011 meeting for Valencia. Sadly, he passed away in January 2010 before he could enjoy the fruits of his IEEE success. In honor of our dear friend and colleague Juan Antonio, the 2011 IEEE Nuclear Science Symposium and Medical Imaging Conference is dedicated to his memory, in deep appreciation for his personal interest and lasting support for this meeting.
Registration

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 only registration method available is through the conference web site, as it places your details directly into our database, and where you can pay by Visa or MasterCard through our secure web server. Checks or money orders must be paid in euros and be drawn on or paid through a bank. Wire transfers will be accepted only under special circumstances, and will be charged a € 50 service fee. For wire transfer information please contact Fundación Universidad Carlos III (see below). NOTE: Registration and payment must be received by October 5, 2011 to qualify for reduced registration, lunches, tours, dinners, and short course fees.

Payment by Mail

Send payment (made out to IEEE 2011 NSS/MIC/RTSD) to:

Attn: Sergio Santiago
Fundación Universidad Carlos III C/ Madrid 126
28903 Getafe – Madrid / Spain
fax: +34 (91) 6249147
e-mail: registration@fund.uc3m.es
Alicia de Frutos phone: +34 (91) 6249145
Sergio Santiago phone: +34 (91) 6249142

Electronic Registration


On-site Registration

All on-site registration will be performed via the online registration page. If you choose to register on-site, you must first register yourself online. You may do this via any computer with internet access. There will be computers near the registration desk that you may use to register. Next, proceed to the “On-site Registration” booth of the Registration desk where you will obtain your nametag, conference bag, and any tickets you have purchased. A nametag is required to attend all conference events, so you must visit the Registration desk after you have electronically registered.

Note: Checks and money orders WILL NOT be accepted on-site. Payment on-site must be made via credit card or cash.
An acknowledgement of your registration will be sent upon its receipt and payment. Please address any questions via e-mail (Attn: IEEE 2011 NSS/MIC/RTSD) or by phone.

**Registration Hours at the Conference**

Registration and general information will be available during the following times at the IEEE Registration Desk located in the Valencia Convention Center in the Entrance Level.

<table>
<thead>
<tr>
<th>Date</th>
<th>Monday, October 24</th>
<th>Tuesday, October 25</th>
<th>Wednesday, October 26</th>
<th>Thursday, October 27</th>
<th>Friday, October 28</th>
<th>Saturday, October 29</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time</td>
<td>07:30 - 18:30</td>
<td>07:30 - 18:30</td>
<td>07:30 - 18:30</td>
<td>07:30 - 17:00</td>
<td>07:30 - 12:00</td>
<td>07:30 - 09:00</td>
</tr>
</tbody>
</table>

**Conference Registration Fees**

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<tr>
<th></th>
<th>By Oct. 5</th>
<th>After Oct. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEEE Member¹</td>
<td>€ 495</td>
<td>€ 595</td>
</tr>
<tr>
<td>Non-IEEE Member</td>
<td>€ 605</td>
<td>€ 705</td>
</tr>
<tr>
<td>IEEE Student¹,²</td>
<td>€ 200</td>
<td>€ 250</td>
</tr>
<tr>
<td>Non-IEEE Student²</td>
<td>€ 300</td>
<td>€ 350</td>
</tr>
<tr>
<td>One Day Only³</td>
<td>€ 200</td>
<td>€ 200</td>
</tr>
<tr>
<td>IEEE Retired/Unemployed¹</td>
<td>€ 150</td>
<td>€ 190</td>
</tr>
<tr>
<td>IEEE Life Member¹,⁴</td>
<td>No Charge</td>
<td>No Charge</td>
</tr>
<tr>
<td>Continuing Education Program Only</td>
<td>No Charge</td>
<td>No Charge</td>
</tr>
</tbody>
</table>

¹ IEEE member number required at registration.
² Proof of student status required at registration. Students who want to pre-register and take advantage of the reduced IEEE Student or Non-IEEE Student registration fee need to provide proof of student eligibility by emailing a copy of a student status certificate or ID card to registration@fund.uc3m.es by October 21st AND by bringing the original student status certificate or ID card to the registration desk in Valencia. If official proof of student status is not provided, the participant will be required to pay the full non-student registration fee to attend the conference. Additionally, postdoctoral individuals (postdocs) do NOT qualify for the reduced Student registration rates.
³ Valid for one day only. Must specify day. Multiple day tickets are not allowed. For 2 or more days, the full registration will be charged.
⁴ Life Members must contact the Registration Chair to obtain their complimentary registration.
**Workshops Fees**

<table>
<thead>
<tr>
<th>Workshop</th>
<th>By Oct. 5</th>
<th>After Oct. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshop on ATCA and MicroTCA for Physics, Sat. &amp; Sun. Oct. 21-22</td>
<td>€ 60</td>
<td>€ 80</td>
</tr>
<tr>
<td>5th International Workshop on the Molecular Radiology of Breast Cancer</td>
<td>€ 110</td>
<td>€ 160</td>
</tr>
<tr>
<td>Sun. Oct. 30</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Luncheon/Dinner Fees**

<table>
<thead>
<tr>
<th>Luncheon/Dinner</th>
<th>By Oct. 5</th>
<th>After Oct. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSS Luncheon (Mon. Oct. 24)</td>
<td>€ 35</td>
<td>€ 45</td>
</tr>
<tr>
<td>RTSD Luncheon (Tue. Oct. 25)</td>
<td>€ 35</td>
<td>€ 45</td>
</tr>
<tr>
<td>MIC Dinner (Fri. Oct. 28)</td>
<td>€ 45</td>
<td>€ 55</td>
</tr>
</tbody>
</table>

**Cancellation and Refund Policy**

All cancellations (partial or full) must be received in writing by October 15, 2011 for consideration. Approved refunds (less a € 50 administrative fee) will be issued after November 30, 2011. No refunds will be issued for requests after October 15, 2011.

**Short Courses**

<table>
<thead>
<tr>
<th>Short Course*</th>
<th>By Oct. 5</th>
<th>After Oct. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC1: Experimental Techniques in Nuclear and Particle Physics</td>
<td>€ 325</td>
<td>€ 375</td>
</tr>
<tr>
<td>SC2: High-Precision Calorimetry for Particle and Nuclear Physics Experiments</td>
<td>€ 275</td>
<td>€ 325</td>
</tr>
<tr>
<td>SC3: Integrated Circuits for Time and Amplitude Measurement of Nuclear Radiation Pulses</td>
<td>€ 275</td>
<td>€ 325</td>
</tr>
<tr>
<td>SC4: Statistical Approaches to Tomographic Reconstruction</td>
<td>€ 275</td>
<td>€ 325</td>
</tr>
<tr>
<td>SC5: Kinetic Modeling</td>
<td>€ 275</td>
<td>€ 325</td>
</tr>
<tr>
<td>SC6: Statistical Approaches to Medical Image Analysis</td>
<td>€ 275</td>
<td>€ 325</td>
</tr>
<tr>
<td>SC7: Physics and Design of Detectors for SPECT and PET</td>
<td>€ 275</td>
<td>€ 325</td>
</tr>
</tbody>
</table>

* IEEE Members receive a € 25 discount

**IEEE Membership**

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

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

HOTEL AND CONVENTION CENTER

The meeting will be held at the Valencia Conference Centre (designed by Sir Norman Foster) and two adjacent hotels: the Meliá Valencia Palacio Congresos Hotel and the Sorolla Palace Hotel. The conference center is located in the northern part of city, with easy access to the airport, and within walking distance of a variety of other hotels in all categories.

CONFERENCE 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/2011

TRANSPORTATION TO THE CONVENTION CENTER FROM THE AIRPORT

By taxi: The journey takes about 25 minutes and costs around € 16-20. Taxi journeys that start at the airport always include an excess fare of € 3,50. Most taxis do not allow credit card payments, so be sure to have euros for the taxi fare.

By underground: There are two underground lines which link the airport, the city center and the port: Line 3 (Rafelbunyol-Aeroport) and Line 5 (Marítim-Serrería/Torrent Av.-Aeroport).

When arriving at Valencia Airport, the shortest way to get to the Valencia Conference Centre is getting the line 5 direction Maritim-Serrería, get off at the station called Angel Guimerá; from there, take line 1 direction Seminari-CEU and get off at Beniferri. Finally, there is approximately a 5 minute walk to reach the Valencia Conference Center.

PARKING

Near the Valencia Conference Centre is a large underground car park with closed-circuit television monitored by a security service with space for up to 600 cars. There are also two smaller outdoor car parks with room for 22 coaches or buses and 45 authorised vehicles.

The car park opens at 07:30. The fees are € 1.50 per hour (for the use of the car park for less than 12 hours), with a daily fee of € 12.

WEATHER

Autumn is a particularly pleasant season in Valencia, with daytime mild temperatures of around 20º C / 68º F.
**Computer access**

Rooms 8 and 9 in VCC and Rooms 4/5 in Melia Hotel will have 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 2010 will be loaded on all computers. In addition, wireless Internet access will be available in front of the Auditoriums and in the cafeteria of the VCC, in the lobby and Rooms 4/5 of Melia Hotel and in the lobby of Sorolla Hotel.

**Smoking Policy**

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

**Social Activities**

The conference program includes a number of social activities, some of which are complimentary to all attendees. Program-specific events are not exclusive to those focused on the respective program and are open to all attendees. The table below is the list of lunches, dinners, and receptions (including any applicable fee) that are scheduled during the conference.

Please note that the Conference Reception is a buffet dinner event, and the Exhibitor Reception is a drink and finger-food event.

<table>
<thead>
<tr>
<th>Event</th>
<th>Date/Time</th>
<th>Location</th>
<th>Fees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome Drink</td>
<td>Sun, Oct 21 18:00</td>
<td>VCC</td>
<td>Complimentary</td>
</tr>
<tr>
<td>NSS Luncheon</td>
<td>Mon, Oct. 22 13:00</td>
<td>Meliá Valentina A&amp;B&amp;C</td>
<td>€ 35 (by Oct.5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>€ 45 (after Oct. 5)</td>
</tr>
<tr>
<td>Exhibitor Reception</td>
<td>Tue, Oct. 25 19:00</td>
<td>VCC Multipurpose Room 1 &amp; 2</td>
<td>Complimentary</td>
</tr>
<tr>
<td>Conference Reception</td>
<td>Wed, Oct. 26 19:00</td>
<td>VCC</td>
<td>Complimentary</td>
</tr>
<tr>
<td>RTSD Luncheon</td>
<td>Tue, Oct. 25 12:45</td>
<td>Hotel Ayre Astoria Palace</td>
<td>€ 35 (by Oct.5)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>€ 45 (after Oct. 5)</td>
</tr>
<tr>
<td>MIC Dinner</td>
<td>Fri, Oct. 28 20:00</td>
<td>VCC Multipurpose Room 2</td>
<td>€ 45 (by Oct.5)</td>
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<tr>
<td></td>
<td></td>
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<td>€ 55 (after Oct. 5)</td>
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“¡Una cálida bienvenida a Valencia!”
(“A warm welcome to Valencia!”)

Located on the Mediterranean coast, Valencia offers a unique cultural identity. Valencia is not just another Spanish city. It has always considered itself a state within a state, it has held on to its own unique traditions and they are still very much alive in the 21st century. Valencia has a totally stunning and compact old town center, packed with gorgeous buildings, historic sights, squares, gardens, museums, and charming little streets. It is a total delight to get lost in it while soaking up the atmosphere. The Historic Center (Old Town) bears the marks of 2000 years in a spectacular mix of Roman, Muslim and Christian civilizations. But it doesn’t end there - walking through Valencia you will see ultra-modern, breath-taking, futuristic architecture contrasting with the gothic, baroque and classical. Valencia is also a beach city. While you have many sights and culture to fill your leisure time to the limit, you can always just drop down to the beach and relax under the sun.

The Companion Program provides a daily selection of guided excursions to places of interest both within and outside of the city. All tours will depart from and return to the Companion Program Meeting Area in the Valencia Convention Center. This meeting area will be available as a lounge for all registered companions to gather during the conference. Information about the Valencia 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 Valencia. Please contact any of us for more information.

Kathy Gullberg
Companion Program Co-Chair

Carolyn Hoffman
Companion Program Co-Chair

Antonio Gonzalez
Companion Program Co-Chair
<table>
<thead>
<tr>
<th>Tour Number and Name</th>
<th>Date</th>
<th>By Oct. 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1 - The Caves of San Jose in Vall d’Uixo/ Sagunto-Roman City</td>
<td>Sun. Oct.23</td>
<td>€ 55</td>
</tr>
<tr>
<td>T2 - Valencian Port Sports City &amp; Catamaran Boat Cruise</td>
<td>Sun. Oct.23</td>
<td>€ 50</td>
</tr>
<tr>
<td>T3 - Valencian Port Panoramic/Lladró Tour</td>
<td>Mon. Oct.24</td>
<td>€ 35</td>
</tr>
<tr>
<td>T4 - The City of Arts and Sciences/ Oceanographic Visit</td>
<td>Mon. Oct.24</td>
<td>€ 60</td>
</tr>
<tr>
<td>T5 - Old Town Valencia</td>
<td>Tue. Oct.25</td>
<td>€ 40</td>
</tr>
<tr>
<td>T6 - Valencian Palaces</td>
<td>Tue. Oct.25</td>
<td>€ 40</td>
</tr>
<tr>
<td>T7 - Peñíscola, a Legendary Town</td>
<td>Wed. Oct.26</td>
<td>€ 60</td>
</tr>
<tr>
<td>T5 - Old Town Valencia</td>
<td>Thu. Oct.27</td>
<td>€ 40</td>
</tr>
<tr>
<td>T1 - The Caves of San Jose in Vall d’Uixo/ Sagunto-Roman City</td>
<td>Thu. Oct.27</td>
<td>€ 55</td>
</tr>
<tr>
<td>T9 - Lladró Museum/Albufera Nature Reserve with Paella Tasting</td>
<td>Fri. Oct.28</td>
<td>€ 75</td>
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<tr>
<td>T6 - Valencian Palaces</td>
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<td>€ 40</td>
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<tr>
<td>T7 - Peñíscola, a Legendary Town</td>
<td>Sat. Oct.29</td>
<td>€ 60</td>
</tr>
</tbody>
</table>

Please note:
- Individual tours are subject to cancellation and refund of tour fees if an insufficient preregistration is achieved prior to October 5, 2011.
- The fees in the table above are set for early registration. There may be limited late or on-site registration for an additional 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 a hostess from the Companion Program committee.
- A detailed data sheet for each tour may be found on the conference website.
- Please consult the General Terms and Conditions on the website.
This half day excursion will take us 45 km north of Valencia near the town of Vall d’Uixó where we will visit the caves of San José, a spectacular natural cave that can be visited by boat along one of the longest underground river courses in Europe.

We will then travel a little to the south to the modern fertile district of Camp De Moveredre to the ancient city of Sagunto. Historically known as Saguntum or later Morvedre, Sagunto was an ally of Rome when it was besieged and captured by the Carthaginians under Hannibal and later captured by Rome in 214 BC and made a Municipium. An important prosperous city, Sagunto was later ruled by Visigoths, and in the eighth century became part of the Caliphate of Cordoba where it remained under the Muslim Arab rule for over five hundred years when James I of Aragon conquered it in 1238.

Our guided tour will start in the historic center to understand the influence and heritage of its different cultures. We will then climb to the Roman fortification built on top of the hill to see the existing Roman theater and the castle with its picturesque walled ramparts of Roman and Moorish origin.

This half day tour is rated as a moderate activity, and good walking shoes are recommended. The tour includes shuttle service, tourist guide, and boat and museum tickets. Lunch is not included.

This half day excursion will take us around the port of Valencia and the Malvarrosa beaches and culminate with a one hour catamaran boat trip sailing the Port waters of the beautiful Mediterranean Sea. The tour will allow us to discover a modern port, which has undergone a massive change in the last few years, primarily due to the fact that since 2007, Valencia has hosted two of the world’s biggest sporting events: the America’s Cup and the Formula 1 (F1) motorcar race. Valencia hosted the F1 competition in 2009 and 2010 on the Valencia Street Circuit and is framed by the Grao area which passes through the inner docks of the port, the port and the old bed of the Turia River.

Valencia is blessed with special natural characteristics and with the local climatology making the Gulf of Valencia an excellent course for regattas. Thanks to these conditions, the city became the first European city to host the America's Cup in the event's 150+ year history. The America’s Cup is an international sailing competition, a challenge between two boats in which there is only one winner. We will enjoy the panoramic views from the Veles e Vents balcony, a modern building designed for the 2007 America’s Cup and conclude the tour with a one hour ‘catamaran’ boat trip, sailing the Port waters of the Mediterranean Sea.

The tour is rated as an easy activity. The tour includes shuttle service, tourist guide, and catamaran tickets. Lunch is not included.
This half day excursion tour will begin with a tour to the “City of Porcelain” where the famous Lladró porcelain pieces are made. Thousands of people worldwide collect Lladró, and it would be difficult to walk along the streets of any Spanish town without seeing a few pieces for sale. This beautiful and hand painted Spanish porcelain with its delicate colors is truly one of Spain’s great success stories. Our guided tour will allow us to visit a production line at the factory as well as an opportunity to visit the Museum Boutique, one of the largest Lladró Boutiques in the world. After the Lladró tour, we will visit the Valencia Port. A panoramic tour will show us the modern port, which has undergone a massive change in the last few years, primarily due to the fact that since 2007, Valencia has hosted two of the world’s biggest sporting events: the America’s Cup and the Formula 1 motorcar race.

Valencia is blessed with special natural characteristics and with the local climate making the Gulf of Valencia an excellent course for regattas. Thanks to these conditions, the city became the first European city to host the America’s Cup in the event’s 150+ year history. The America’s Cup is an international sailing competition, a challenge between two boats in which there is only one winner. Today, after 159 years of history, the continued success of the event is based on three key factors: teamwork, strategy and technology. We will enjoy the panoramic views from the Veles e Vents balcony, a modern building designed for the 2007 America’s Cup. The tour guide will provide general information regarding the sports events. The F1 competition was held in 2009 and 2010 on the Valencia Street Circuit framed by the Grao area which passes through the inner docks of the port, the port and the old bed of the Turia River.

The tour is rated as an easy activity. The tour includes shuttle service, tourist guide, and tour at the Lladró factory. Lunch is not included.

This half day tour will give us insight into the most important modern tourist destination in the city of Valencia. The City of Arts and Sciences is an entertainment-based cultural and architectural complex in the city situated at the end of the old riverbed Turia. A bypass of the Turia river began after the great flood of Valencia in 1957 and the Turia riverbed became a park and garden in 1980. Designed by Santiago Calatrava and Félix Candela, the City of Arts and Sciences was inaugurated April 16, 1998 with the opening of L’Hemisferic. Today the complex includes the Hemisferic, the Sciences Museum, the Umbracle gardens, the Opera House, and the Oceanographic, the largest aquarium in Europe. We will take a stroll among these amazing structures and learn more about the building of this stunning architecture. We will then visit the Oceanographic with its 45,000 living creatures from 500 different species represented in the planet’s main marine ecosystems. Our guide will lead us through
the different buildings housing examples of ecosystems from the Mediterranean, Wetlands, Temperate and Tropical, Antarctic, Arctic, and Delfinarium.

The tour is rated as an easy activity. The tour includes shuttle service, tourist guide, and Oceanographic tickets. Lunch is not included.

T5 - Old Town Valencia
Tuesday, October 25 – 09:00 to 13:30
Thursday, October 27 – 09:00 to 13:30
Cost: €40

Valencia has been the home of many cultures. Founded by the Romans, the Visigoths, Moors, and the Aragonese have all made the city an important cultural and historical center. Valencian architecture is very rich and combines gothic, modernism, and baroque styles.

Our half day walking tour will begin at the Serrano Towers, main doorway of the medieval walls that once protected the city. We will learn about the origins of Valencia and see some of the most representative monuments in the historical city center including:

• The Cathedral of Valencia with its various architectural styles from the romanesque to the baroque. Inside, we will discover the fresco paintings above the main altar, the magnificent dome, and the Holy Grail Chapel that contains an agate cup which is said to be the chalice used by Jesus during the last supper.

• The Palacio de la Generalitat constitutes a fabulous example of the gothic architecture in Valencia.

• The Basilica of the Holy Mary of the Forsaken dedicated to the patron saint of Valencia was built in the 17th century by Diego Martínez Ponce de Urrana in the Baroque style.

• The Lonja (the Silk Exchange), one of the most famous civil gothic monuments in Europe built in 1493 and a UNESCO World Heritage Site.

• The Central Market, one of the largest food markets in Europe.

The visit will end at one of the most photographed places in the city: the spectacular baroque style façade of the Marqués de Dos Aguas Palace.

The tour is rated as an easy activity, but good walking shoes are recommended. The tour includes shuttle service, tourist guide, and museum tickets. Lunch is not included.
This half day walking tour will take us across the old city grounds of Valencia discovering some of the former palaces that allow us to imagine the old lifestyle in Valencia. We will pass many Gothic-style buildings and palaces of the Historic Center of Valencia during the tour.

The Palacio de Benicarló was built in the late fifteenth century as the residence of the family of the Borgia, Duke of Gandia, on the site of a previous building which was a Grammar and Art School (1408). Since then, there have been many renovations of the palace, though it retains its Gothic portal. Nowadays it is the headquarters of the Valencian Parliament. The construction of the Palacio de la Generalitat dates back to 1421 as the seat of the Generalitat Valenciana and Provincial General. The central body of the building is in late Gothic style. Today, its three floors serve as private palaces of the city. The Palacio de los Boil, owned by the Marquis of Scala, assimilates and repeats the patterns of the typical gothic mansion, with a few later additions in the renaissance style. The building is made up of two distinct constructions with two main entrances and two courtyards which are joined by a stairway that runs below an oval-shaped dome. We will visit the old Gothic building of the Palacio del Marques de dos Aguas, constructed by the family of Perellós Rabassa and now a historical-artistic monument. Today, it is the National Museum of pottery. Finally, we will visit the façade of the Gothic medieval Palace del Almirante, the most important private architecture in the Gothic style that remains in Valencia.

This half day walking tour is rated as an easy activity. Good walking shoes are recommended. The tour includes shuttle service, tourist guide, and museum tickets. Lunch is not included.

This full day excursion will take us back in time to the Renaissance Middle Ages. We will travel 145 km (approx. 90 miles) north of Valencia to visit the small fishing village of Peñíscola, a jewel in the crown of the beautiful coast of eastern Spain. Peñíscola consists of a mix of old and new with the fortified old quarters rising out of the sea to form almost an island of incredible beauty. On the highest part of the outcrop of rock stands the castle: a watchtower and impregnable fortress surrounded by the city walls that were built over different periods to protect the old city. The medieval fortifications of the south and east faces were built between the 13th and 15th centuries. Just up from Saint Peter’s Gate is the Fountain’s Wall (Muralla de la Fuente), which comes to an end at Saint Anne’s battery (Batería de Santa Ana). The Renaissance fortification was planned by J.B. Antonelli and built in the 16th century. It was an ambitious project that took in the Artillery Store and Saint Peter’s Gate, but it could not be finished. An ornamental cordon runs the length of the masonry wall.
walls, and watchtowers at each corner make Peñíscola an impregnable crag of rock, which is unique and has an unusual beauty.

The Renaissance style is widespread throughout the city. We will visit the Dark Gate (Portal Fosc), the main entrance to the city until the 18th century and The Artillery Store, and the third gate to the city, Saint Mary’s Gate, which was built in 1754 by order of Ferdinand VI to improve access to the city. Inside the gate is Les Escaseres Square, next to the Saint Anne’s chapel. A visit to this less known chapel (which dates back to 1827 and is of great historical interest) is a must when strolling through the narrow streets of the old city.

This full day tour is rated a strenuous activity and good walking shoes are a must. The tour includes shuttle service, tourist guide, museum tickets and a box lunch.

T8 - IVAM and Museum of Fine Arts San Pio V
Wednesday, October 26 – 14:30 to 18:30
Cost: € 40

This half day excursion will include visits to two important art museums in Valencia. The IVAM (Contemporary Valencian Art Institute) is a new building with galleries designed for permanent and temporary exhibitions. The exhibitions are mainly focused on the evolutionary process of Art, from the classical vanguard crisis right up to the seventies. The Julio González and Pinazo collections are on permanent display. There is also a display that includes parts of the medieval Valencian city wall that was destroyed over 100 years ago.

We will also visit the Museum of Fine Arts San Pio V, the second most important art collection in Spain. This huge museum is filled with works from 14th century to the 20th century. The museum is largely dominated by 13th-15th century iconography and the golden age of 17th century Baroque, but there are also works from the Renaissance and the 18th-19th century movements. You will find, among others, Ribaltas, El Greco, van Dyck, Bosch, Velazquez and Goya. The museum also shows some Sorollas masterpieces, the most representative Valencian painter of the late 19th Century. There are also many archeological items on display.

The historical building that houses the museum was originally the San Pío Seminary College, founded in 1683 by Brother Juan Tomás de Rocaberti, the Archbishop of Valencia. The building has been used for several different purposes: A Military Cadet Academy, a Charity Center, an army supplies storehouse and a Military Hospital until
1946 when it was chosen to be used for the Museum of Fine Arts. The tour is rated as an easy activity. The tour includes shuttle service, tourist guide, and museum tickets. Lunch is not included.

T9 - Lladró Museum/Albufera Nature Reserve with Paella Tasting
Friday, October 28 – 09:00 to 18:00
Cost: € 75

This full day tour will begin with a tour to the “City of Porcelain” where the famous Lladró porcelain pieces are made. Thousands of people worldwide collect Lladró, and it would be difficult to walk along the streets of any Spanish town without seeing a few pieces for sale. This beautiful Spanish porcelain with its delicate colors, every single piece hand painted, is truly one of Spain’s great success stories. Our guided tour will allow us to visit a production line at the Lladró factory as well as an opportunity to visit the Museum Boutique, one of the largest Lladró Boutiques in the world.

We will then travel to the fishing village of El Palmar where we will enjoy a Valencian paella for lunch. El Palmar is located in the Albufera Nature Reserve, an important stopover point for migratory birds and a nesting area for resident birds. After lunch we will sail the main lake in a typical fishing boat to observe the manner in which the local people follow fishing traditions established some 750 years ago and the unique configuration of rice fields and agricultural plots divided by canals and linked by small, narrow bridges.

This full day tour is rated as an easy activity. The tour includes shuttle service, tourist guide, museum/excursion tickets and the paella lunch.
Presentations and Posters Guidelines

Oral Presentations Instruction

Presentation files must be in Windows-compatible PowerPoint or PDF format. Note that the laptops used for the presentations are under Windows7 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 Room at the entrance of Auditorium 2 in VCC or in Rooms 4/5 in Meliá Valencia Palacio de Congresos Hotel, 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.

Poster Presentation Instruction

RTSD Poster presentations will be in Hotel Sorolla Palace, room Gran Recati. NSS and MIC Poster presentations will be in Hotel Sorolla Palace, room Gran Recati, and in Meliá Valencia Palacio de Congresos Hotel, rooms A+B. The poster panels are made to fit poster size DIN-A0 (84 cm wide x 119 cm high). Adhesive tape 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, RTSD, and MIC posters will share the same space with their respective display times shown in the table below. It is recommended that poster authors display 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. After that time the poster board will be labeled as no show and no late installation will be allowed.

<table>
<thead>
<tr>
<th>NSS</th>
<th>Sunday 17:00 to Monday, 08:00</th>
<th>Wednesday, 16:00-17:00</th>
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</thead>
<tbody>
<tr>
<td>MIC</td>
<td>Wed. 18:00 to Thursday 08:00</td>
<td>Saturday, 13:00-14:00</td>
</tr>
<tr>
<td>RTSD</td>
<td>Sunday 17:00 to Monday, 08:00</td>
<td>Wednesday, 16:00-17:00</td>
</tr>
</tbody>
</table>

Posters that are not removed on time will be subject to disposal.
The Conference Record (CR) is the official repository for manuscripts presented at the 2011 Nuclear Science Symposium and Medical Imaging Conference. It will be published on DVD-ROM, complimentary to all registered conference attendees. All Conference Record manuscripts will be made available online at http://www.nss-mic.org/2011/ConferenceRecord before the DVD-ROMs are mailed out.

The approved word processor templates, available in PDF, MS Word, and LaTeX format can be downloaded from http://www.nss-mic.org/2011/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 DVD-ROM, please follow this procedure for the Conference Record manuscript submission:

1. **Produce IEEE Xplore-compatible PDF file using PDF eXpress**
   - 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 DVD-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 5, 2011.

All manuscripts submitted through the conference web site will be made available immediately at the “Conference Record” web link.
Only those that meet the following requirements will be included in the DVD-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 5 deadline.

Guest Editor
Mokhtar Chmeissani
Institut de Física d’Altes Energies (IFAE)
Phone: +34-93-581-2846
Email:mokhtar@ifae.es

The Guest Editor will be available in the Organizers Room #1, VCC, during the coffee breaks on Tuesday to Friday 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 present a set of conclusions supported by the measured and/or calculated data. The paper should be sufficiently complete that others with comparable equipment could repeat the work.

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

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

For further information regarding the Transactions on Nuclear Science, contact:
TNS Editor in Chief
Paul Dressendorfer
Sandia National Laboratories (retired)
p.dressendorfer@ieee.org
+1-505-292-5965

TNS Senior Editors
Radiation Instrumentation - NSS
Zane Bell
Oak Ridge National Laboratory
bellzw@ornl.gov
+1-865-574-6120

Nuclear Medical and Imaging Sciences - MIC
Joel Karp
University of Pennsylvania Health System
joelkarp@mail.med.upenn.edu
+1-215-662-3073

Transactions on Medical Imaging (TMI)

Authors of medical imaging papers may alternatively choose to submit their manuscripts to the IEEE Transactions on Medical Imaging through 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
milan-sonka@uiowa.edu
+1-319-335-6052

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.
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<th>Transactions on Nuclear Science (TNS)</th>
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<td>Standard IEEE Transactions and Journal format</td>
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<td><strong>Use of color</strong></td>
<td>Free and encouraged</td>
<td>Free for online version; at author's expense for print version</td>
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<td><strong>Page Limit</strong></td>
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<tr>
<td><strong>Availability</strong></td>
<td>Online immediately, CD out before end of 2011 to all attendees</td>
<td>Published throughout the year</td>
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**Short Course Program**

An excellent set of short courses will be given at the start of the NSS/MIC programs, covering a wide range of nuclear and medical imaging technology. All courses are one day in length. The first lecture will begin at 09:30. Lunch, refreshments, lecture notes, and a certification of completion are also provided as part of the short course registration fee.

**Joao Varela**  
NSS Short Course Chair  

**Grant Gullberg**  
MIC Short Course Chair

**Short Course Location and Schedule**

<table>
<thead>
<tr>
<th>Short Course</th>
<th>Date</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>SC1: Experimental Techniques in Nuclear and Particle Physics</td>
<td>Sat, Oct.22</td>
<td>VCC 1&amp;2</td>
</tr>
<tr>
<td>SC2: High-Precision Calorimetry for Particle and Nuclear Physics Experiments</td>
<td>Sat, Oct.22</td>
<td>VCC 3&amp;4</td>
</tr>
<tr>
<td>SC3: Integrated Circuits for Time and Amplitude Measurement of Nuclear Radiation Pulses</td>
<td>Sun, Oct.23</td>
<td>VCC 1&amp;2</td>
</tr>
<tr>
<td>SC4: Statistical Approaches to Tomographic Reconstruction</td>
<td>Sun, Oct.23</td>
<td>VCC 3A</td>
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<tr>
<td>SC5: Kinetic Modeling</td>
<td>Sun, Oct.23</td>
<td>VCC 3&amp;4</td>
</tr>
<tr>
<td>SC6: Statistical Approaches to Medical Image Analysis</td>
<td>Mon, Oct.24</td>
<td>VCC 3&amp;4</td>
</tr>
<tr>
<td>SC7: Physics and Design of Detectors for SPECT and PET</td>
<td>Mon, Oct.24</td>
<td>VCC 1&amp;2</td>
</tr>
</tbody>
</table>

**Short Course Session Times**

- 09:30-11:00 session 1
- 11:00-11:30 morning break
- 11:30-13:00 session 2
- 13:00-14:30 lunch
- 14:30-16:00 session 3
- 16:00-16:30 afternoon break
- 16:30-18:00 session 4

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**Joao Varela**  
NSS Short Course Chair

**Grant Gullberg**  
MIC Short Course Chair
SC1: Experimental Techniques in Nuclear and Particle Physics
Saturday, October 22, 09:30-18:00, VCC, Room 1&2

Organiser: Stefaan Tavernier, Vrije Universiteit Brussel, Belgium
Instructors:
- Stefaan Tavernier, Vrije Universiteit Brussel, Belgium
- Danek Kotlinski, Paul Scherrer Institute, Switzerland

Course Description:
This one-day course provides an introduction to the design and the use of instruments for the detection of energetic subatomic particles. Emphasis is on the fundamental processes that govern the operation of such detectors, rather than on operational details of specific instruments. The class begins with a brief overview of the interactions of energetic subatomic particles in matter. Nearly all detectors are either based on the use of ionisation in gases, on the use of ionisation in semiconductor materials, or on the use of scintillation light; and this classification is used to structure the course. Examples of applications of these detectors in particle physics, in nuclear physics, in homeland security, and medical imaging will be given.

There are no prerequisites for attending this course other than the standard physics and mathematics that is part of any curriculum in physics or engineering. A copy of the textbook, “Experimental techniques in nuclear and particle physics” by S. Tavernier, as well as a set of copies of the presentations, are provided to the registrants.

Course Outline:
- Interactions of energetic subatomic particles in matter
- Detectors based on ionisation in gases
- Detectors based on ionisation in semiconductors
- Detectors based on scintillation
- Electronics and noise

Instructors:
STEFAAN TAVERNIER is professor of physics at the faculty of sciences of the Vrije Universiteit Brussel, served as head of the physics department for 5 years, and was chairman of the Research board for Science and Applied science for 5 years. He was spokesperson of the Crystal clear collaboration for 15 years. He has over 160 scientific publications, has 3 patents and is author or co-author of 2 books. He has made essential contributions to the several major high energy physics detectors, and he also made important contributions to the development of instrumentation for medical imaging, especially to PET.

DANEK KOTLINSKI is a Senior Physicist at the Paul Scherrer Institute in Switzerland. He received his Ph.D. from the University of Rochester in 1984. His research interests are primarily in the area of particle detectors and instrumentation for high energy and nuclear physics. Presently these include applications of semiconductor silicon detectors in particle physics, for example, pixel vertex detectors. Other primary research interests are detector readout electronics and data reconstruction algorithms. Since 1994 he has been one of the main developers of the pixel detector build for the CMS/LHC experiment located at CERN.
Organiser: Erika Garutti, DESY, Germany
Instructors:
  Erika Garutti, DESY, Germany
  Michele Livan, University of Pavia, Italy
  Frank Simon, Max-Planck-Institute Physics, Germany

Course Description:
This one-day course is intended to provide a general overview of the state of the art of calorimetry for particle and nuclear physics experiments. The course is targeted to physicists and detector specialists. The lectures cover the technology frontier aspects of calorimetry, in terms of available material and modern concepts for photons, electrons, and hadrons measurements.

Emphasis is given to high energy physics applications, but also links to calorimetric techniques in photo-science and medical applications are given. The most modern readout techniques are discussed and compared. All aspects of large scale application of Silicon-Photomultipliers are addressed. A basic knowledge of detector physics is assumed.

Course Outline:
• Basics of interaction of radiation and matter
• Active media used in calorimetry
• Calorimeters for electrons and photons
• Calorimeters for hadrons and neutrons
• Giga-channel calorimeters with SiPM readout

Instructors:
ERIKA GARUTTI is research group leader at the Deutsches Elektron-Synchrotron (DESY) in Hamburg, Germany, and she has been appointed Professor of Physics at the University of Hamburg. In 2003 she received a PhD degree in Physics at the University of Amsterdam for a work that included the commissioning of a silicon strip detector for the HERMES experiment. Her main research topics are development of highly granular calorimeter detectors and large scale application of Silicon Photomultipliers. The fields of application range from calorimetry for future linear collider experiments to positron emission tomography detectors. Her research interests cover development of multi-channel highly integrated readout electronics and radiation hard studies for silicon detectors.

MICHELE LIVAN is research group leader and Full professor of Experimental Physics at the University of Pavia, Italy. He has been working in experiments at SLAC and CERN. He is currently a member of the ATLAS Collaboration at LHC. His research interests cover detector technologies in the field of gas detectors and hadron calorimeters. His group has built part of the drift chambers of the ATLAS Muon Spectrometer. He has been active in the field of calorimetry since 1986 when he started to work on the SPACAL Collaboration at CERN devoted to the study of scintillating fibre calorimetry. He is now leader of the Italian groups involved in the DREAM project for the development of the Dual Readout technique for high resolution hadron calorimetry.

FRANK SIMON is a research group leader at the Max-Planck-
Institute for Physics and at the Excellence Cluster ‘Origin and Structure of the Universe’ at the Technical University in Munich, Germany. He received his PhD degree at the Technical University Munich in 2005, while working on the STAR experiment at the Relativistic Heavy Ion Collider in Brookhaven. His research interests cover detector technologies in the area of calorimetry and tracking detectors, the development of data reconstruction techniques and physics at hadron and lepton colliders. His current activities focus on highly granular “imaging” hadronic calorimetry, on Silicon Photomultipliers for scintillator readout, the detailed investigation of the properties of hadronic showers and on physics studies for future high-energy linear colliders.

SC3: Integrated Circuits for Time and Amplitude Measurement of Nuclear Radiation Pulses
Sunday, October 23, 09:30-18:00, VCC, Room 1&2

Organiser: Angelo Rivetti, INFN Torino, Italy
Instructors:
  Angelo Rivetti, INFN Torino, Italy
  Eric Delagnes, CEA Saclay, France
  Edoardo Charbon, TU Delft, Netherlands
  Jean Francois Genat, CNRS/IN2P3 Paris, France

Course Description:
This one-day course will discuss integrated circuits for the extraction of energy and time of occurrence information from a radiation pulse. Emphasis will be given to the monolithic implementation of time pick-off methods and to circuit architectures which allow simultaneous measurements of energy and time in a single processing channel. After a review of the basics, each lecture will progressively delve into circuit details, with focus on implementations in CMOS technologies. A basic knowledge of front-end electronics for radiation detectors and CMOS integrated circuits is recommended to take full profit of the course.

Course Outline:
Integrated architectures and circuit optimization for energy and time pick-off.
• High accuracy integrated timing discriminators
• High resolution time pick-off with waveform sampling
• Low-power multi-channel Time to Digital Converters
• Fully integrated, high resolution CMOS systems

Instructors:
ANGELO RIVETTI received the degree in Physics from the University of Torino, Italy, in 1995 and the Ph.D. in Electrical Engineering from the Polytechnic Institute of the same town in 2000. From 1998 to 2000 he conducted his research activity at CERN, working at the implementation of radiation tolerant integrated circuits in commercial deep submicron CMOS technologies. From 2000 to 2001 he was assistant professor with the Faculty of Physics of the University of Torino. In December 2001 he joined the Italian National Institute for Nuclear Physics (INFN), where he developed VLSI front-end circuits now in use in the ALICE and COMPASS experiments at CERN. Since 2009, he has been a senior member of the research and technology staff of INFN in Torino. His current
research interests are in the design of front-end electronics for hybrid
and monolithic pixel detectors and in the development of low power,
high resolution mixed-mode integrated circuits for charge and time
measurements in high energy physics and medical applications.

ERIC DELAGNES received the electrical engineering degree from
ENSEEIHT (France) and the M.S. in microelectronics degree from
Institut Polytechnique de Toulouse in 1990. Since then, he has
been active in the design of mixed mode analog-digital ASICs and
associated electronics, used mainly to read particle detectors with a
special interest on very frontend electronics and analog memories. He
is the designer of more than 15 ASICs, used in high energy physics,
nuclear physics, and ground, undersea or spaceborne astrophysics
experiments. Since 2003, he has been responsible for the detector
R&D and front-end electronics group of CEA/IRFU (Saclay,
France). Eric Delagnes has published more than 30 papers in refereed
publications and is the holder of 4 patents in the fields of analog
memories and analog-to-digital conversion. He received the Yves

EDOARDO CHARBON received the Diploma from the Swiss
Federal Institute of Technology (ETH) in Zürich in 1988, the M.S.
from UCSD in 1991, and the Ph.D. from UC-Berkeley in 1995,
all in Electrical Engineering. From 1995 to 2000, he was with
Cadence Design Systems, where he was responsible for analog and
mixed-signal design automation tools. In 2000, he joined Canesta
Inc. as its Chief Architect, leading the development of wireless 3D
CMOS image sensors. From 2002 to 2008 he was with the Swiss
Federal Institute of Technology (EPFL) of Lausanne, Switzerland,
working in the field of CMOS sensors, biophotonics, and ultra low-
power wireless embedded systems. Since 2008, Prof. Charbon has
been Full Professor and Chair of VLSI design at TU Delft, where he
leads research in high performance, low power circuits, and systems.
His research interests include high-performance imaging, quantum
integrated circuits, and design automation algorithms.

JEAN FRANCOIS GENAT is a research engineer at CNRS/IN2P3
Paris, France. He has been active in the field of electronics and
signal processing for High Energy Physics and Astrophysics since
1975. He addressed in particular the problem of high resolution
time encoding introducing in 1984 digital delay lines integrated in
ASICs for the Large Electron Positron collider experiments at CERN
(Geneva, Switzerland), leading to large scale sub-nanosecond timing
systems. He is currently involved in the readout of Micro-Channel
Plate photo-detectors for which he designs GHz sampling analog
memories ASICs aiming to achieve picosecond timing resolution.
SC4: Statistical Approaches to Tomographic Reconstruction
Sunday, October 23, 09:30-18:00, VCC, Auditorium 3A

Organizer: Arkadiusz Sitek, Harvard Medical School and the Brigham and Women’s Hospital, USA

Instructors:
Bruno DeMan, GE Global Research, USA
Johan Nuyts, Katholieke Universiteit Leuven, Belgium.
Arkadiusz Sitek, Harvard Medical School and Brigham and Women’s Hospital, USA

Course Description:
Statistical and iterative approaches are methods of choice used for image reconstruction in emission tomography (ET) and are gaining popularity in X-Ray computed tomography (CT). The course will serve as an introduction to iterative and statistical methods of image estimation in ET and CT from projection data. The program of the course will cover fundamentals of medical tomography and common iterative and Monte Carlo methods. An introduction to general Bayesian methods in ET will also be given.

Course Outline:
The course will consist of three parts:
1. Image reconstruction in ET (Introduction to the statistical description of the data. Algorithms: ML-EM, OS-EM, MAP, etc.)
2. Image reconstruction in X-Ray CT (Iterative algorithms used in image reconstruction)
3. Bayesian statistical analysis of ET data (image creation, estimation/classification tasks using the posterior probability and Monte Carlo methods, Bayesian credible sets)

Prerequisite knowledge includes basics familiarity with the physics of emission and transmission imaging systems, statistics, and elementary algebra.

Instructors:

BRUNO DE MAN earned his B.S., M.S. and Ph.D. degrees in Electrical Engineering from the University of Leuven, where he performed research in the areas of ultrasonic tissue characterization (echocardiography) and CT iterative reconstruction for metal artifact reduction. Bruno joined GE Global Research in June 2001 and performed research in the areas of cone-beam reconstruction, iterative reconstruction, and multi-source inverse-geometry CT, among other projects. He is currently managing the CT Systems and Applications Laboratory at GE Global Research.

JOHAN NUYTS is research professor in the Department of Nuclear Medicine of the Katholieke Universiteit Leuven, Belgium. He received his Ph.D. in applied sciences in 1991 on the subject of image reconstruction and quantification in SPECT. His research interests include iterative reconstruction in PET, SPECT, and CT. Ongoing research projects focus on some multimodal imaging problems in PET/CT and PET/MRI, polychromatic CT reconstruction, multi-pinhole SPECT imaging, and motion correction in small animal PET.

ARKADIUSZ SITEK is an assistant professor of Radiology at the
Harvard Medical School and the Brigham and Women’s Hospital in Boston. He received his M.S. degree in physics in 1994 from the University of Warsaw and Ph.D. in physics from the University of British Columbia in Vancouver, B.C. in 1998. Arek’s main research interests in medical imaging include applications of statistics, high-performance computing, medical data visualization, and quantitation.

SC5: Kinetic Modeling
Sunday, October 23, 09:30-18:00, VCC, Room 3&4
Organizer: Richard Carson, Yale University, USA
Instructors:
Richard Carson, Yale University, USA
Roger N. Gunn, Glaxo Smith Kline, UK
Adriaan A. Lammertsma, VU University Medical Center, The Netherlands
Julie C. Price, University of Pittsburgh, USA
Jörg van den Hoff, Technical University Dresden, Germany

Course Description:
This 1-day course is designed for anyone who would like to gain a better understanding of the principles involved in PET kinetic modeling and analysis. It is appropriate for physicists, physicians, graduate students, and researchers with a range of backgrounds. This course is an abbreviated version of a 2.5 day course given annually by a group of experts in PET pharmacokinetic modeling.

Course Outline:
• Basic Kinetic Modeling Principles
• Basic Pharmacological Principles
• Single- and Two-Tissue Compartment Models
• Blood Flow and FDG Models
• Neuroreceptor Modeling
• Reference Tissue Approaches and Modeling
• Simplified Approaches Including Linear Methods and Steady-State Principles

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. He received his Ph.D. from UCLA in 1983 in Biomathematics., and from then until 2005, Dr. Carson was an integral part of the PET program at the National Institutes of Health, rising to the rank of Senior Scientist. His research focus is the development and application of mathematical techniques for the study of human beings and non-human primates with PET. Dr. Carson has published over 160 papers in peer-reviewed journals and given over 80 invited lectures.

ROGER N. GUNN is Director of Molecular Imaging Analysis at GSK where he is leading the application of PET imaging to drug development. He did his undergraduate degree in applied mathematics at the University of Warwick before completing a PhD in the bio-mathematical modelling of PET data at the MRC Cyclotron Unit (London, UK). He left the MRC to take up a faculty position at McGill University where he worked at the Montreal Neurological Institute before joining GSK in 2003. He holds Visiting...
Professorships at Oxford University (Dept Engineering Science) and Imperial College (Division of Neuroscience and Mental Health) and has published over 100 peer reviewed journal articles in the field of imaging.

ADRIAAN A. LAMMERTSMA studied experimental physics at the State University Groningen. He has been involved in PET since 1979 when he moved to the MRC Cyclotron Unit, Hammersmith Hospital in London, UK. In 1984, he received his PhD in Medicine from the University of London on the use of PET for measuring blood flow and oxygen metabolism. With the exception of a one-year sabbatical leave at UCLA, he stayed at Hammersmith Hospital until the end of 1996. He then moved to the VU University Medical Center in Amsterdam, where he is now head of the Department of Nuclear Medicine & PET Research and professor of Positron Emission Tomography. He has published over 250 peer reviewed papers.

JULIE C. PRICE received a B.S. in physics and M.S. in medical physics from the University of Wisconsin. Her doctoral (Johns Hopkins University, Radiological Health Sciences) and post-doctoral (NIH PET Dept.) training focused on kinetic modeling and quantitative PET methods. She joined the University of Pittsburgh in 1994 and is currently Professor of Radiology and Biostatistics and Head of PET methodology. Her PET research includes novel tracer evaluation and assessment of brain function in neurodegeneration, aging, and psychiatric disorders. Recent research has focused on the development and application of methods for PET amyloid imaging.

JÖRG VAN DEN HOFF is Professor of Positron Emission Tomography at the medical faculty of the Technical University Dresden and head of the Department of Positron Emission Tomography in the Institute of Radiopharmacy of the Helmholtz-Zentrum Dresden-Rossendorf (HZDR). He obtained his PhD in experimental nuclear physics in 1991 at the University of Bonn, and subsequently joined the PET center in the Department of Nuclear Medicine at the Medical School Hannover. In 2002, he took his current position in Dresden. Besides a continuing interest in tracer kinetic modeling, the group of Prof. van den Hoff is working at algorithms and procedures for improved quantitative imaging such as event-based movement correction and reliable volumetric evaluation of PET investigations, especially for radiation treatment planning.

SC6: Statistical Approaches to Medical Image Analysis
Monday, October 24, 09:30-18:00, VCC, Room 3&4
Organizer: Juan Domingo Gispert, Fundació Pasqual Maragall, Barcelona, Spain
Instructors:

Javier Pascau, Universidad Carlos III, Madrid, Spain.
Uwe Pietrzyk, University of Wuppertal and Research Center Juelich, Germany
Carles Falcon, IDIBAPS and Hospital Clinic of Barcelona, Spain.
Juan Domingo Gispert, Fundació Pasqual Maragall and Pompeu Fabra University, Barcelona, Spain.
Lars Kai Hansen, Technical University of Denmark, Denmark.
Manuel Desco, Universidad Carlos III, Madrid, Spain.
Course Description:
The course will present the basic aspects of medical image analysis based on statistical methods. The course will cover the mathematical background of image coregistration and fusion along with clinical applications, image classification, voxelwise statistical image analysis, practical examples of image processing artifacts, and, finally, a critical lecture on neuroimaging analysis. The course is suited for anyone willing to gain a basic knowledge on standard statistical imaging processing, analysis, and quantification techniques. Course prerequisites are basic algebra, and basic knowledge on medical imaging modalities. Basic knowledge on statistics is recommended, but not required.

Course Outline:
• Medical image coregistration. Javier Pascau
• Clinical applications of image fusion. Uwe Pietrzyk
• Medical image preprocessing artifacts. Carles Falcon
• Basic statistical neuroimaging analysis. Juan D. Gispert
• Image classification methods. Lars Kai Hansen
• Critical overview of neuroimaging analysis methods. Manuel Desco

Instructors:
JAVIER PASCAU is professor of Medical Imaging Techniques at the Carlos III University of Madrid and holds an appointment as researcher at the Laboratory of Medical Imaging of the Gregorio Marañón Hospital in Madrid, Spain. He received his education as engineer at the Technical University of Madrid where he received his PhD in 2005 and a Master's degree on Biomedical Techniques and Instrumentation the same year. His main research interests are clinical and preclinical multimodal image coregistration and fusion.

UWE PIETZYK is a Professor of Experimental Physics at the University of Wuppertal, Department of Mathematics and Natural Sciences and holds an appointment as group leader in the Institute of Neurosciences and Medicine (INM-4) at the Research Center Juelich, Germany, since 1999. He received his education in particle physics at CERN, Geneva, Switzerland, since 1977, got his PhD in 1984, but moved to medical imaging physics in 1987, working at the Max-Planck Institute of Neurological Research. The main research topics are multimodal / hybrid imaging, image registration, image fusion, and in the field of simulating medical imaging devices. His group also made essential contributions to the development of Polarized Light Imaging (PLI). He is member of the Crystal Clear and the OpenGATE Collaboration and has co-authored more than 80 peer reviewed papers in the field of medical imaging.

CARLES FALCON is professor at the Barcelona University and holds an appointment as group leader of the Medical Imaging Platform of IDIBAPS and Hospital Clinic of Barcelona, Spain. He received his education at the University of Barcelona where he received his PhD in physics in 1998. His main research interest is functional neuroimaging.

JUAN DOMINGO GISPERT is professor of Biomedical Imaging Techniques at the Pompeu Fabra University and holds an appointment as coordinator of the Neuroimaging Platform of the Pasqual Maragall Foundation in Barcelona, Spain. He received his education as engineer at the Technical University of Barcelona and
a Master’s degree on Biomedical Techniques and Instrumentation and a PhD at the Technical University of Madrid in 2004. His main research interests are molecular imaging acquisition and processing.

LARS KAI HANSEN is full professor and Head of the section ‘Cognitive Systems’ at the Informatics Department of the Technical University of Denmark. He received his PhD in physics in 1986 at the University of Copenhagen, and his main research interests are machine learning, neuroinformatics, neuroimaging, and neural networks.

MANUEL DESCIO is full professor and Head of the Bioengineering and Aeronautics Engineering of the Carlos III University of Madrid, Spain. He received his education as nuclear medicine physician at the Universidad Complutense and as engineer at the Technical University of Madrid. His main research interests are molecular imaging instrumentation and processing.

SC7: Physics and Design of Detectors for SPECT and PET
Monday, October 24, 09:30-18:00, VCC, Room 1 & 2

Organizer: Nicola Belcari, Università di Pisa, Italy
Instructors:
Nicola Belcari, Università di Pisa, Italy
Marlies Goorden, Delft University of Technology, The Netherlands
Pedro Guerra, Universidad Politécnica de Madrid, Spain
Sibylle Ziegler, Technische Universität München, Germany

Course Description:
This one-day course is intended to introduce physicists and engineers to the fundamentals of PET and SPECT technology and detector design with focus on high resolution systems, electronic design, and hybrid systems. A basic knowledge of detectors and electronics is assumed.

Course Outline:
The course will be organized in four sessions with basics and advanced topics.

Basics: This part will cover the basics of detector design for PET and SPECT. Starting with current status of technology, attendees will be introduced to recent advances on high resolution detectors for PET to advanced multi pin-hole systems for ultra-high resolution SPECT. In particular, specific topics covered are:

• Physics of PET
• Spatial resolution and noise issues in PET
• Instrumentation for high resolution PET imaging
• Physics of SPECT
• Advanced pinhole imaging
• Detectors for high resolution SPECT

Advanced topics: This part will cover recent developments in two research topics: the new generation of acquisition systems for PET and SPECT and the latest advances on hybrid imaging. Advanced topics include:

• Acquisition systems for PET and SPECT
• Timing issues for next generation TOF PET systems
• Fully digital acquisition systems for PET/SPECT
• Hybrid imaging
• From (S)PET/CT to (S)PET/MRI
• Advanced detectors for (S)PET/MRI

**Instructors:**

NICOLA BELCARI is Assistant Professor at the Department of Physics “E. Fermi” of the University of Pisa. He received his Ph.D. degree in applied physics in 2003 on the subject of Positron Emission Mammography. His present research interests are in the field of instrumentation for PET and SPECT with a special focus on small animal imaging and in-beam PET monitoring systems in hadron therapy. He collaborated in the development of a small animal scanner with PET/SPECT capabilities and a variable resolution microCT system. Dr. Belcari holds 2 patents in animal imaging techniques and has authored or co-authored more than 50 papers in medical imaging.

PEDRO GUERRA is Research Scientist at the Electronic Engineering Department of the Universidad Politécnica de Madrid. In 2007, He received his Ph.D. degree in Telecommunication Engineering from the Universidad Politécnica de Madrid, Spain, for his studies on the application of digital signal processing techniques in gamma-ray detectors. His present research interests are in the field of PET instrumentation and intraoperative radiotherapy. He is currently active in the development of a small animal scanner with PET/CT capabilities. Dr. Guerra holds 2 patents with application to small animal molecular imaging and has authored or co-authored more than 30 scientific papers, including journals and conference proceedings.

Prof. Dr. SIBYLLE ZIEGLER received her PhD in physics from the University of Mainz (Germany) in 1989. After a postdoctoral fellowship at the German Cancer Center in Heidelberg and the Hammersmith Hospital in London, she joined the Nuclear Medicine Department at the Technische Universität München in 1993. Her research is focused on nuclear medical instrumentation and data analysis with an emphasis on multimodal imaging.

Dr. MARLIES GOORDEN received her PhD in theoretical nanophysics at Leiden University (The Netherlands) in 2005. After a postdoctoral fellowship at the University of Geneva, she joined the molecular imaging group of Prof. Dr. F. Beekman at Delft University of Technology and University Medical Center Utrecht. Her research focuses on theoretical aspects of Single Photon Emission Tomography (SPECT) imaging, including the improvement of image reconstruction methods and the optimization of SPECT geometries.
The IEEE NSS/MIC Industrial Program provides our conference attendees with ample opportunities to meet the different exhibitors on Tuesday, Wednesday, and Thursday, 25 to 27 October. The opening hours will follow the hours of the conference. More than 40 companies from all around the world will be present to meet conference attendees and to demonstrate their latest products. These represent state-of-the-art in detectors, pulse processing instrumentation, imaging, software, and other associated areas. The exhibition area is located in two rooms in the Valencia Conference Center: Multipurpose 1 & 2, located near the main session room. Coffee with local pastries and fruits will be served during the breaks in the exhibit rooms on Tuesday, Wednesday, and Thursday. The exhibits will remain open until after the afternoon coffee on Thursday to provide extra time for the MIC attendees to visit.

The three-day exhibition is complemented by a series of seminars and technical presentations on Tuesday, Wednesday, and Thursday in VCC, Rooms 1 & 2, which will allow an in-depth exchange of information between attendees and exhibitors on existing products, future developments and needs. Rooms 1 & 2 are located on the second floor. The detailed schedule will be posted at the entrance to the exhibit area.

The morning and afternoon coffee breaks will be held in the exhibit area. On Tuesday evening from 19:00 to 21:00, the exhibiting companies will host the Exhibitor Reception.

<table>
<thead>
<tr>
<th>Exhibition Opening Hours</th>
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<tr>
<td>Tuesday, October 25</td>
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<tr>
<td>12:00 – 21:00</td>
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<tr>
<td>Reception starting at 19:00</td>
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<tr>
<td>Wednesday, October 26</td>
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<tr>
<td>09:00 – 18:00</td>
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<tr>
<td>Thursday, October 27</td>
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<td>09:00 – 16:00</td>
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</table>

Ron Keyser          Manuel Lozano
Industrial Program Co-Chair        Industrial Program Co-Chair
List of Exhibitors (as of 18 July, 2011)

ADVANSID SRL- Advanced Silicon Detectors
AMPTEK Inc.
Acrorad Co., Ltd.
Alibaba Systems, S.L.
Alpha Spectra, Inc.
Baltic Scientific Instruments, Ltd.
Berkeley Nucleonics Corp.
CAEN SpA
CRC Press-Taylor & Francis Group LLC
Canberra Industries
Creative Electron, Inc.
ET Enterprises Ltd.
Eljen Technology
FLIR Radiation GmbH
Furukawa Co., Ltd.
GE Energy
Hamamatsu Photonics Europe
Hilger Crystals
KROMEK Ltd.
Micron Semiconductor
Nucare Medical Systems, Inc
ORTEC
Philips Digital Photon Counting
SEMIKON Detector GmbH
SINTEF
Saint-Gobain Crystals
Schroff GmbH
Scientifica Internacional, S.L.
Scionix Holland
Shangai SICCAS High Technology Corp.
Shizuoka University/ ANSeeN Inc.
Symetrical Security Ltd.
Tokuyama Corp.
U. S. Naval Research Laboratory
VTT Technical Research Center of Finland
Wiener, Plein & Baus, Ltd.
X-Ray Imaging Europe GmbH
XGLAB SRL.
XIA LLC
The following table shows the preliminary list of presentations. The final list and schedule will be posted on the web and printed in the Exhibitor’s Guide.

<table>
<thead>
<tr>
<th>Company</th>
<th>Presentation</th>
</tr>
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<tbody>
<tr>
<td>ORTEC</td>
<td>Technical Advances in Radiation Detection Systems</td>
</tr>
<tr>
<td>CAEN</td>
<td>Digital Pulse Processing in Homeland Security and Medical Imaging Applications</td>
</tr>
<tr>
<td>HAMAMATSU</td>
<td>Latest development for vacuum photodetector</td>
</tr>
<tr>
<td>TOKUYAMA</td>
<td>Scintillation properties of LiCAF for neutron detection</td>
</tr>
<tr>
<td>KROMEK</td>
<td>Developments within Multi-Spectral X-Ray Imaging</td>
</tr>
<tr>
<td>SAINT GOBAIN</td>
<td>Developments in Neutron Detection Solutions</td>
</tr>
<tr>
<td>SEMIKON</td>
<td>Planar HPGE- and Si(Li)-detectors – Custom-made and tailored for a great variety of physics-applications</td>
</tr>
<tr>
<td>Alibava Systems, S.L.</td>
<td>Flexible readout system for microstrip particle detectors</td>
</tr>
<tr>
<td>GE ENERGY</td>
<td>TBD</td>
</tr>
<tr>
<td>PHILIPS</td>
<td>Fully Integrated Arrays of Digital Silicon Photomultipliers (dSiPM’s) - The way towards industrial Application</td>
</tr>
</tbody>
</table>

**Location:** Rooms 1 and 2, Valencia Convention Center

Exhibitors’ Sessions will take place at the following times:

- Tuesday, Oct. 25 from 15:30 to 17:30.
- Wednesday, Oct. 26 from 10:00 am to 17:30.
- Thursday, Oct. 27 from 10:00 am to 13:00.

Check our website: http://www.nss-mic.org/2011 for up-to-date information. 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 one of the Co-chairs: Ronald Keyser (ronkeyser@ieee.org, +1 865 483 2146) or Manuel Lozano (Manuel.Lozano@imb-cnm.csic.es, +34 93 594 77 00).
Organizers:
Ralf Engels, Forschungszentrum Jülich GmbH, Germany
Richard Kouzes, Pacific Northwest National Laboratory, USA

This workshop will focus on neutron detection methods and technologies for science and applications in the age of a diminishing supply of $^3$He. One of the main uses for $^3$He is in gas proportional counters for neutron detection, which are 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 research, and for basic research in condensed matter physics. Due to the large increase in the applications named above, the supply can no longer meet the demand and the $^3$He supply is dwindling. The objective of this workshop is to provide a forum for discussion of the state of the art of neutron detection and the issues surrounding the current shortage of $^3$He. The workshop will cover the progress achieved in the areas described by the following keywords:

- The $^3$He supply limitations and possible supplies
- Alternative neutron detector technology
- Neutron detection for homeland security
- Neutron detection for neutron scattering science
- Neutron detection for medicine
- Neutron detection for petroleum and gas exploration

Program:
08:30 Welcome by the Chairs; Ralf Engels/Richard Kouzes
08:30 Overview of supply and demand issues; Richard Kouzes (PNNL)
08:50 Neutron Detector Technical Requirements for IAEA Safeguards Applications; Howard Menlove (LANL)
09:10 Alternatives to $^3$He for Neutron Detection in National Security Applications; James Ely (PNNL)
09:30 Helium-3 Alternatives for Neutron Detection in Neutron Scattering Science; Karl Zeitelhack (FRM II)
09:50 Detector Requirements for the European Spallation Source;
Richard Hall-Wilton (ESS)

10:10 Potential Role of IAEA Towards Promotion of Alternative Solutions for Neutron Detectors; Francoise Mulhauser (IAEA)

10:30 Coffee break

11:00 Neutron and Gamma Measurements with Polyvinyl Toluene Detectors; Dean Mitchell (SNL)

11:20 Performance Characteristics of a High Efficiency Passive Neutron Assay System Using Alternative Neutron Detectors to Helium-3; Alan Simpson (Pajarito Scientific)

11:40 He-4 Detectors for Mixed-Oxide (MOX) Nuclear Fuel Measurements; Rico Chandra (Arktis)

12:00 Straw-Based Portal Monitor 3He Replacement Detector with Expanded Capabilities; Athanasios Athanasiades (Proportional Technologies)

12:20 Boron-Lined Tubelet Clusters Applied to Waste Assay Applications as a 3He Alternative Technology; Robert McKeag (Centronics)

12:40 Development of Novel Neutron Detectors with Thin Conversion Layers; Reinhard Kampmann (Helmholtz-Zentrum Geesthacht)

13:00 Lunch break

14:30 Microstructured Semiconductor Neutron Detectors; Douglas McGregor (Kansas State Univ.)

14:50 Neutron Detector for the Instruments of CSNS; Zhijia Sun (Institute of High Energy Physics, China)

15:10 The Efficiency of MeV Neutron Counting with Plastic Microchannel Plates; Anton Tremsin (Arradiance)

15:30 Light Output Uniformity of Czochralski Grown Rare-Earth-Ion Doped 6LiCaAlF6 Single Crystal for Thermal Neutron Detection; Noriaki Kawaguchi (Tokuyama Corp.)

16:00 Coffee break

16:30 Design Optimization of a Layered Boron Based Solid State Neutron Spectrometer; Abigail Bickley (Air Force Institute of Technology)

16:50 Wavelength-Shifting-Fibre Based Position-Sensitive Scintillator Detectors for the J-PARC/MLF; Kazuhiro Soyama (JAEA)

17:10 Wavelength-Shifting-Fiber and Scintillator Based Neutron Detector Development at SNS; Cai-Lin Wang (ORNL)

17:30 First Tests of Linear-Position-Sensitive Twin Tubes with BF3; Thomas Wilpert (Helmholtz-Zentrum Berlin)

17:50 Characterization of a Large-Area ZnS/6LiF Thermal Neutron Detector Read Out by Wavelength-Shifting Fibers; Zane Bell (ORNL)

18:10 Discussion

18:30 End
The original motivation for interest in the new telecom xTCA standards stemmed from studies for large high energy accelerator controls and detector systems. The main attraction was to achieve very high availability for very large systems which studies demonstrated would be necessary for acceptable up-time. However such systems also would bring many advantages to any large system, including an architecture that accommodates state-of-the-art multi-gigabit serial rather than parallel bus backplane inter-module communication.

In November 2008 at the 2nd xTCA for Physics Workshop in Dresden an ad hoc committee from several major physics labs agreed to accept an invitation to join the PICMG open standards consortium to develop xTCA for physics extensions to the existing PICMG standards. Work began in May-June 2009 and in 2011 has now produced important new IO, timing, and intelligent platform management standards for two hardware extensions, one for ATCA and one for MicroTCA; a guideline document for precise timing distribution; and progress toward uniform software architectures and protocols to promote greater design uniformity and interoperability of hardware and software modules developed by both labs and industry. In 2011 key infrastructure support became available from industry and several labs are pursuing implementation programs for both controls and detector applications.

The Workshop is under the auspices of IEEE and the Laboratory Members of the PICMG1 xTCA2 for Physics open standards consortium.

Outline:
Since many potential users are still new to ATCA/µTCA while others are actively designing on the open standard, this workshop has four main components:

1. introductory xTCA hardware and software tutorials
2. status reports on the new extensions by committee members
3. tutorials of hardware and software products by industry and labs
4. new application developments in progress by both labs and industry

The program includes a small industrial exhibit and invited talks by vendors. The preliminary program is given below.

Registration:
The registration fee, inclusive of a reception on Saturday Oct 22, 18:30-20:00 (Tapas & Drinks) is, by 5 Oct., € 60; after 5 Oct., € 80.

Advance registration is required and companions are welcome to the

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1 PICMG is the industry open standards group, PCI Industrial Computer Manufacturers Group, consisting of 250 companies and the following international physics Laboratories developing xTCA for Physics: CERN, DESY, ELETTRA, FNAL, IHEP, IPFN (Lisbon), ITER, LBNL, and SLAC.
2 ATCA is shorthand for ATCA (Advanced Telecom Computer Architecture) and/or MicroTCA, also called µTCA, the packaged mezzanine card standard platform.
Preliminary Program:

Saturday Oct 22
08:00 Registration
09:00 Opening Welcome and Workshop Agenda; Javier Bermejo, ESSB, Workshop Chair

Session 1: PICMG XTCA Introductory Tutorials
Chair: Bruno Gonçalves, IPFN
09:15 1.1 Introductory Tutorial – ATCA/µTCA Hardware Basics; Robert Downing, SLAC Consultant, Chair PICMG Physics HWG
10:00 1.2 Introductory Tutorial – ATCA/µTCA Software Basics; Stefan Simrock, ITER, Chair PICMG Physics SWG
10:45 Refreshment Break
11:15 1.3 Introductory Tutorial – ATCA/TCA Hardware Platform Management Systems Basics (IPMI); Dariusz Makowski, Lodz & DESY, Member PICMG Software SWG
12:00 1.4 Introductory Tutorial - Managed Crate, Power & Cooling Systems; Dietmar Mann, Schroff, Member PICMG Physics HWG
12:45 Lunch Break

Session 2: PICMG XTCA for Physics Extensions
Chair: Stefan Simrock, ITER
14:00 2.1 PICMG Hardware Extensions for Physics: ATCA Intelligent RTM (PICMG 3.8), New MicroTCA for Physics Platform (MTCA.4); Robert Downing, R.W. Downing Inc., Chair, PICMG Physics HWG
15:00 2.2 PICMG Software Extensions for Physics: Guidelines, Roadmap & Status; Augustus (Gus) Lowell, Triple Ring Technologies, Secretary PICMG Software SWG
16:00 Refreshment Break
16:30 2.3 Timing Distribution Extensions for ATCA Standard Backplane; Jorge Sousa, IPFN, Member PICMG Physics HWG

Session 3: Industry Exhibits 1
Chair: TBD
17:00 3.1 Industry Exhibits
18:30-20:00 Workshop Reception

Sunday Oct 23
Session 4: Lab and Lab-Industry Initiatives 1
Chair: Prof. Javier Bermejo, ESSB
09:00 4.1 Goals of Lab-Lab and Lab-Industry Collaboration: Infrastructure & Generic Modules; Ray Larsen, SLAC, Chair PICMG Physics Coordinating Committee
09:20 4.2 xTCA Physics Timing Distribution AMCs; Attila Hidvégi, Physics Department, University of Stockholm
09:40 4.3 ATCA Developments for Fusion Fast Plasma Control Systems; Bruno Gonçalves et al, IPFN, Member PICMG Physics
Standards Committees

10:10  4.4 xTCA Initiatives for ITER; Stefan Simrock, ITER, Chair PICMG Physics SWG

10:30 Refreshment Break

11:00  4.5 xTCA Initiatives for IHEP; Zhen’an Liu, IHEP, Member & Officer PICMG for Physics Committees

11:20  4.6 xTCA Initiatives for ESSB Injector Project; Prof. Javier Bermejo, ESSB, Workshop Chair

11:40  4.5 MTCA.4 Fast Digitizers for RF; Matthias Kirsch, Strück Company

12:00  4.6 MTCA.4 Generic FPGA for Physics; Andreas Pruess, TEWS Company

12:20  4.7 MTCA.4 Monterey System for 10/40 Gbps Telecom and Physics Applications; Tony Romero, PT-Performance Technologies Inc.

12:45 Lunch Break

Session 5: Lab and Lab-Industry Initiatives 2

14:00  5.1 MTCA.4 Hardware-Software Infrastructure Development for RF & Controls; Qing Yang & Zheqiao Geng, SLAC, Members PICMG Physics SWG

14:20  5.1 CERN xTCA for Physics Interest Group; Markus Joos, CERN, Member PICMG for Physics Coordinating Committee

14:40  5.2 ESSB-IPFN-SLAC Collaboration; Bruno Gonçalves, IPFN, Member PICMG for Physics Committees

15:00  5.3 MTCA.4 DESY ITER Initiatives; Tomasz Jezynski, DESY, Member PICMG for Physics Hardware WG

15:20  5.4 MTCA.4 SLAC LCLS Upgrade Controls & RF Initiatives; Ray Larsen, SLAC, Chair PICMG Physics Coordinating Committee

15:40 TBD

16:00 Refreshment Break

Session 6: Future Workshop Goals & Wrapup
Chair: Ray Larsen

16:30 Feedback suggestions – future standards collaboration plans – standards maintenance – committee memberships

17:00 Adjourn
48 Special Focus Workshops

5th International Workshop on the Molecular Radiology of Breast Cancer
Sunday, October 30, 2011 08:00-19:30, VCC, Auditorium 2

International Organizing Committee:
Martin Tornai, Duke University, USA
Stanislaw Majewski, West Virginia University, USA
Mark Williams, University of Virginia, USA
Marie-Alix Duval, Imaging & Modeling in Neurobiology & Cancer Laboratory, France
Michael Hofmann, University of Hannover Medical School, Germany
Craig Levin, Stanford University, USA

This one-day Workshop will take place on Sunday immediately after the annual IEEE Nuclear Science Symposium & Medical Imaging Conference in Valencia, Spain. As in past years since 2002, the overall goals of the proposed events are to convene imaging physicists and engineers as well as chemists, biologists, physicians and students from around the world to discuss important issues related to breast cancer evaluation using functional Molecular Imaging techniques involving nuclear radiotracers, x-rays, and other technologies. Key issues to address are the recent successes and limitations of nuclear imaging approaches (molecular breast imaging/breast specific gamma imaging, PEM, and mammotomography with single gamma and positron emitting tracers) and what steps are required to continue to increase their role in breast cancer detection, diagnostics and management. Thus, in addition to having educational goals, the meeting serves as a venue to understand and suggest solutions to problems associated with incorporating nuclear imaging methods into the clinic for breast cancer screening, diagnosis, and staging.

The outline of the program, which incorporates suggestions from past convened Workshops, is as follows:

1. Review of the pathology of breast cancer
2. Clinical management and imaging of breast cancer
3. New tracers for nuclear imaging
4. Review and outlook of the future direction of molecular breast imaging
5. Interventional molecular imaging
6. Latest developments in non-ionizing (e.g. optical or ultrasound) breast imaging approaches

While there is a logically progressive and structured format, the setting is meant to be informal, with the morning portion of the Workshop devoted to discussion and interaction between the audience members and invited didactic presenters. There will be a competition for student travel awards to promote education/training in this field. This Workshop will provide the latest research information and lively interaction and discussions.

Registration:
The registration fee by 5 Oct. of € 110 includes all meals, breaks and handouts.

Student Support:
Provided adequate external funding, there will be student/post-doc travel awards available on a competitive basis, based on the relevance
and quality of abstract(s) submitted to the regular IEEE NSS/MIC Conference. Further details may be found on the 2011 IEEE NSS-MIC website.

Preliminary Program:

08:00  Introduction / Welcome

Session I - Breast Cancer Pathology
08:30  Speaker – TBD
09:15  Discussion

Session II - Detection and Characterization: A Clinical Perspective
09:30  Current Methods of Percutaneous Breast Biopsy: Hardware Requirements for Targeting and Biopsy; Debra Ikeda, MD (Stanford University)
10:45  Molecular Breast Imaging Clinical Trial Results; TBD
11:00  Discussion Session
11:30  Coffee Break

Session III - Nuclear Tracer Status
11:45  Tracers on the Horizon; Michael Hofmann, MD/PhD, University of Hannover
12:30  Discussion
12:45  Lunch

Session IV - Successes and Challenges in Human Studies to Date
13:45  Speaker 1 – TBD
14:30  Speaker 2 – TBD
15:15  Discussion Session

Session V - Intervention: A Clinical Perspective
15:45  Speaker 1 – TBD
16:30  Speaker 2 – TBD
17:15  Discussion Session
17:45  Coffee Break

Session VI - Recent Developments in Non-ionizing Molecular Breast Imaging
18:00  Speaker – TBD
18:45  Discussion Session
19:00  Concluding Remarks, Adjournment
IEEE GOLD (Graduates of the Last Decade) members are welcome to join a casual reception to be held on Thursday, October 27 at 18:30 to 20:00 in Pinedo/Faro and Almarda/Raco Rooms of the Sorolla Hotel.

Attendance is free, but restricted to GOLD members and to conference attendees that join IEEE or the Nuclear and Plasma Sciences Society during the conference in Valencia, in order to extend a special welcome to them and allow for networking right away.

In a comfortable, casual atmosphere, personal contact between the attendees will be easily established: After a short welcome address the participants will be invited to take some refreshments. A couple of speakers that can look back on their bright careers in both academia and industry will then give very brief summaries on what they have done to get where they are today. Also IEEE fellows will be among these speakers. Their statements will focus on aspects of successful career planning. Since these brief statements are meant to set the pace for peer-to-peer discussions among the participants, a lot of time will be reserved for this.

Over the past years, the GOLD reception at NSS-MIC has proven to foster direct contact between young professionals and colleagues at the zenith of their careers. So, if you are an IEEE GOLD member or have joined our society right here in Valencia, you are cordially invited to participate. It is up to you to profit from the opportunities the GOLD reception offers. I look forward to welcoming you.

Christoph Ilgner
GOLD Membership Committee Chair

Special Women in Engineering (WIE) Session: Contribution of Women Scientists to Nuclear Science and Medical Imaging
Thursday, October 27, 18:30-20:00,
Sorolla Palace Hotel, Arenas & Perellonet Rooms

Organizers:
Jane Lehr, Sandia National Laboratories, USA
María J. Ledesma-Carbayo, Universidad Politécnica de Madrid, Spain

We are pleased to welcome you to the Women in Engineering (WIE) Session, 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 has the following goals:
• encouraging young ladies to choose science and engineering as a career
• how to improve the 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 personal life

Several speakers with outstanding careers in scientific laboratories, industry, and government have been invited to give brief summaries on what they have done to get where they are today and how they have addressed the incorporation of women in their teams.

These women and men 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 these talented women and 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/2011/ under Special Focus Workshops
The Nuclear Science Symposium has become year after year a reference international event in the domain of radiation instrumentation. It offers an outstanding opportunity for scientists and engineers interested in, or actively working in the fields of nuclear science, high energy physics, radiation instrumentation and related software for different applications, to meet and discuss with colleagues from around the world. The program emphasizes the latest developments in technology and radiation instrumentation and their implementation in experiments for particle physics, biomedical sciences, homeland security, space, accelerators, and other radiation environments.

The NSS program consists of plenary, parallel, and poster sessions, with a number of joint sessions with the Medical Imaging conference (MIC) as well as with the Room-Temperature Semiconductor Detector workshop (RTSD).

Particular attention will be given this year to multi-disciplinarity and cross-fertilization between closely related domains. For this purpose the large number of topics usually proposed (20 or even more) are regrouped in 5 main sectors:

- Detection components
- Front End, DAQ, Trigger electronics
- Software and Computing
- Detectors/Intrumentation (small systems)
- Large detection systems

Each sector is placed under the supervision of 2 topic conveners, who will organize the sessions in such a way as to avoid as much as possible conflicts of interest and promote interactions between different subtopics.

This year the NSS luncheon, in Meliá Valencia Palacio Congresos Hotel, Rooms A&B, will include the talk from D. Manuel Toharia, director of the Science Museum at Valencia, a recognized expert in science divulgation, that is specially important in the perception of general public about nuclear science and technology.

Posters are organized following the same approach with five two-hours dedicated poster sessions not overlapping the corresponding oral sessions on the same subject. However each poster will stay on the board 2.5 day to allow individual viewing.

In the same spirit the oral and poster sessions addressing the solid-state detector topics are organized in close collaboration with the RTSD program chair and co-chair.

Educational Short Courses are organized focusing on topics of interest for the scientific community. They will offer the opportunity for very detailed presentations and discussions by renowned experts in the corresponding fields.
We have also introduced 3 refresher courses to allow students to be up-to-date on the following generic subjects: Geant4, Gaseous detectors, and Neutron detection.

We have tried also to restrict the number of parallel workshops allowing only emerging fields, which are not yet addressed in the NSS topics and where a community needs to be organized.

We would like to take this opportunity to thank all the authors for the excellent scientific contributions to the NSS conference this year, and also all the people who have been working so hard to prepare this event, and in particular the large number of reviewers as well as the topic conveners.

We hope the 2011 NSS conference will be a memorable event for all of you, both scientifically and socially, and we are looking forward to seeing you in Valencia in October 2011.

Paul Lecoq
NSS Program Chair

Faustino Gomez
NSS Program Deputy Chair
Biography:

Prof. Dr. Michael Kröning was born on January 6, 1944 in Weixdorf, Germany. In 1971 he graduated with a Diploma in physics at the Johannes Gutenberg-University in Mainz. In 1974 he achieved his Ph.D. in the field of experimental nuclear physics at the Johannes Gutenberg-University in Mainz. From 1972 to 1974 Dr. Michael Kröning was a Research assistant at the Max Planck-Institut für Chemie in Mainz and was promoted to Researcher at the Max Planck-Institut für Chemie in Mainz (1974-1978).

During 1978 to 1990, Dr. Kröning was manager of various research groups in nuclear engineering, quality assurance, and inspection technologies at Siemens AG, Kraftwerk Union, in Erlangen. In 1990, Dr. Michael Kröning was elected to serve as the Director of the Fraunhofer-Institut für Zerstörungsfreie Prüfverfahren (Institute for Nondestructive Testing) in Saarbrücken, and Professor at the University of Saarbrücken, Chair of Nondestructive Testing and Quality Assurance.

From 2000 to 2003, he took a sabbatical leave to hold a post of the Executive Director of the International Science and Technology Center in Moscow. In October of 2003, he returned to the position as Director of the Fraunhofer-Institut Zerstörungsfreie Prüfverfahren, IZFP, in Saarbrücken, and Professor at the University of Saarbrücken - Chair of Nondestructive Testing and Quality Assurance, until February 2009.

Prof. Dr. Michael Kröning was a member of the German Reactor Safety Committee (from 1992 to 1999) and a co-opted scientific member of the advisory board of the German Society of Nondestructive Testing. He is Chairman of a number of SME committed to the international scientific cooperation in the field of technical safety.

Prof. Dr. Michael Kröning is an Honorary Fellow of the Indian Society for Nondestructive Testing and Honorary Fellow of the Indian National Academy of Engineering and appointed part-time lecturer and Professor of the Su Zhou Nuclear Power Research Institute, China.

After retirement from the position as Director of Fraunhofer IZFP in 2009, he was contracted by various nuclear engineering institutions...
in the USA, Germany, Brazil, and China, working on applied research problems in the field of nondestructive testing.

In October of 2010, Michael Kröning was a winner of the open grant competition of the Government of the Russian Federation, designed to support research projects implemented by leading scientists. Since then, he is developing the Tomsk open Laboratory for Material Inspections, TOLMI, at the Polytechnic University of Tomsk with the objective of advanced inspection techniques for Risk Based Assessment of the structural integrity of nuclear systems and components.

He has been honored by Universities and Institutions, including:

- Honorary Professor of the Tomsk Polytechnical University
- Honorary Doctorate of the St. Petersburg Railway University
- Honorary Doctorate of the Kyrgyz-Russian-Slavonic University
- Honorary Professor of the Issyk-Kul State University
- Honorary Doctorate of the Eurasian National L.N. Gumilyov-University, Astana
- Honorary Doctor of the National Academy of Science of the Kyrgyz Republic
- Honorary Professor of the L.N. Gumilyov Eurasian National University, Republic of Kazakhstan
- 2008 NDE Lifetime Achievement Award SPIE, US

Abstract:
On March 11, 2011 one of the most severe natural catastrophes in the history of Japan caused inconceivable human grief and sorrow and destroyed parts of the infrastructure of one of the most developed high-technology countries. The Tsunami following the earthquake resulted in the disastrous incident at the Fukushima Daichii I-IV nuclear power plant. We feel the disappointment and sympathize with the Japanese people. In consequence, we have to take responsibility as nuclear engineering and peaceful use of nuclear power is a result of the global state of engineering and international regulations.

Meanwhile, experts understand the reasons that lead to the nuclear disaster. This talk covers the technical and design-related facts and what we have learned to improve the design and management structure. However, the technical analysis is only one of the lessons to be learned in view of the world-wide reframed perception on the usage of nuclear energy. The future will show whether we will have learned the right lessons for the appropriate use of human knowledge and engineering to master these global challenges.

NP2-1: Exploring Nature Moments after the Big Bang at the LHC
Tejinder S. Virdee
Imperial College, London, UK
Monday, October 24, 10:30-11:10, VCC, Auditorium 1

Biography:
Tejinder (Jim) Virdee is Professor of Physics at Imperial College, London. He did his graduate studies at Imperial College on an experiment conducted at the Stanford Linear Accelerator Centre, Stanford. He has worked on an experiment studying deep inelastic Compton scattering of photons off of quarks and then on the UA1 proton-antiproton collider experiment both at CERN. The UA1 experiment discovered the W and Z bosons. After the termination
of UA1 (1990), Dr. Virdee concentrated on the physics of, and experimentation at, the next generation of hadron colliders. He is one of the founding members of the Compact Muon Solenoid Collaboration (CMS) at CERN-LHC. Dr. Virdee has played a major role in all phases of the experiment. These phases have lasted around 20 years and include the formation of CMS, the definition of the physics goals, checking performance against benchmark physics reactions, detector R&D, detector prototyping, construction and installation, commissioning, data-taking and the start of the extraction of science. He pioneered some of the techniques used in its calorimeters, crucial for the measurement of the energies of electrons, photons and jets. Dr. Virdee was the Spokesperson (leader) of the CMS Collaboration for three years, between 2007 to 2009, and was the Deputy Spokesperson of CMS from 1993 to 2006.

Dr. Virdee's current work involves analysis of data to search for new physics including the Higgs boson, and to consider the improvements necessary to keep the CMS experiment operating over the next two decades, at rates of proton-proton collisions some ten times higher than anticipated in the original design.

Dr. Virdee was awarded the 2009 James Chadwick Medal and Prize of the U. K. Institute of Physics for his crucial role in the design and construction of CMS.

Abstract:

The Large Hadron Collider project, comprising the accelerator and the experiments, aims to tackle some of the most fundamental questions about the origin, evolution and composition of our universe. Potential discoveries include new forms of matter, new forces of nature, new dimensions of space and time. Particular questions to be addressed include: what is the origin of mass, what constitutes dark matter, why is the universe composed of matter, not antimatter, and more. The discoveries have the potential to alter our perception of how Nature operates at the fundamental level.

In 2010 the LHC accelerator collided protons and lead ions at unprecedented high energies. Outstanding progress was made in operating the accelerator with very good performance. Continued good progress in 2011 has seen the proton-proton interaction rate increase to about 100 million per second.

All the LHC experiments also performed very well, close to their desired and ambitious design performance set down some fifteen years ago. Physics measurements are confronting, more and more precisely, the predictions of the Standard Model of particle physics, whilst looking for new physics.

The LHC experiments are designed to operate in a very harsh...
environment created by hundreds of billions of particles produced every second, and to register with high accuracy the passage and energies of all these particles, thus demanding huge data collection, transfer and processing rates on a scale greater than ever previously attempted. The two large LHC experiments, ATLAS and CMS, each comprise over 3500 scientists and engineers from around 170 institutions in around 40 countries.

The talk will briefly recall the physics of the LHC, outline some of the challenges faced during construction, the operation and the performance, the first physics results from the experiments, and the outlook.

The talk will also touch upon the societal impact of fundamental research, CERN and the LHC.

NP2-2: Heavy Ions at the LHC
Paolo Giubellino
CERN and INFN Torino, Italy
Monday, October 24, 11:10-11:50, VCC, Auditorium 1

Biography:
Paolo Giubellino, after his studies at Torino University and University of California, Santa Cruz, has dedicated most of his scientific life to the Physics of High-Energy Heavy-Ion collisions, first in HELIOS, then in NA50 and finally in ALICE. He has been in ALICE from the very first feasibility studies, and has later carried a number of responsibilities in the experiment, including Project Leader for the Inner Tracking System, Chair of Conference Committee, Upgrade Coordinator and, for the past six years, Deputy Spokesperson. Since Jan 1st, 2011, he is the Spokesperson of the ALICE Collaboration. He has been active in the development of silicon detectors and is a member of the ICFA Instrumentation Panel. He has served in many scientific committees and panels and is currently Chair of the G-PAC of GSI and member of the Conseil Scientifique of IN2P3. He also chaired the working group charged of writing the Phase Transitions chapter of the NUPECC Long-Term Plan. Author of over 300 scientific papers, he has been awarded the Medal of the Ukrainian Academy of Sciences and the Medal of the Particles and Fields section of the Mexican Physical Society. He is based at both INFN Torino and CERN.

Abstract:
In November 2010, three LHC experiments, ALICE, ATLAS and CMS, took first Pb-Pb data at the unprecedented centre of mass energy per nucleon pair of 2.76 TeV, a jump of a factor 13 over the highest energies ever achieved with nuclear beams. Both the CERN
accelerator complex and the experiments performed remarkably well, so that important scientific results could be obtained in a very short time. The talk will cover the experimental challenges of the LHC Heavy Ion program and give an overview of the first physics results obtained, with a special attention given to ALICE, the dedicated Heavy-Ion experiment.

Biography:
Alan Watson has worked on high-energy cosmic rays since 1964 when he moved from Edinburgh to join the shower-group at the University of Leeds, UK, to help construct the 12 km² air-shower array at Haverah Park. He became head of the group in 1976. While his primary interests have been in the study of charged cosmic rays above $10^{17}$ eV, he has also done some gamma-ray astronomy. Together with a team from the Bartol Institute of the University of Delaware, he was involved in a search, made from the South Pole, for gamma-rays of $\sim 10^{14}$ eV from SN1987A. During this period the first coincidences between a shower detector and muons observed in the AMANDA instrument were recorded: this served as a prototype for the IceTop/IceCube configuration now in operation. In 1994 he spent time at the Whipple Observatory in Arizona and helped in the discovery of flared-emission at $\sim 1$ TeV of gamma-rays from Markarian 421. In 1991, with Jim Cronin (Chicago), he started the processes that led to creation of the Pierre Auger Observatory and is currently interested in using data obtained with it to determine the mass composition of the highest-energy cosmic rays. He is emeritus spokesperson of the Pierre Auger Observatory and an emeritus professor at the University of Leeds. He is a Fellow of the Royal Society.

Abstract:
I will explain why cosmic rays of energies above $10^{19}$ eV, the most energetic particles in Nature, are of interest to astrophysicists and particle physicists. While the former can use them to probe the galactic and intergalactic magnetic fields and to learn something of the workings of active galactic nuclei, the particles give the latter the opportunity to gain information about limited features of hadronic interactions at centre-of-mass energies up to 30 times above what is accessible at the LHC.

The Pierre Auger Observatory was constructed to measure the
properties of the highest-energy cosmic rays with unprecedented precision and statistical accuracy. I will describe how it operates and discuss the impact of the most recent results on our understanding of the nature and origin of the particles above $10^{18}$ eV. Inferences drawn from the data on the p-air cross section at a centre-of-mass energy of 57 TeV and on the number of muons found in air-showers, which are greater than predicted using models of hadronic interactions defined by Tevatron and LHC data, will be presented.
NSS Luncheon Talk

Climate change: myth and reality
Manuel Toaria Cortès
City of Arts and Sciences in Valencia, Spain
Monday, October 24, 12:30-14:30
Meliá Valencia Palacio Congresos Hotel, Valentia A&B&C

Biography:
Manuel Toharia was born in Madrid on August the 3rd, 1944. He got the French and Spanish bachelor’s degree in the “Lycée Français de Madrid” and afterwards he became a Physicist in the special field of the cosmos physics by the University Complutense of Madrid.

He has been a public official at the National Institute of Meteorology from 1969 to 1975 and started at the same time his activity in journalism and scientific dissemination as an editor of the newspaper “Informaciones” and as a redactor for the science information services of the Spanish public TV, TVE. Since 1979 he has guided and presented several cultural and scientific related programmes in the Spanish public TV.

He has been a scientific editor for the newspaper “El País”, he has launched the magazine “Muy Interesante” and has founded the scientific journal “Conocer”. Afterwards he has been working as a TV producer for several scientific related videofilms and programmes, and he has designed and developed several exhibits for science, technology and environment hands-on museums.

He has published 35 scientific dissemination books and he has been recognized with several rewards, one of them is the outstanding journalism award by the Scientific Investigation Council of Spain.

He has been the Director of the Interactive Science Museum ACCIONA and then the director of the Science Museum of the Foundation LA CAIXA, in Madrid. Since January 2000 he has been the Scientific Director of the City of Arts and Sciences in Valencia, and was elected president of the Spanish Association of Science Communication in spring 2005.

Abstract:
Every negative atmospheric phenomena - extreme temperatures, heavy rains, tropical cyclones, persistent drought, icy weather, etc. - is nowadays attributed to climate change, in such a way that the scientific forecasts are, according to public media, announcing an apocalyptic future. The political leaders are so convinced of this, that they claim we are facing the worst threat to human society in this century. Does it mean that this problem is more serious than the
actual fact of a thousand million people dying because of starvation in the world? Is this of higher concern than the thousands of nuclear weapons stored at military arsenals by the most powerful countries in the world? Even more grave than the fanatical, blind, international, suicidal and non-rational uncontrollable terrorism? Human beings are not making relevant efforts to avoid these dramas, in fact we ignore them. Climate change, on the other hand, is certainly a famous myth but also a reality difficult to ignore, because it has appeared as a scientific warning related to the development consequences of rich countries, and also from poor countries that want to become rich. It is not an immediate or short term warning, but requires reflexive and preventive, rather than palliative, actions, in an attempt to get an alternative scenario better than the existing forecast. Concerning global warming, we already know some facts, although we still ignore many more, and we are probably excessively fearful, but also doing very little to correct our previous behaviour.
Since the introduction of multiwire chambers in the late sixties, gaseous detectors have been and are used in a variety of configurations and sizes in most experiments in physics and other fields. To cope with the increasingly stringent requirements of modern applications, both in terms of tracking accuracy and rate capability, new generations of devices have emerged, generally named Micro-Pattern Gas Detectors. In this introduction to the topic, I will briefly summarize the performances and limitations of the classic and improved generations of gaseous detectors, as well as indicate directions of research aimed at solving endemic problems such as rate capability, long term survivability at high radiation levels, energy, and position resolutions.

In recent years neutron detection has been the object of renewed interest largely due to detection needs for homeland security and various other nuclear security/safeguards applications. In many applications, ³He gas detectors were used as thermal neutron detectors and surrounded with moderating material to detect higher energy neutrons. There is now a shortage of ³He for neutron detection applications. As a result, research efforts have been encouraged to find a replacement detection material for ³He. This refresher course will review the basic physics mechanisms by which various energy neutrons are detected. The principal reactions and cross sections for detecting slow, fast and high-energy neutrons will be reviewed. The detector types that have been traditionally used for neutron detection will also be reviewed: namely gas-filled, scintillators, and semiconductor-based detectors. The detector requirements for neutron spectroscopy will be presented along with a short discussion of the deconvolution of pulse-height spectra usually required to obtain a spectrum. Some cursory information on the applications of neutron detectors will be presented and the challenges that must be addressed to provide neutron detection capabilities now of interest. The attendee should keep in mind that this is a refresher course and will not address anything but the fundamentals of neutron detection.

This Refresher Course overviews Geant4 main features, with emphasis on Geant4 physics modeling capabilities and their use in
Monte Carlo simulation applications.

The selection of physics processes and models to be used in a simulation is one of the most critical tasks of Geant4 experimental applications. Geant4 users are invested of the responsibility of configuring the physics of their simulation, since Geant4 does not provide any default physics settings. The configuration of a user application requires in-depth knowledge of Geant4 physics functionality to identify appropriate processes and models, and understanding of their validity to estimate the reliability and accuracy of the simulation results.

This Geant4 simulation domain is by far the most difficult to master, not only for novice users, but also for more experienced ones, due to its intrinsic complexity and the large number of available options in the toolkit.

This Refresher Course reviews Geant4 simulation capabilities and physics modeling options; it summarizes the current status of Geant4 physics validation and provides guidance to deal with Geant4 physics selection in experimental applications.
It is our great pleasure to welcome you to the 2011 IEEE Medical Imaging Conference in Valencia, Spain. The Valencia Convention Center (VCC) is a wonderful venue for the meeting. Valencia offers a stimulating scientific environment together with a rich cultural heritage of music, art, gastronomy, architecture, and folklore.

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, David Townsend, who guided us through the whole process. Bo Yu, who managed the conference website and provided the necessary software tools, deserves a special mention for his rapid response to implementing new facilities and to fixing 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 764 abstracts and we accepted 684 of them after a rigorous review process. Of the 684 accepted abstracts, 126 have been assigned to 16 MIC oral sessions and to the two joint NSS-MIC and MIC-RTSD sessions and 555 to the MIC poster sessions; 3 accepted posters were withdrawn by the corresponding authors. The joint sessions between NSS, RTSD, and MIC will again be held on Tuesday afternoon. The MIC oral sessions are organized in two parallel sessions, where we have attempted to minimize the overlap between the subject matter in order to avoid conflicts. As last year, we have kept the number of poster sessions to 5 accommodating a total of 555 posters in an effort to reduce the number of posters per session. Although the physical space assigned to the poster sessions had to be split between two locations, we have tried to reduce the inconvenience to the minimum.

The Best Student paper competition will be particularly visible to attendees this year. There will be a special oral session devoted to finalists and the selected posters that are finalists will be indicated by a ribbon on the respective poster board.

There will be two MIC plenary sessions held on Wednesday. The first session will feature two renowned speakers, Prof. Willi Kalender from Erlangen University who will speak on “Is there still room for research in CT?” and Dr. Cristoph Bert from GSI, who will speak on “New frontiers in particle therapy”. The second plenary session will feature the third keynote speaker, Prof. Anders Brahme from Karolinska Institute and Stockholm University, who will speak on “Optimal use of imaging in radiation therapy”, followed by presentations from

Alberto Del Guerra
Juan J. Vaquero
this year’s winners of the Hoffman and Hasegawa Awards and by the recognition of the recipient of the 2011 IEEE Medal for Innovation in Healthcare Technology: Prof. Harry Barrett.

We have kept last year’s primer: the refresher courses to be held before the start of the main scientific sessions each morning on Thursday, Friday, and Saturday and covering the basics of Radiotherapy, CT, and PET/MRI imaging, respectively. On Wednesday, just before the opening, there will be an interesting refresher course on the European patent system.

There will also be the usual social events at the meeting, including the MIC dinner that will feature a fascinating after-dinner talk from the Spanish architect Luis Fernández-Galiano on “Biology and design: the city as artificial nature”. The prizes for the best student papers will be also given at the MIC dinner.

The “5th International Workshop on the Molecular Radiology of Breast Cancer” will take place on Sunday after the closing of the Medical Imaging Conference. As in past years since 2002, the overall goals of the proposed event are to convene imaging physicists and engineers as well as chemists, biologists, physicians, and students from around the world to discuss important issues related to breast cancer evaluation using functional Molecular Imaging techniques involving nuclear radiotracers, x-rays, and other technologies.

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 2011 IEEE Medical Imaging Conference in Valencia, Spain.

Alberto Del Guerra  
MIC Program Chair  

Juan J. Vaquero  
MIC Program Deputy Chair
**M01-1: Is there still room for research in CT?**

Willi Kalender  
*Institute of Medical Physics, Erlangen University, Germany*  
*Wednesday, October 26, 09:00–9:45, VCC, Auditorium 1*

**Biography:**

Willi A. Kalender was born on August 1, 1949. He received his Master’s Degree and Ph.D. in Medical Physics from the University of Wisconsin, Madison, Wisconsin, USA in 1979. In 1988 he completed all postdoctoral lecturing qualifications (Habilitation) for Medical Physics at the University of Tübingen, Germany.

From 1979 to 1995 Willi A. Kalender worked in the research laboratories of Siemens Medical Systems in Erlangen, Germany. He was appointed head of the Department of Medical Physics from 1988 to 1995. Since 1992 he has been Visiting Professor of Medical Physics at the University of Wisconsin, he was nominated as Distinguished Visiting Professor to the Department of Radiology at Stanford University, Stanford, CA, USA. In 1995 he was appointed full Professor and Chairman of the newly established Institute of Medical Physics at the Friedrich-Alexander-University Erlangen-Nuremberg, Germany.

Willi A. Kalender has conducted research mainly in the area of diagnostic imaging. The development and introduction of volumetric spiral computed tomography was a particular focus of his work. Other highly interesting fields of research were radiation protection and the development of quantitative diagnostic procedures, e.g. for the assessment of osteoporosis, lung and cardiac diseases. His work is documented in more than 800 scientific papers with 295 original publications among these, and more than 30 patents.

Willi A. Kalender is a Fellow of the American Association of Physicists in Medicine; from 2005 to 2007 he was an elected Member of the Board of Directors of this society. He is member of the International Commission on Radiation Units and Measurement (ICRU). In 2009 he was awarded an honorary doctorate in Medicine by the Medical Faculty of the RWTH Aachen, Germany. He organized and hosted numerous international workshops and conferences, among them the World Conference of Medical Physics in 2005 in Nuremberg, Germany.

**Abstract:**

X-ray computed tomography (CT) was considered a mature technology as early as the 1980s and was considered dead in the late 1980s due to the advent of magnetic resonance imaging (MRI). In spite of these predictions CT underwent remarkable developments in
technology and applications since then. The state of the art in clinical CT will be reviewed briefly.

The speed and the spectrum of the ongoing developments are remarkable. The lecture will primarily focus on the following areas: photon-counting energy-discriminating detectors for CT in general, dedicated scanners beyond clinical CT, special applications such as dual energy CT and breast CT, and efforts at the assessment and reduction of patient dose. There appear to be many topics still for basic and applied research in CT.

M01-2: New frontiers in particle therapy
Cristoph Bert
GSI, Germany
Wednesday, October 26, 09:45–10.30, VCC, Auditorium 1

Biography:

Christoph Bert is deputy director of the Biophysics Department and leading the group working on moving targets at GSI Helmholtz-Centre for Heavy Ion Research in Darmstadt, Germany. He joined GSI after receiving his diploma in physics from the Friedrich-Alexander University of Erlangen-Nuremberg, Germany in 2002 as a PhD student. Part of the PhD research took place at Massachusetts General Hospital (Harvard Medical School) in Boston, USA. Also after his PhD (2006 from Technical University in Darmstadt, Germany) Dr. Bert remained at GSI to continue research in the direction of particle beam therapy. His PostDoc time included a short term stay at the National Centre for Radiological Sciences in Chiba, Japan. Most of his research is dedicated to translational challenges involving close collaboration with clinical partners and industry.

Abstract:
Proton and especially carbon beam radiotherapy were recently established as therapy options in a clinical setting. Especially for scanned beam treatments numerous aspects are still investigated and will be transferred to clinical practice in the next few years. Within the lecture an introduction to the challenge of organ motion will be given. Scanned beam treatment of moving objects results in interference effects that can lead to under-dosage of the tumor. All links of the radiotherapy chain thus have to incorporate the temporal domain. The lecture will focus on: i) 4D treatment planning that has to incorporate the increased radiobiological effect of carbon beams; ii) beam tracking, gating, and rescanning that are investigated as treatment techniques to mitigate the interference effect; and iii) radiobiological validation of the techniques by irradiating cell samples in a biological phantom.
Biography:
Anders Brahme is Professor of Medical Radiation Physics at the Department of Oncology-Pathology, Karolinska Institutet and Department of Medical Radiation Physics, Stockholm University, and Manager of the Research Center for Radiation Therapy, Karolinska Institutet. He got his Master of Science degree in electrical engineering at the Royal Institute of Technology in 1969 and his Ph.D. thesis on the application of the Microtron accelerator for radiation therapy was presented 1975 at Stockholm University. Since then he has been active in the development of radiation dosimetry, quality assurance and radiation therapy equipment and techniques for most types of radiation from electrons and photons to neutrons, protons and light ions. He initiated the development of inverse radiation therapy planning and intensity modulated radiotherapy using scanning beams and dynamic multileaf collimator systems. During the last three decades he has been mainly active in the field of radiotherapy optimization using light ions and accurate radiobiological models describing the response of tumors and normal tissues. By such techniques he has been able to maximize the expectation value of the complication-free tumor cure under consideration of intensity modulation, dose fractionation, the choice of radiation modality, the number of beam portals and their angles of incidence as well as uncertainties in geometrical and biological parameters. Anders Brahme was head of the department of Oncology-Pathology 1998 – 1999 and has been director for the Vinnova Center of Excellence: Research Center for Radiation Therapy (1995 – 2007) and coordinator to the 6th FP of EU project BioCare on Molecular Tumor Imaging for Biologically Optimized Cancer Therapy (2004 – 2009). In 2008 he started a very close collaboration with the National Institute of Radiological Sciences (NIRS) in Chiba, Japan on the future development of light ion therapy.

Abstract:
The fast development of energy and intensity modulated radiation therapy during the last two decades using photon and electron beams has resulted in a considerable improvement of radiation therapy, particularly when combined with radiobiologically based treatment optimization techniques. This development and the recent development of advanced tumor diagnostics based on PET-CT and Spectroscopic MR imaging of the tumor density opens the field...
for new powerful radiobiologically based treatment optimization methods. It is even possible by repeated PET-CT imaging to perform a real 3-dimensional (3D) predictive assay in vivo on the patient to determine the radiation responsiveness of the tumor being treated. The ultimate step is to use the unique radiobiological and dose distributional advantages of light ion beams for truly optimized bioeffect planning where the integral 3-dimensional dose delivery and tumor cell survival can be monitored by PET-CT imaging and corrected by adaptive therapy optimization methods.

The main purpose of this presentation is to discuss the principal areas of development of therapy optimization considering the whole therapy chain from tumor diagnostics and patient fixation through therapy planning and treatment optimization to the repeated treatment setups and dose delivery on a patient that hopefully has a shrinking tumor and often may loose weight. Finally, it is the integral dose delivery and the biological effect distribution that matters so the shaping of the optimal incident beams is a truly complex inverse problem which is hard to solve by such a simplistic concept as a planning target volume. The above introduction indicates that Biologically Optimized 3D in vivo predictive Assay based Radiation Therapy (BIO-ART) is really the ultimate way to perform high precision radiation therapy using checkpoints of the integral dose delivery and the tumor response, and based on this information, performing compensating corrections of the dose delivery. By using biologically optimized scanned high energy photon or ion beams it is possible to measure in vivo the 3D dose delivery using the same PET-CT camera that was used for diagnosing the tumor spread. This method thus opens up the door for truly 3D biologically optimized adaptive radiation therapy where the measured dose delivery to the true target tissues can be used to fine adjust the incoming beams so that possible errors in the integral therapy process are eliminated towards the end of the treatment. Interestingly enough practically all major error sources can be corrected for in this way such as organ motions, treatment planning errors, patient setup errors, and dose delivery problems due to gantry, multileaf, or scanning beam errors. When it is possible to quantify surviving tumor clonogens after the first week or two of therapy, this information can be used to also account for uncertainties in biological response data and really cover all clinical uncertainties at the same time as more accurate dose response data can be derived. The response of the PET-CT camera is related to the truly delivered integral dose with correct temporal averaging, thus if only small errors are seen, it is sufficient to adjust the last few treatment fractions. Thus, when using PET-CT tumor response monitoring, it is even possible to account for the uncertainty in biological response of the patient and to do real time in vivo predictive assay to perform truly biologically optimized radiation therapy.

Several examples of radiobiologically optimized dose delivery are presented and examples of the above mentioned new treatment techniques are illustrated for a number of clinically relevant targets. The unique properties of light ion therapy in this context are also presented in more detail. Using the recently available biologically based treatment optimization algorithms it is possible to improve the treatment outcome for
advanced tumors by as much 10 – 40%. The adaptive radiotherapy process based both on 3D tumor cell survival and dose delivery monitoring has the potential of percent accuracy in tumor response and dose delivery, not least with 3D geometric Bragg peak scanning and intensity modulated ion beam dose delivery. There is no doubt that the future of radiation therapy and diagnostic tumor imaging is very promising and gradually more and more patients may not even need advanced surgery but instead could be cured by photon and electron IMRT and ultimately biologically optimized light ion therapy, where the high LET-RBE Bragg peak is solely placed in the gross tumor volume.

M02-2: Awards Plenary
Anna M. Celler
University of British Columbia, Canada
Wednesday, October 26, 11:45–13:00, VCC, Auditorium 1

11:45 Presentation of the Bruce H. Hasegawa Award
12:00 Presentation of the Edward J. Hoffman Award
12:05 NPS Awards (Graduate scholar award; 2011 NPSS Fellow)

Harrison H. Barrett, Ph.D.
Regents Professor, University of Arizona

Dr. Barrett received a bachelor’s degree in physics from Virginia Polytechnic Institute in 1960, a master’s degree in physics from MIT in 1962, and a Ph.D. in applied physics from Harvard in 1969. He worked for the Raytheon Research Division until 1974, when he came to the University of Arizona. He is a professor in the College of Medicine and the College of Optical Sciences, and he has appointments in Applied Mathematics, Biomedical Engineering and the Arizona Cancer Center. In 1983 he served as acting director of the Optical Sciences Center, and in 1990 he was named a Regents Professor. He is a fellow of the Optical Society of America, the Institute of Electrical and Electronic Engineers, the American Physical Society, and the American Institute of Medical and Biological Engineering. He has 25 U.S. patents and over 250 technical papers, and 55 students have received Ph.D. degrees under his direction. His awards include a Humboldt Prize, the 2000 IEEE Medical Imaging Scientist Award, an E. T. S. Walton Award from Science Foundation Ireland, and the 2005 C. E. K. Mees Medal from the Optical Society of America. He is the 2011 recipient of the IEEE Medal for Innovations in Healthcare Technology and also the 2011 recipient of the SPIE Gold Medal of the Society.

His current research is in image science, with applications in medicine and astronomy. He is director of the Center for
Gamma-ray Imaging, an NIH-funded research resource that develops state-of-the-art instruments for radiotracer studies of small animals. He is also active in developing new methods for the assessment and optimization of image quality and in applying parallel computers to tomographic imaging. In collaboration with Kyle J. Myers, he has written a book entitled Foundations of Image Science, which in 2006 was awarded the First Biennial J. W. Goodman Book Writing Award from OSA and SPIE.
Biology and design: the city as artificial nature

Luis Fernández-Galiano

School of Architecture of Madrid’s Universidad Politécnica, Spain

Friday, October 28, VCC, Multipurpose room 2, 20:00

Biography:
Luis Fernández-Galiano (1950) is an architect, professor at the School of Architecture of Madrid’s Universidad Politécnica and editor of the journals AV/Arquitectura Viva. Between 1993 and 2006 he was in charge of the weekly architecture page of the newspaper El País, where he now writes in the Op-Ed section. A member of the Royal Academy of Doctors, he has been Cullinan Professor at Rice University, Franke Fellow at Yale University, a visiting scholar at the Getty Center of Los Angeles and a visiting critic at Princeton, Harvard, and the Berlage Institute; and has taught courses at the Menéndez Pelayo and Complutense universities. President of the jury in the 9th Venice Architecture Biennial, expert and juror of the Mies van der Rohe European Award, he has curated the exhibitions El espacio privado, Extreme Eurasia (in Tokyo and in Madrid) and Bucky Fuller & Spaceship Earth, and has been on the jury of several international competitions, in Europe and America. Among his books are La Quimera Moderna, Fire and Memory (MIT Press), Spain Builds (with New York’s MoMA in its English version, and presented in its Chinese version with symposiums in Shanghai and Beijing) and Atlas, Global Architecture circa 2000, a series of five volumes.

Abstract:
Living beings have been interpreted as machines, but they also have served as inspiration for designing objects: organisms and mechanisms have exchanged a fertile dialogue, and both have served as a source of metaphors that have helped to blur the boundaries between what is natural and what is artificial. Cities, like buildings, have been described as organisms that are susceptible to mechanical and thermodynamic analysis, and these visions of the artificial environment help to understand the ecology of urban areas and to suggest sustainable ways of occupying the territory, which is an especially urgent challenge at the time of climate change and growing scarcity of fossil fuels, two vectors that should promote a thorough technical and spatial transformation of our societies.
Academic research is more and more interacting with industrial partners and technology transfer institutions, which have a strong interest in commercialising their inventions and research results. At the same time, especially in academics, there seems to be a considerable lack of information on how to use intellectual property rights (IPR) to protect these results but also on how to make use of the enormous information published in patent applications.

Consequently, the aim of this refresher course is to give researchers an insight into the world of patents with an emphasis on the European patent system. First an introduction to patents and practical information on the procedure to obtain a patent will be provided. Moreover, topics related to the search of patent literature will be presented, including an introduction to patent classification systems as well as an overview of public tools/databases for patent literature search and file inspection. Finally, patent related issues for medical technologies will be briefly addressed. The course includes presentations and a question and answer session to discuss the issues raised.

During the last 30 years radiation therapy has developed from classical rectangular beams via conformation therapy with largely uniform dose delivery but irregular field shapes to fully intensity modulated dose delivery where the total dose distribution in the tumor can be fully controlled in three dimensions. This last step has been developed during the last 15 – 20 years and has opened up the possibilities for truly optimized radiation therapy also with multiple radiation modalities.

This refresher course will briefly discuss biological objective functions and the associated advantages in the treatment outcome using new approaches such as consideration of stochastic positioning and sensitivity uncertainties and angle of incidence and fractionation schedule optimization with intensity-modulated beams. Finally, future possibilities for realizing general three-dimensional intensity-modulated dose delivery with the wide spectrum of radiation modalities from electrons and photons to protons and light ions will be discussed. The clinical value of different radiation modalities will also be briefly reviewed.
An introduction to modern CT
Willi A. Kalender
Institute of Medical Physics, Erlangen University, Germany
Friday, October 28, 07:30-08:30, VCC, Auditorium 2

The refresher course aims at providing an introduction to basics, technology and applications of modern CT for “novices” in the field. The focus will be on the scan approaches and technology which are the basis for the amazingly high performance of modern CT. For this purpose the state of the art in clinical CT will be reviewed and recent development trends will be analysed briefly; 64-slice high-resolution spiral CT for whole-body imaging constitutes the standard today with rotation times below 0.3 s and total body scan times of just a few seconds. Performance has been enhanced significantly by the introduction of dual source CT. Further developments such as dedicated scanners for special applications and detector developments are key topics and will be outlined briefly to complete the overview. The basic physics of data acquisition and image reconstruction will be covered only briefly.

Fundamentals of PET/MRI Imaging
Sibylle Ziegler
Münich University, Germany
Saturday, October 29, 07:30-08:30, VCC, Auditorium 2

PET/MR has attracted a lot of attention and the first systems are being used in the clinical arena. The major challenges in terms of detectors, system design, quantification, and protocols will be summarized. Different available hardware solutions in preclinical as well as clinical systems will be reviewed. Furthermore, issues and potential solutions for MR-based attenuation correction procedures will be covered.
It is our great pleasure to welcome you to the 18th 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 Workshop Program Committee, who have offered their time to enlist the involvement of most researchers in the field.

Ralph James
RTSD Program Co-Chair

Ernesto Dieguez
RTSD Program Co-Chair
SCIENTIFIC PROGRAM
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NP1  NSS Plenary 1
Monday, Oct. 24  08:30-10:00  VCC, Auditorium 1
Session Chairs: Jose M. Perez, CIEMAT, Spain
Faustino Gomez, University of Santiago, Spain

NP1-1 (08:30) Welcome by General Chair
D. W. Townsend, Singapore Bioimaging Consortium, Singapore

NP1-2 (08:40) Welcome by NSS Chair
P. Lecoq, CERN, Switzerland

NP1-3 (08:50) Tribute to Juan Antonio Rubio
E. Gonzalez, CIEMAT, Spain

NP1-4 (08:55, invited) Lessons to be learned from Fukushima
M. Kröning, Fraunhofer-Institut Zerstörungsfreie Prüfverfahren, Germany

NP2  NSS Plenary 2
Monday, Oct. 24  10:30-12:30  VCC, Auditorium 1
Session Chairs: Paul R. Lecoq, CERN, Switzerland
David W. Townsend, Singapore Bioimaging Consortium, Singapore

NP2-1 (10:30, invited) Exploring Nature Moments after the Big Bang at the LHC
T. Virdee, CERN, Switzerland

NP2-2 (11:10, invited) Heavy ions at the LHC
P. Giubellino, INFN, Italy

NP2-3 (11:50, invited) Ultra-High Energy Cosmic Rays and the Pierre Auger Observatory
A. Watson, University of Leeds, UK

N1  Scintillators 1
Monday, Oct. 24  14:30-15:45  VCC, Auditorium 1
Session Chairs: Etienne Auffray, CERN, Switzerland
Chuck Melcher, University of Tennessee, United States

N1-1 (14:30) Scintillation Properties of Eu2+-Activated BaBrCl
G. Gundiah, Z. Yan, G. Bizarr, S. E. Derenzo, E. D. Bourret-Courchesne
Lawrence Berkeley National Laboratory, USA

N1-2 (14:45) ZnO Neutron Detectors Designed for High Sensitivity and Gamma-Ray Discrimination
B. J. Connors, N. E. Hertel, C. J. Summers, J. Blair, B. D. B. Klein
Georgia Institute of Technology, USA

N1-3 (15:00) Advanced Scintillator Development for a Fast Scintillator Compton Telescope (FACTEL)
S. R. Torrega, E. A. McKigney, R. M. Kippen, M. S. Wallace, Los Alamos National Laboratory, USA; J. Ryan, P. Bloter, University of New Hampshire, USA

N1-4 (15:15) Characteristics of Undoped and Europium-Doped SrI2 Scintillator Detectors
B. W. Sturm, N. J. Cherepy, P. A. Thelin, S. A. Payne, Lawrence Livermore National Laboratory, USA; J. O. Ramey, L. A. Boatner, Oak Ridge National Laboratory, USA; A. Burger, Fisk University, USA; R. Hawrami, K. S. Shah, Radiation Monitoring Devices, Inc., USA

N1-5 (15:30) Large-Area Crystalline Microcolumnar LaBr3:Ce for High-Resolution Gamma Ray Imaging
H. B. Bhandari1, V. Gelfandbein1, S. Miller1, S. Cool1, B. W. Miller2, H. B. Barber, V. V. Nagarkar1
1Radiation Monitoring Devices, Inc., USA; 2The University of Arizona, USA
**N2 Nuclear Power**

**Monday, Oct. 24**  14:30-15:15  VCC, Auditorium 2

Session Chairs:  **Gordon E. Kohse**, MIT, United States  
**Stephen Peggs**, Brookhaven National Laboratory, United States

**N2-1** (14:30) Measurements of Fukushima Fallout by the Berkeley Radiological Air and Water Monitoring Project
M. S. Bandstra¹, K. Vetter¹,², D. Chivers¹, T. Aucott¹, C. Bates¹, A. Coffer¹, J. Curtis¹, D. Hogan¹, A. Iyengar¹, Q. Looker¹, J. Miller¹, V. Negut¹, B. Plimley¹, N. Satterlee¹, L. Supic¹, B. Yee¹  
¹University of California, USA; ²Lawrence Berkeley National Laboratory, USA

**N2-2** (14:45) Imaging of Reactor Cores Using Cosmic-Ray Muon Tomography
C. L. Morris, K. N. Borozdlin, S. Greene, E. C. Milner, H. Miyadera  
Los Alamos National Laboratory, United States

**N2-3** (15:00) A Device for Ultrafast Three-Dimensional X-Ray Computed Tomography with a Scanned Electron Beam
T. Stuerzel, Uni Stuttgart, Institut fuer Kernenergetik und Energiesysteme IKE, Germany; M. Bieberle, U. Hampel, Institut fuer Sicherheitsforschung, HZDR, Germany

**N3 Multi-level Trigger Approaches and Trigger Farms**

**Monday, Oct. 24**  14:30-15:45  Meliá, Meeting 1&2&3

Session Chairs:  **Stefan Ritt**, Paul Scherrer Institute, Switzerland  
**Alberto Aloisio**, University of Naples ‘Federico II’ and INFN, Italy

**N3-1** (14:30) The PHENIX Muon Level-1 Trigger Upgrade
J. Lajoie, Iowa State University, USA  
On behalf of the PHENIX Collaboration

**N3-2** (14:45) Online Muon Reconstruction in the ATLAS Muon Spectrometer at the Level-2 Stage of the Event Selection
A. Di Mattia, Michigan State University, USA  
On behalf of the ATLAS Collaboration

**N3-3** (15:00) Data Compression for Large Tracking Detectors for High Energy Nuclear Physics
M. Richter, University of Oslo, Norway  
On behalf of the ALICE Collaboration

**N3-4** (15:15) A Trigger System Based on Fast Sampling ADCs - Implementation and Tests
P. Marciniukiewski, P. Plucinski, K. Fransson, L. Heijkenskjold, A. Kupsc, J. Zlomanczuk, M. Wolke, Uppsala University, Sweden; W. Erven, P. Wuestner, H. Klein, V. Hejny, D. Coderre, Forschungszentrum Juelich, Germany

**N3-5** (15:30) Trigger-Less Readout Chain for the PANDA Electromagnetic Calorimeter
M. Kavatsyuk, KVI, University of Groningen, The Netherlands  
On behalf of the PANDA Collaboration

**N4 Photodetectors 1**

**Monday, Oct. 24**  16:30-18:15  VCC, Auditorium 1

Session Chairs:  **William W. Moses**, Lawrence Berkeley National Laboratory, United States  
**Roger Lecomte**, Université de Sherbrooke, Canada

**N4-1** (16:30) Mean and Variance of the Response of Digital SiPM-Based Scintillation Detectors: Model and Measurements
H. T. van Dam, S. Seifert, G. J. van der Lei, D. R. Schaart  
Delft University of Technology, The Netherlands
N4-2 (16:45) Modeling of Single Photon Avalanche Diode Array Detectors for PET Applications
A. Corbeil Therrien, B.-L. Berube, C. Thibaudeau, S. Charlebois, R. Lecomte, R. Fontaine, J.-F. Pratte
Université de Sherbrooke, Canada

N4-3 (17:00) Highly Integrated Arrays of Digital SiPMs with Simplified Readout Interface
C. Degenhardt, B. Zwaans, O. Muelhens, R. de Gruyter, T. Frach
Philips Digital Photon Counting, Germany

N4-4 (17:15) Silicon Photomultiplier Characterization and Its Impact on Time Resolution for Application in an Endoscopic TOF PET Detector
C. Xu, E. Garruti, M. Goettlich, A. Silenzi
Deutsches Elektronen-Synchrotron (DESY), Germany

N4-5 (17:30) Timing Performance of Large Area SiPMs Coupled to LYSO Using Noise Compensation Methods
C. Piemonte, A. Gola, A. Picciotto, N. Serra, A. Tàrolli, N. Zorzi
FBK, Italy

N4-6 (17:45) Study of the Coincidence Time Resolution for Several Scintillators of Different Size and Wrappings Read Out by SiPMs Using the Time over Threshold Method
E. Auffray, B. Frisch, S. Gundaker, H. Hillemanns, P. Jarron, P. Lecoq, T. Meyer, K. Pauwels
CERN, Switzerland

N4-7 (18:00) Assessment of New Photosensors for Fast Timing Applications with Large LaBr3(Ce) Scintillator Detectors
L. M. Fraile, B. Olaizola, E. Picado, J. M. Udías
Universidad Complutense de Madrid, Spain

N5 Gaseous Detectors 1

Monday, Oct. 24 16:30-18:15 VCC, Auditorium 2

Session Chairs: Jae Yu, Univ. of Texas Arlington, United States
Fabio Sauli, TERA FOUNDATION AND CERN, Switzerland

N5-1 (16:30) Performances and Sparking Rate Study of Resistive-Anode Micromegas Detectors for the HL-LHC Environment
F. Jeanneau, CEA Saclay, France
On behalf of the CEA Saclay, NTU Athens and NSCSR (Demokritos) groups

N5-2 (16:45) Novel Spark-Protected Microstrip and Microdot-Type Gaseous Detectors
V. D. Peskov1, R. Oliveira1, F. Pietropaolo2, P. Picchi2, P. Martinengo1, E. Nappi
1CERN, Switzerland; 2INFN, Italy

N5-3 (17:00) R&D on MRPC for BESIII E-TOF Upgrade
Y. Sun1, C. Li1, H. Chen1, Y. Heng1, X. Jiang1, S. Liu1, S. Liu2, S. Qian1, Z. Tang1, Y. Wang2, L. Xu1, S. Yang1
1University of Science and Technology of China, China; 2Institute of High Energy Physics, CAS, China

N5-4 (17:15) A Setup to Study Properties of Micro-Pattern Gaseous Detectors with Laser-Photoelectrons
K. Temming1, G. Herten1, U. Landgraf1, W. Mohr1, S. Weber2, S. Zimmermann1
1Albert-Ludwigs-Universität Freiburg, Germany; 2Universität Wuerzburg, Germany

N5-5 (17:30) High-Rate Performance of New Fast Muon Drift Tube Chambers for LHC Upgrades
B. Bittner, J. Dubbert, H. Kroha, P. Schwegler
Max-Planck-Institut fuer Physik, Germany

N5-6 (17:45) Development of the GridPix Detector for Dual Phase Noble Gas Time Projection Chambers
M. Alfonsi, N. van Bakel, M. P. Decowski, G. Hemink, H. van der Graaf, R. Schoen
N5-7 (18:00) Test for Upgrading the RPCs at Very High Counting Rate
1INFN, Italy; 2University of Rome, Italy

N6 Grid and Core Software Tools
Monday, Oct. 24 16:30-17:45 Meliá, Valentia A

Session Chairs: Rafael Mayo, CIEMAT, Spain
Gabriele Benelli, CERN, Switzerland

N6-1 (16:30) More Efficient Monte Carlo Grid Executions with Montera Framework
M. Rodríguez-Pascual, A. J. Rubio-Montero, R. Mayo
CIEMAT, Spain

N6-2 (16:45) A General Purpose Suite for Grid Resources Exploitation
A. Fella, INFN Sezione di Pisa, Italy; E. Luppi, M. Manzali, L. Tomassetti, University of Ferrara and INFN, Italy

N6-3 (17:00) Services for the Heavy User Communities of the European Grid Infrastructure: High Energy Physics, Life Sciences, Earth Sciences, Astronomy & Astrophysics and Beyond
J. D. Shiers, CERN, Switzerland
On behalf of the The EGI-InSPIRE Heavy User Communities (SA3)

N6-4 (17:15) ATLAS Detector Data Processing on the Grid
A. Vaniachine, Argonne National Laboratory, USA
On behalf of the ATLAS Collaboration

N6-5 (17:30) The CMS Software Performance in the First LHC Collisions Years
G. L. Bruno, Université catholique de Louvain, Belgium
On behalf of the CMS Collaboration

N7 Solid State Hybrid and Monolithic Detectors 1
Monday, Oct. 24 16:30-18:00 Meliá, Valentia B

Session Chairs: Laci Andricek, MPI Halbleiterlabor, Germany
Gianluigi Casse, CERN, Switzerland

N7-1 (16:30) Performance of P-Type Silicon Sensors after Cleaving and Al2O3 Sidewall Passivation
V. A. Fadeyev, H. F.-W. Sadrozinski, J. G. Wright, UCSC, USA; M. Christophersen, B. F. Philips, U.S. Naval Research Laboratory, USA

N7-2 (16:45) Alumina, Al2O3, Layers as Effective P-Stops for Silicon Radiation Detectors
M. Christophersen, B. F. Philips
U.S. Naval Research Laboratory, USA

N7-3 (17:00) Radiation Hard Sensor Materials for the CMS Tracker Upgrade
M. Dragicevic, HEPHY, Austria
On behalf of the CMS Tracker Collaboration

N7-4 (17:15) Diamond Pixel Detectors Confronting Silicon in High Radiation Environments
1Bonn University, Germany; 2Ohio State University, USA

N7-5 (17:30) Performance of Silicon N-in-P Pixel Detectors Irradiated up to 1016 N cm2 for Future ATLAS Upgrades
P. Weigell, C. Gallrapp, A. La Rosa, A. Macchiolo, R. Nisius, H. Pernegger, Richter
1Max-Planck-Institut für Physik, Germany; 2CERN, Switzerland; 3Max-Planck-Institut Halbleiterlabor, Germany
N7-6 (17:45) Recent Progress of the ATLAS Upgrade Planar Pixel Sensors R&D Project
D. Muenstermann, CERN, Switzerland
On behalf of the ATLAS Upgrade Planar Pixel Sensors R&D Project

N8 Astrophysics and Space Instrumentation 1

Monday, Oct. 24 16:30-18:15  Meliá, Valentia  C

Session Chairs: Tadayuki Takahashi, ISAS/JAXA, Japan
Hong-Joo Kim, Department of Physics, Kyungpook National University, South Korea

N8-1 (16:30) Extremely Low Noise Developments for Charge Coupled Devices
G. Fernandez Moroni1,2,3, J. Estrada1, G. Canelo1, S. E. Holland4, E. E. Paolini5,6, T. Diehl1
1Fermilab, United States; 2CONICET, Argentina; 3Universidad Nacional del Sur, Argentina; 4Lawrence Berkeley National Laboratory, United States; 5CIC, Argentina

N8-2 (16:45) The Spectral Response of eROSITA pnCCDs
S. Granato, N. Meidinger, L. Strueder, G. Weidenspointner, MPI Semiconductor laboratory, Germany; M. Krumrey, F. Scholze, Physikalisch-Technische Bundesanstalt, Germany

N8-3 (17:00) Integration and Calibration of the DEPFET Based Flight Detectors for MIXS on BepiColombo
P. Majewski1, L. Andricek2,3, B. Guenther2,4, M. Hilchenbach5, K. Herrmann1,2,3, T. Lauf4, P. Lechner1, G. Lutz5, M. Porro2,4, J. Reiffers2,4, R. Richter2,3, G. Scheller2,4, M. Schnecke2,4, F. Schopper2,4, H. Soltau1, A. Stefanescu2,3, L. Strueder2,4, J. Treis1, G. De Vita2,4
1PNSensor GmbH, Germany; 2Max-Planck Semiconductor Laboratory, Germany; 3Max-Planck Institute for Physics, Germany; 4Max-Planck Institute for extraterrestrial Physics, Germany; 5Max-Planck Institute for Solar System Research, Germany

N8-4 (17:15) The Wide Field Imager of the Advanced Telescope for High Energy Astrophysics
A. Stefanescu1,2, 1Max-Planck-Institut Halbleiterlabor, Germany; 2Max-Planck-Institut für extraterrestrische Physik, Germany
On behalf of the ATHENA/WFI Consortium

N8-5 (17:30) Development and Performance of X-Ray Astronomical SOI Pixel Sensor
T. G. Tsuru, S. G. Ryu, S. Nakashima, Kyoto University, JAPAN; Y. Arai, A. Takeda, Y. Ikemoto, KEK, JAPAN; A. Iwata, T. Imanura, T. Ohmoto, A-R-Tec Corp, JAPAN

N8-6 (17:45) Single Photon Avalanche Diodes for Space Applications
1INAF-IASF Bologna, Italy; 2CNR IMM Bologna, Italy; 3INFN & Universita degli Studi di Milano, Italy; 4Politecnico di Milano, Italy; 5Micro Photon Device, Italy; 6INFN sezione di Padova, Italy; 7Universita degli Studi di Padova, Italy; 8Italian Space Agency, Italy

N8-7 (18:00) Determination of effective axion masses in the helium-3 buffer of CAST
J. Ruz, CERN, Switzerland
On behalf of the CAST Collaboration
N9 - DAQ Architectures and Hardware Standards 1

Monday, Oct. 24 16:30-18:15 Meliá, Meeting 1&2&3

Session Chairs: Martin L. Purschke, Brookhaven National Lab, United States
Gary Drake, Argonne National Laboratory, United States

N9-1 (16:30) Associative Memory Design for the Fast TrackKer Processor (FTK) at ATLAS
A. Annovi1, S. Amerio2, M. Beretta1, E. Bossini3, F. Crescioli4, M. Dell’Orso5, P. Giannetti6, J. Hoff7, T. Liu2, V. Liberati2, I. Sacco5, A. Schoening5, H. K. Soltveit6, A. Stabile4, R. Tripiccione2
1INFN Laboratori Nazionali di Frascati, Italy; 2FERMILAB, USA; 3INFN Sezione di Pisa, Italy; 4University of Milano, Italy; 5University of Mannheim, Germany; 6University of Heidelberg, Germany; 7University of Ferrara, Italy

N9-2 (16:45) The NEMO Experiment Data Acquisition and Timing Distribution Systems
F. Ameli1, A. Aloisio2, A. D’Amico1, R. Giordano1, V. Izzo1, F. Simeone1
1Istituto Nazionale di Fisica Nucleare, Italy; 2Universita’di Napoli Federico II, Italy

N9-3 (17:00) First Experiences with the New Data Acquisition for the PHENIX Detector Upgrades
M. L. Purschke, Brookhaven National Lab, USA
On behalf of the PHENIX Collaboration

N9-4 (17:15) The DAQ Readout Chain of the DSSC Detector at the European XFEL
T. Gerlach, A. Kugel, A. Wurz, P. Fischer, University of Heidelberg, Germany; K. Hansen, K. Hlaer, D. Muenterfe, Deutches Elektronen-Synchrontron DESY, Germany

N9-5 (17:30) The Time Assignment System of ASTRO-H
T. Kouzu1, K. Iwase1, Y. Mishima1, Y. Terada1, T. Yuasa1, Y. Ishisaki1, M. S. Tashiro1, M. Kokubun2, M. Ozaki2, M. Nomachi2, T. Takahashi2
1Saitama University, Japan; 2ISAS/JAXA, Japan; 3Tokyo Metropolitan University, Japan; 4Osaka University, Japan

N9-6 (17:45) Functional Super Read Out Driver Demonstrator for the Phase II Upgrade of the Atlas Tile Calorimeter
F. Carrio Argos, University of Valencia, Spain
On behalf of the ATLAS Tile Calorimeter group

N9-7 (18:00) ITER Fast Plant System Controller Prototype Based on ATCA Platform
B. Goncalves1, J. Sousa1, B. B. Carvalho1, A. Batista1, A. Neto1, D. F. Valcarcel1, D. Alves1, M. Correia1, A. P. Rodrigues1, P. F. Carvalho1, M. Ruiz2, J. Vega3, R. Castro3, J. M. Lopez3, N. Urzel3, P. Makijarvi4
1Instituto de Plasmas y Fusio Nuclear, Portugal; 2Universidad Politecnica de Madrid (UPM), Spain; 3Asociacion EURATOM/CIEMAT para Fusion, Spain; 4ITER Organization, France
R01  CZT I

Monday, Oct. 24  09:00-10:25  VCC, Auditorium 3 A & B

Session Chair:  Ernesto Dieguez, Universidad Autonoma de Madrid, Spain

R01-1  (09:00, invited) CZT Detection: from THM to Heart Imaging
Redlen Technologies, Canada

R01-2  (09:20, invited) Past Performance and Future Propects of CdZnTe Coplanar-Grid Detectors
P. N. Luke, M. Amman, J. Lee
Lawrence Berkeley National Laboratory, USA

R01-3  (09:40) Analysis of a Traveling Magnetic Field (TMF) for Active Control of the Bridgman Growth of CZT Crystals
J. J. Derby, G. Samanta, A. Yeckel
University of Minnesota, U.S.A.

R01-4  (09:55) Approaches Towards Minimization of Secondary Phases During Bridgman Growth of Cd0.9Zn0.1Te for Nuclear Radiation Detection Application
S. K. Swain, A. Datta, K. G. Lynn
Center for Materials Research, Washington State University, USA

R01-5  (10:10) Array of Virtual Frisch-Grid CZT Detectors with Common Cathode Readout for Correcting Charge Signals and Rejecting of Incomplete Charge-Collection Events
Brookhaven National Laboratory, USA

R02  Applications I

Monday, Oct. 24  11:00-12:55  VCC, Auditorium 3 A & B

Session Chair:  Paul N. Luke, Lawrence Berkeley National Laboratory, United States

R02-1  (11:00, invited) Development of Small-Pixel CdTe and CZT Detectors with a Hybrid Pixel-Waveform Readout System
L.-J. Meng, L. Cai, N. Li
University of Illinois at Urbana-Champaign, USA

R02-2  (11:20, invited) Development of a 128x128 Pixel CZT Imaging System Based on Orthogonal Capacitive Strip Technology
G. Montémont, M.-C. Gentet, L. Maingault, F. Mathy, O. Monnet, J.-P. Rostaing, S. Stanchina, L. Verger
CEA-Leti, MINATEC Campus, FRANCE

R02-3  (11:40) Development of the ProtoEXIST2 Advanced CdZnTe Imaging Detectors
B. Allen, J. Hong, J. Grindlay, Harvard College Observatory, USA;  S. D. Barthelmy, R. G. Baker, Goddard Space Flight Center, USA;  W. R. Cook, F. A. Harrison, Caltech, USA

R02-4  (11:55) Digital Spectroscopic System Based on Large Volume Stacked Coplanar Grid (Cd,Zn)Te Detectors
M. Dambacher, A. Zwerger, A. Fauler, C. Disch, M. Fiederle, Freiburger Materialforschungszentrum, Germany;  W. Eickhoff, Bundesamt fuer Strahlenenschutz, Germany;  U. Stoelhcket, CTBTO, Austria

R02-5  (12:10) Development of a CZT High Efficiency Detector with Three Dimensional Spatial Resolution for Hard X Ray Astronomy
R02-6 (12:25) Thick Silicon and CZT Compton Imager
M. Subramanian, George Mason University, USA; E. A. Wulf, B. F. Philips, Naval Research Laboratory, USA; H. Krawczynski, J. Martin, Washington University in St Louis, USA

R02-7 (12:40) Caliste HD: a New Fine Pitch Cd(Zn)Te Imaging Spectrometer from 2 keV up to 1 MeV
A. Meuris, O. Limousin, O. Gevin, F. Lugiez, I. Le Mer, F. Pinsard, M. Donati, C. Blondel, A. Michalowska, E. Delagnes, CEA Saclay, France; M.-C. Vassal, F. Soufflet, 3d Plus, France

R03 Characterization I

Monday, Oct. 24 14:30-16:05 VCC, Auditorium 3 A & B
Session Chair: Jan Franc, Institute of Physics, Charles University, Czech Republic

R03-1 (14:30, invited) Effects of Post-Growth Two-Step Annealing on Deep Energy Levels in CdTe:Cl
A. Cavallini, B. Fraboni, A. Castaldini, S. Assali, University of Bologna, Italy; J. Franc, M. Bugar, Charles University, Czech Republic

R03-2 (14:50) Nonuniformity of the Electric Field near the Edges in CdZnTe Detectors
A. E. Bolotnikov, G. S. Camarda, Y. Cui, R. Gu, A. Hossain, K. Kim, B. Raghothamachar, G. Yang, B. J. James
1Brookhaven National Lab, USA; 2Stony Brook University, USA

R03-3 (15:05) Correlation Between Te Inclusion Inspection by IR with Spectral Response Performance for CZT Sensor Pack Detectors
Y. Du, J. E. Tkaczyk, G. Abramovich, Y. Yao, C. A. Nafis, T. Zhang, GE Global Research Center, USA; H. Chen, J. McKenzie, G. Bindley, Redlen Technologies, Canada

R03-4 (15:20) Impact of Electric Field Non-Uniformity on Large CdZnTe Crystals
J. C. Kim, W. Kaye, Z. He, University of Michigan, US

R03-5 (15:35) Synchrotron Radiation Studies of Te Inclusions in CdZnTe
A. G. Kozorezov, Lancaster University, UK; C. T. Hansson, A. Owens, European Space Agency / ESTEC, Netherlands; V. Costilo, Baltic Scientific Instruments, Lettland; F. Quarati, Technical University of Delft, Netherlands

R03-6 (15:50) Kinetics of Tellurium Precipitation in Cd(Zn)Te
V. Lordi, Lawrence Livermore National Lab, USA

R04 Characterization II

Session Chair: Douglas S. McGregor, Kansas State University, United States

R04-1 (16:30, invited) New Approach for High Quality CZT Crystals
D. J. Knuteson, N. B. Singh, A. Berghmans, D. Kahler, B. Wagner, M. King, S. McLaughlin, Northrop Grumman Corporation, USA; A. E. Bolotnikov, R. B. James, Brookhaven National Laboratory, USA

R04-2 (16:50, invited) Large Area Detector with the Medipix2 Chip
A. Canas, M. Chmeissani, R. Coll, D. Glass, M. Kolstein, R. Martinez, C. Puigdengoles, C. Sanchez, A. Sancho
1X-ray Imatek SL, Spain; 2Institut de Fisica d’Altes Energies, Spain; 3IMB-CNMT (CSIC), Spain

R04-3 (17:10) Pulse-Height Variation Within Pixelated CdZnTe Detectors Exposed to X-Rays and Operating under Conditions of Ballistic Deficit
D. S. Bale, C. Szeles
Endicott Interconnect Detection and Imaging Systems, USA
R04-4 (17:25) CdTe Diode Detectors with a p-n Junction Formed by Laser-Induced Doping
V. A. Gnatyuk1,2, T. Aoki2, O. I. Vlasenko1, S. N. Levytskyi1
1V.E. Lashkaryov Institute of Semiconductor Physics of National Academy of Sciences of Ukraine, Ukraine; 2Research Institute of Electronics, Shizuoka University, Japan

R04-5 (17:40) Spectroscopic Characterization of M-π-N CdTe Pixel Detectors Coupled to Hextec and Timepix Readout Chips
J. J. Kalliopuska, VTT, Finland; S. Nenonen, H. Andersson, Oxford Instruments Analytical Oy, Finland; P. Seller, M. C. Veale, M. D. Wilson, Rutherford Appleton Laboratory, United Kingdom; G. Blaj, CERN, Switzerland

R04-6 (17:55) Investigation of Polarisation in CdTe Using Ion Beam Induced Charge Collection
D. A. Prokopovich1, M. Ruat2,3, M. I. Reinhard1
1Australian Nuclear Science and Technology Organisation, Australia; 2Monash University, Australia; 3Detector Unit, France

R04-7 (18:10) Semiconductor Detectors for High Flux
I. M. Blevis, A. Shahar, M. Kleinman, B. Rosner, General Electric Healthcare, Israel; E. Tkaczyk, General Electric Global Research Centre, USA
NP1.M Poster Session Detectors & Instrumentation Small Systems

Monday, Oct. 24 16:30-18:30 Meliá, Room A&B

Session Chairs: Felix Sefkow, DESY, Germany
Graham C. Smith, Brookhaven National Laboratory, United States

NP1.M-1 Preliminary Studies on Geological Fault Location Using Solid State Nuclear Track Detection
A. B. Asumadu-Sakyi1, J. J. Fletcher2, O. C. Oppon1,2, F. K. Quashie1, D. A. Wordson1, C. A. Adjei1, E. O. Amartey3, E. O. Darko4, P. E. Amponsah4
1National Nuclear Research Institute, Ghana Atomic Energy Commission, Ghana; 2Graduate School of Nuclear and Allied Sciences, Ghana; 3National Data Centre, Ghana Atomic Energy Commission, Ghana; 4Radiation Protection Institute, Ghana Atomic Energy Commission, Ghana

NP1.M-3 Measurement of Rn-222 in Water by Liquid Scintillation Counting of Polycarbonates
I. S. Dimitrov1, K. K. Mitev1, V. N. Zhivkova2, S. B. Georgiev1, D. S. Pressyanov1
1Sofia University, Bulgaria; 2Kazdachy NPP, Bulgaria

NP1.M-5 Large-Size RPCs Prototypes for R3B Time-of-Flight Wall
Y. Ayyad, C. Paradela, J. Benlliure, I. Duran, Universidad de Santiago de Compostela, Spain; E. Casarejos, Universidad de Vigo, Spain

NP1.M-7 Development of an Alpha/beta/gamma Detector for Radiation Monitoring
S. Yamamoto, Kobe City College of Technology, Japan

NP1.M-9 Use of LaBr3 for Downhole Spectroscopic Applications

NP1.M-11 Realization of neutron sensitive MCP with ALD technique
N. Lu1,2, Y. Yang1,2, W. Huang1,2,3
1Department of Engineering Physics, Tsinghua University, 100084, P.R.China; 2Ministry of Education, 100084, P.R.China; 3Institutes of Chemical Defence, 102205, P.R.China

NP1.M-13 Ultra Thin 3D Silicon Detector for Plasma Diagnostics at ITER Tokamak
F. Garcia, Helsinki Institute of Physics and Department of Physical Sciences, University of Helsinki, Finland; G. Pellegrini, M. Lozano, J. P. Balbuena, C. Fleta, C. Guardiola, D. Quirion, Instituto de Microelectrónica de Barcelona,(IMB-CNMM, CSIC), Spain

F. Amorini1, R. Bassini2, C. Boiano3, G. Cardella1, E. De Filippo1, L. Grassi3, C. Guazzoni1, P. Guazzoni2, M. Kis1, E. La Guidara2, Y. Leifels1, I. Lombardo1, A. Pagano1, S. Pirrone3, G. Politi1, F. Porto3, F. Riccio3, F. Rizzo3, P. Russorto1, W. Trautmann1, A. Trifrè1, G. Verde1, P. Zambon1, L. Zetta2
1INFN, LNS and Universita', Italy; 2Universita' degli Studi and INFN, Italy; 3INFN, Sezione di Catania and Universita', Italy; 4Politecnico and INFN, Italy; 5Universitaet Heidelberg and Ruder Boskovic Institute, Germany / Croatia; 6Centro Siciliano Fisica Nucleare e Struttura della Materia, Italy; 7GSI Helmholtzzentrum fuer Schwerionenforschung, Germany; 8INFN, Gruppo collegato di Messina and Universita', Italy

NP1.M-17 Evaluation of Neutron Diagnostic System for Fusion Reactor KSTAR Using Stilbene Scintillator
Hanyang University, Korea
NP1.M-19 Experimental Investigations of Incoherent Scattering for Non-Destructive Tomographic Measurements  
A. Sharma, B. Singh, B. S. Sandhu  
Punjabi University Patiala, India

NP1.M-21 Development of Silica Aerogel Cherenkov Counter with N=1.003 for Electron Veto  
T. Sato1, H. Kawai1, Y. Kishi1, M. Kubo1, K. Mase1, T. Nakano1, H. Nakayama1, M. Ono1, M. Tabata1, M. Yosoi1  
1Chiba University, Japan; 2Osaka University, Japan; 3Japan Aerospace Exploration Agency, Japan

NP1.M-23 Methodology Development for Analysis of in-Beam AGATA Data  
E. Filmer1, A. J. Boston1, H. C. Boston1, S. J. Colosimo1, J. Cresswell1, D. Cullen1, D. Judson1, I. Lazarus1, S. Moon1, P. J. Nolan1, A. P. Robinson1, J. Simpson1, C. Unsworth1  
1University of Liverpool, United Kingdom; 2University of Manchester, United Kingdom; 3STFC Daresbury Laboratory, United Kingdom

NP1.M-25 Large-Scale Compton-Camera Simulations, Validation Experiments, and Image Reconstruction  

NP1.M-27 Nuclear Material Imaging with Muon-Induced Signatures  
K. N. Borozdin, J. Bacon, C. L. Morris, J. Perry, W. C. Priedhorsky, R. Paulding  
Los Alamos National Laboratory, United States

NP1.M-29 Determination of CsI(Tl) Scintillation Time Constants and Intensities by Direct Fitting of the Output Waveform in the CHIMERA 4π Multidetector  
A. Castoldi, C. Guazzoni, P. Zambon, Politecnico di Milano and INFN, Sezione di Milano, Italy; C. Boiano, P. Guazzoni, F. Riccio, L. Zetta, Universita’ degli Studi di Milano and INFN, Sezione di Milano, Italy; F. Amorini, I. Lombardo, F. Porto, F. Rizzo, P. Rusotto, INFN, Laboratori Nazionali del Sud and Universita’ di Catania, Italy; G. Cardella, E. De Filippo, E. Geraci, L. Grassi, A. Pagano, S. Piretto, G. Verde, INFN, Sezione di Catania and Universita’ di Catania, Italy; E. La Guidara, Centro Siciliano Fisica Nucleare e Struttura della Materia, Italy

NP1.M-31 Optimization of Process Parameters for Amorphous Semiconductor Contacts on High-Purity Germanium Detectors  
Q. Looker1, M. Amman2, K. Vetter1, P. Barton2, P. Luke2  
1UC Berkeley, USA; 2Lawrence Berkeley Laboratory, USA

NP1.M-33 3D NDP for Thin Samples  
J. Vacik1,2, V. Hnatowicz1, D. Fink3,4, C. Granja4  
1Nuclear Physics Institute, Academy of Sciences of the Czech Republic, Czech Republic; 2Research Center Rez, Czech Republic; 3Universidad Autonoma Metropolitana-Iztapalapa, Mexico; 4Institute of Experimental and Applied Physics, Czech Republic

NP1.M-35 Feasibility Study of Using Epitaxial Silicon Diodes for Clinical Electron and Photon Beams Dosimetry  
J. A. C. Goncalves1,2, T. C. dos Santos1, W. F. P. Neves-Junior3, C. M. K. Haddad1, C. C. Bueno1,2  
1Instituto de Pesquisas Energeticas e Nucleares, Brazil; 2Pontificia Universidade Catolica de Sao Paulo, Brazil; 3Hospital Sirio Libanes, Brazil

NP1.M-37 Short-Term Repeatability of a Rad-Hard EPI Diode Applied in Electron Processing Dosimetry  
T. C. dos Santos1, J. A. C. Goncalves1,2, I. Pintilie1,4, C. C. Bueno1,2  
1Instituto de Pesquisas Energeticas e Nucleares, Brazil; 2Pontificia Universidade Catolica de Sao Paulo, Brazil; 3Institute for Experimental Physics, Germany; 4National Institute for Materials Physics, Romania

NP1.M-39 Doped and Undoped Lead Borate Glass-Ceramics as Thermoluminescent Detectors  
L. Formaro, Centro Universitario de la Regin Este (CURE), Uruguay; M. Rodriguez, I. Galain, A. Cardenas, Facultad de Quimica,
Uruguay: E. Castiglioni, Facultad de Ciencias, Uruguay

NP1.M-41 Optimization of Yttrium-90 Processing on a Clinical PET/CT System
Y. H. Kao1, J. Steinberg2, J. Yan2, D. W. Townsend3, S. Satchithanandan1, Y. S. Tay1, K. Y. Lim1, P. K. Chow1, E. H. Tan1, C. E. Ng1, S. W. Goh1
1 Singapore General Hospital, Singapore; 2 Agency of Science, Technology and Research, Singapore

NP1.M-43 Dosimetric Study of Therapeutic Beams Using a Homogeneous Scintillating Fiber Layer
E. Lamanna, A. S. Fiorillo, A. Gallo, A. Trapasso, R. Caroleo, Magna Graecia University Cz & INFN Gruppo Collegato Cz, Italy; G. Barca, F. Castrovillari, S. Carnevale, Cosenza Hospital, Italy; R. Brancaccio, University & INFN Bologna, Italy

NP1.M-45 Influence of the Whole-Body Vibration on the Biodistribution of the Radiopharmaceutical 99mTc-Methylene Diphosphonate in Wistar Rats
S. D. Santos-filho1, N. S. Pinto2, M. O. Pereira2, M. B. Monteiro1, F. S. Carmo1, C. S. Diniz1, P. J. Marin1, M. Bernardo-Filho1,2
1 Universidade do Estado do Rio de Janeiro, Brazil; 2 Universidade Federal do Rio Grande do Norte, Brazil; 3 European University Miguel de Cervantes, Spain; 4 Instituto Nacional do Cancer, Brazil

NP1.M-47 Influence of Morphology on Nuclear Medicine Dosimetry Based on Patients Images
A. Desbree, I. Hadid, N. Grandgirard, Institut de Radioprotection et de Surete Nucleaire, France; N. Pierrat, Institut Curie, France

NP1.M-49 Small Dimension Plastic Dosimeter in High Dose Rate Brachytherapy with 192Ir Source
F. Rego1, T. Ramos Ribeiro1, L. Penalta1, C. Jesus2
1 LIP- Laboratorio Intrument. Fisica Exp. Particulas, Portugal; 2Hospital de Santa Maria, Portugal; 3 Universidade de Lisboa, Portugal

NP1.M-51 Development of a High-Sensitivity Radiation Detector for Chromatography
Lawrence Berkeley National Lab, USA

NP1.M-53 A Dedicated Processor for Monte Carlo Computation in Radiotherapy
S. Siddhanta1,2, V. Fant1,2, G. Fois1,2, R. Marzeddu1,2, C. Pili1,2, P. Randaccio1,2, J. Spiga1,2, A. Szostak1,2
1 Istituto Nazionale di Fisica Nucleare, Italy; 2 University of Cagliari, Italy

NP1.M-55 A Compact Probe for β+-Emitting Radiotracer Detection in Surgery, Biopsy and Medical Diagnostics Based on Silicon Photomultipliers
C. Mester1, C. Bruschini1,2, P. Magro1, N. Demartines2, V. Dunet2, E. Grigoriev1, A. Konoplyannikov1, V. Talanov1, M. Mattle1, J. O. Prior1, E. Charbon1,4
1 Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland; 2 CHUV University Hospital and University of Lausanne, Switzerland; 3 Forimtech S.A., Switzerland; 4 TU Delft, The Netherlands

NP1.M-57 The Channeler Ant Model Lung CAD as a Support for Large-Scale Screenings
E. Lopez Torres1,2, 3, CEADEN, Cuba; INFN, Italy
On behalf of the MAGIC-5 Collaboration

NP1.M-59 Characterisation of a Novel Diamond-Based Microdosimeter for Radioprotection Applications in Space Environments
J. A. Davis1, K. Ganesan1, S. Guatelli1, M. Petasecca1, J. Livingstone1, D. A. Prokopovich1, M. I. Reinhard3, R. N. Siegele1, S. Prawer2, D. Jameson1, Z. Kuncic1, A. B. Rosenfeld1
1 University of Wollongong, Australia; 2 University of Melbourne, Australia; 3 Australian Nuclear Science and Technology Organisation, Australia; 4 University of Sydney, Australia
NP1.M-61 Skin Dosimetry of Thyroid Radioiodine with MOSkin Detector: a Phantom Study
K. Chuamsaamkeek2,1, I. Fuduli1, D. Cutajar1, C. Lian1, S. Harvey3, A. B. Rosenfeld1
1University of Wollongong, Australia; 2Mahidol University, Thailand; 3Wollongong Hospital, Australia

NP1.M-63 3D Dosimetry of Eye Brachytherapy Plaques Using Pixelated Silicon Detectors
M. Weaver1, M. Petasecca1, D. Cutajar1, M. Lerch1, V. Peruvertailo1, A. Kryukov2, G. De Geronimo3, J. Jakubek3, S. Pospisil3, D. Prokopovich3, R. Siegel3, M. Reinhard3, R. M. Conway6
1University of Wollongong, Australia; 2SPA BIT, Ukraine; 3Brookhaven National Laboratory, USA; 4Czech Technical University, Czech Republic; 5ANSTO, Australia; 6University of Sydney, Australia

NP1.M-65 A Study of a Compact Multi-channel Beta-probe using Silicon Photomultiplier
S. I. Leon, K. S. Joo, S. H. Beach, M. K. Park, Myongji University, Korea; J. G. Kim, Korea Institute of Radiological and Medical Science, Korea

NP1.M-67 Scatter Correction in TOF PET Using Beam Stopper Device
C.-W. Shen, Y.-W. Tsai2, H.-H. Lin, K.-S. Chuang, National Tsing Hua University, Taiwan; M.-L. Jan, Atomic Energy Council, Taiwan

NP1.M-69 2-D Energy-Resolved Imaging of Gold Nanoparticle Distribution at Concentrations Relevant for in-Vitro Studies
A. Castoldi1,2, C. Guazzoni3, A. Gibson3, K. Pepper1, J. Griffith1,2, G. J. Royle1, A. Bjeoumikhov4
1Politecnico di Milano, Italy; 2INFN, Italy; 3University College London, UK; 4Institute for Scientific Instruments GmbH, Germany

NP1.M-71 Narrowing Coincidence Timing Window Through Time-Walk Correction in Silicon Ring Enhanced PET Scanner
A. Studen1, E. Chesi1, V. Cindro1, N. H. Clithorne1, B. Grosicar1, K. Honscheid2, S. S. Hu3, H. Kagan3, C. Lacasta3, V. Lihart3, G. Llosa4, K. Brzezinski4, M. Mikuz1, V. Stankova1, P. Weilhammer, D. Zontar1
1Josef Stefan Institute, Slovenia; 2The Ohio State University, USA; 3The University of Michigan, USA; 4IFIC/CSIC-UVEG, Spain

NP1.M-73 Feasible Study on Energy Subtraction X-Ray CT Technique Using Comb-Shaped Filtered X-Rays
T. Tsoubouchi, K. Watanabe, A. Yamazaki, A. Uritani
Nagoya University, Division of Quantum Science and Energy Engineering, Japan

NP1.M-75 Development of PhytoPET: a Plant Imaging PET System
A. G. Weisenberger1, B. Kross1, S. Lee1, J. McKisson1, J. E. McKisson1, W. Xi1, C. Zorn1, C. R. Howell2,3, A. S. Crowell2,3, C. D. Reid3, M. F. Smith3, A. Stolin4
1Thomas Jefferson National Accelerator Facility, USA; 2Duke University, USA; 3Triangle Universities Nuclear Laboratory, USA; 4University of Maryland, USA

NP1.M-77 BrachyView: an in-Body Imaging System for Prostate Brachytherapy
K. J. Lou1, M. Petasecca1, M. Safavi1, Z. Han1, S. Pospisil2, J. Jakubek2, S. Melik2, M. Zaider4, J. Bucc2, A. Rozenfeld1
1University of Wollongong, Australia; 2Czech Technical University, Czech Republic; 3University of Sydney, Australia; 4Memorial Sloan-Kettering Cancer Center, United States; 5St George Hospital, Australia

NP1.M-79 Development of a Micro-Size Dosimeter Using an Optical Fiber Probe and a Photostimulable Storage Phosphor
A. Yamazaki, K. Watanabe, K. Nakahashi, H. Miyamae, A. Uritani, Nagoya University, Japan; E. Ariga, Nagoya Daini Red Cross Hospital, Japan
NP1.M-81 The Integration of Photon and Neutron Method for Contrabands Detection with a 7MeV LINAC
Y. Yang1,2, W. Huang1,2, Y. Li1,2
1Tsinghua University, China; 2Ministry of Education, Key Laboratory of Particle & Radiation Imaging (Tsinghua University), China

NP1.M-83 Development of an Instrument for Non-Destructive Identification of Unexploded Ordnance Using Tagged Neutrons—a Proof of Concept Study
S. Mitra, I. Dioszegi
Brookhaven National Laboratory, USA

NP1.M-85 Measurement of Xe-133 in Air by Absorption in Polycarbonates - Detection Limits and Potential Applications
S. B. Georgiev, K. K. Mitev, D. S. Pressyanov, T. A. Boshkova, I. S. Dimitrova
Sofia University, Bulgaria

NP1.M-87 Fast Neutron Resonance Radiography by Double Scatter Spectroscopy for Materials Identification
P. A. Marleau, J. Brennan, E. Brubaker, S. Mrowka
Sandia National Laboratories, USA

NP1.M-89 An Imaging Neutron/Gamma-Ray Spectrometer
1University of New Hampshire, USA; 2Michigan Aerospace Corporation, USA

NP1.M-91 IHEP (Protvino) 3x3 Sq.m Cosmic Ray Muon Tomograph
IHEP (Protvino), Russia

NP1.M-93 Time Response Characterization of Plastic Scintillation Block Detector to MeV Gammas based upon Generated Cherenkov and Scintillation Light
J. E. Sparger1, J. P. Hayward1,2, X. Zhang1, M. A. Laubach1, J. W. Cates1
1University of Tennessee, USA; 2Oak Ridge National Laboratory, USA

NP1.M-97 Geant4 Modeling of the Response of Cherenkov Glass Detectors to Fast and Slow Neutrons
J. E. Sparger1, J. P. Hayward1,2, Z. W. Bell2, B. Ayaz-Maienhafer2, L. A. Boatner2, J. O. Ramey2, R. E. Johnson1,2, G. E. Jellison2
1University of Tennessee Knoxville, USA; 2Oak Ridge National Laboratory, USA

NP1.M-99 The Merits and Demerits of Fast Neutron Detection for Passive Screening
R. Chandra1, G. Davatz1,2, U. Gendotti1
1Arktis Radiation Detectors Ltd, Switzerland; 2ETH Zurich, Switzerland

NP1.M-101 A Characterization of Photon-Induced Activities Generated by Bremsstrahlung in the Environment
S. B. Swarcek1, J. P. Apruzese2, R. J. Commissio1, S. L. Jackson1, D. Mosher1, J. W. Schumer2, J. Jones3
1Naval Research Laboratory (L3 Contractor), USA; 2Independent Consultant, USA; 3Idaho National Laboratory, USA

NP1.M-103 Nuclear Material Identification by Photoneutron and X-Ray Radiography
Y. Liu, Y. Yang, W. Huang, Tsinghua University, China

NP1.M-105 Detection of High-Z Materials Using 7MeV X-Rays Scattering
W. Huang1,2,3, Y. Yang1,2, Y. Li1,2
1Tsinghua University, China; 2Ministry of Education, China; 3Anti-Chemical Command and Engineering Institute, China
M. Firsching, F. Nachtrab, P.-M. Kessling, T. Fuchs, N. Uhlmann
Fraunhofer Institute for Integrated Circuits IIS, Germany

NP1.M-109 Compton Imaging with a Planar Semiconductor System
A. Sweeney¹, A. J. Boston¹, H. C. Boston¹, J. R. Creswell¹, J. Dormand¹,
M. Ellis¹, J. McGrath¹, L. J. Harkness¹, M. Jones¹, D. S. Judson¹,
M. J. Sleev¹, D. P. Scruggs¹, P. J. Nolan¹, A. Thandi²
¹University of Liverpool, UK; ²Atomic Weapons Establishment, UK

NP1.M-111 Prospects of Reactor Monitoring with a Germanium Antineutrino Detection System
B. Cabrera-Palmer¹, M. Amman², P. J. Barton², J. Detwiler², P. N. Luke²,
W. C. Neel¹, D. Reyna¹, J. T. Steele¹, K. Vetter¹
¹Sandia National Laboratories, USA; ²Lawrence Berkeley National Laboratory, USA

NP1.M-113 Application of Advanced Image Reconstruction and Source Detection Methods to the Neutron Scatter Camera
J. Brennan, E. Brubaker, R. Cooper, M. Gerling, P. Marleau, S. Mrowka,
J. Steele, D. Throckmorton
Sandia National Laboratories, USA

NP1.M-115 Including Pair-Production Events in the System Response Function for Energy-Imaging Integrated Deconvolution Algorithm
W. Wang, J. M. Jaworski, Z. He
University of Michigan, United States

NP1.M-117 Noncontact Sensors for Detection of Radioactive Materials
J. S. Morrell, Y-12 National Security Complex, USA; A. N. Lasseigne,
K. M. Koenig, J. E. Jackson, Generation 2 Materials Technology LLC, USA

NP1.M-119 A Small Muon Tomography Station with GEM Detectors
M. Hohlmann, B. Benson, W. Bittner, K. Gnanvo, L. Grasso,
J. B. Locke, M. J. Staib, Florida Institute of Technology, USA; F. Costa,
S. Martoiu, H. Muller, CERN, Switzerland; J. Toledo, Universidad Politecnica de Valencia, Spain

NP1.M-121 Stand-off Detection with an Active Interrogation Photon Beam
A. L. Hutcheson, National Research Council, United States; L. J. Mitchell,
B. F. Philps, E. A. Wulf, U.S. Naval Research Laboratory, United States;
B. E. Leas, SRA International, Inc., United States

D. M. Pfund, K. D. Jarman, A. A. Kriss, C. A. LoPresti, S. K. Cooley,
K. K. Anderson, A. Heredia-Langner
Pacific Northwest National Laboratory, USA

NP1.M-125 Cross Country Background Measurements with High Purity Germanium
L. J. Mitchell, B. F. Philps, E. A. Wulf, Naval Research Laboratory, USA;
A. L. Hutcheson, National Research Council, USA; B. E. Leas, SRA International, INC., USA

NP1.M-127 Replacement of 3He in Constrained-Volume Homeland Security Detectors
J. L. Lacy, A. Athanasiades, C. S. Martin, L. Sun, G. J. Vazquez-Flores,
Proportional Technologies, Inc., USA; B. Moosman, SPAWAR Systems Center Pacific, USA

NP1.M-129 The Machine Vision Radiation Detection System
M. S. Bandstra¹, T. Aucott¹, D. Chivers¹, J. Siegrist², K. Vetter¹,²
¹University of California, USA; ²Lawrence Berkeley National Laboratory, USA

NP1.M-131 Utilizing the Electron-Tracking Compton Imaging Experiment for Benchmarking of Physics Simulations and Design of Future Imagers
A. B. Coffer, B. Plimley, D. Chivers, K. Vetter
University of California - Berkeley, USA
NP1.M-133 Dose Calculations of Photo-Neutrons Emitted in a Medical Linear Accelerator
M. K. Saeed Salih, Najran University, Saudi Arabia; C. Tuniz, International Center for theoretical Physics, Italy; O. Moustafa, Radiation & Isotope Center, Sudan

NP1.M-135 Monte Carlo Analysis of Nondestructive Assay Techniques for Highly Enriched Uranium Oxide
S. D. Clarke, M. Flaska, S. A. Pozzi, University of Michigan, USA; R. B. Oberer, L. G. Chiang, Y-12 National Security Complex, USA

NP1.M-137 Pulse Mode Readout Techniques for Use with Non-Gridded Industrial Ionization Chambers.
V. Popov, I. Degtiairenko Thomas Jefferson National Accelerator Facility, USA

NP1.M-139 Portable Gamma Camera with a Rotated Coded Mask for the Remote Measurement of Radioactivity at Nuclear Installation
V. Stepanov, O. Ivanov, S. Smirnov, A. Danilovich, I. Semin Kurchatov Institute, Russia

NP1.M-141 Thermal Neutron Imaging with PIN Photodiode Line Scanner and Eu-Doped LiCaAlF6 Scintillator
D. Totsuka1,2, T. Yanagida3, K. Fukuda4, N. Kawaguchi5, Y. Fujimoto1, Y. Yokota1, A. Yoshikawa1,3
1IMR, Japan; 2Nihon Kesho Kogaku CO., LTD, Japan; 3NICHe, Japan; 4TOKUYAMA Corp, Japan

NP1.M-143 Active Energy Compensation Method for CZT Based Dose Meters
J. Preston1, C.-M. Herbach2, G. Pausch2, J. Stein1
1FLIR Radiation, Inc., USA; 2FLIR Radiation, GmbH, Germany

NP1.M-145 Neutron/Gamma Separation by Time-of-Flight and Pulse Shape Discrimination at PET-Cyclotron Beams and Radiotherapeutic Linacs
H. Simões1, R. J. Ferreira2, H. M. Saraiva2, S. Ghithans1, F. Alves3,4, R. Ferreira Marques3,5, F. Fraga3,5, M. C. Lopes6, K. Parodi6, D. R. Schaart7, P. Crespo1,2
1LIP - Laboratório de Instrumentação e Física Experimental de Partículas, Portugal; 2ISEC - Instituto Superior de Engenharia de Coimbra, Portugal; 3University of Coimbra, Portugal; 4ESTESC - Escola Superior de Tecnologia da Saúde de Coimbra, Portugal; 5Instituto Português de Oncologia de Coimbra Francisco Gentil, ÉPE, Portugal; 6University Clinic of Heidelberg, Germany; 7Delft University of Technology, The Netherlands

NP1.M-147 Additional Radiation-Induced Charge in Mosfet Dosimeters
I. R. Iatsunskyi, V. A. Smyntyna, O. A. Kulinich, I. A. Marchuk Odessa I.I.Mechnikov National University, Ukraine

NP1.M-149 Effects of Gamma-Rays on Poly(methylmethacrylate) Plastic Optical Fiber under Low Dose-Rate Irradiation

A. P. Fallu-Labruyere1, T. Geryes2, C. Ravera1, N. Jeanjacquot1
1Mirion Technologies (MGPI) SA, FRANCE; 2Institut de Radioprotection et de Surete Nucleaire, FRANCE

NP1.M-153 Feasibility Study of a Gamma Camera for Nuclear Monitoring in PRIDE Facility
1College of Health Science, Yonsei University, Republic of Korea; 2Atomic Energy Research Institute, Republic of Korea

NP1.M-155 A Short Interval Dynamic Neutron CT System Using a Neutron Image Intensifier for Visualizing Water Behavior in Stacked Fuel Cells
K.-I. Mochiki, Y. Otsuka, R. Hata, K. Akiba, Tokyo City University
Japan; K. Sugimoto, H. Murakawa, H. Asano, N. Takenaka, Kobe University, Japan

NP1.M-157 Simulated Response of Cherenkov Glass Detectors to 6 MeV Photons
J. P. Hayward1, Z. W. Bell2, L. A. Boatner2, R. Johnson1, C. L. Hobbs1, J. O. R2, G. E. Jellison, Jr.2
1University of Tennessee Department of Nuclear Engineering, United States; 2Oak Ridge National Laboratory, United States

NP1.M-159 Testing Opportunities at the Y-12 Nuclear Detection and Sensor Testing Center
C. D. Hull, S. L. Creasey, J. A. Cantrell
Y-12 National Security Complex, USA

NP1.M-161 Graphene-Based Neutron Detectors
M. Foxe1, A. Majcher1, C. Piotrowski1, C. Roecker1, J. Boguski1, I. Childress1, A. Patil1, Y. P. Chen1, I. Jovanovic1
1The Pennsylvania State University, USA; 2Purdue University, USA; 3Birck Nanotechnology Center, USA

NP1.M-163 The Spectral and Angular Imaging of Nuclear Radiation with Semiconductor-Based Meander-Line Detectors
M. D. Hammig, M. Jeong, T. H. Kang
University of Michigan, USA

NP1.M-165 Neutron Detector Designs for Detecting Fission Neutrons in Intense Pulsed Environments
S. B. Swanekamp1, F. C. Young2, S. L. Jackson1
1Naval Research Laboratory (L3 Contractor), USA; 2Independent Consultant, USA

NP1.M-167 Neutron Time Projection Chamber Designs in Support of High Resolution Imaging and Mobile Applications
N. Bowden, G. Carosi, M. Heffner, Lawrence Livermore National Laboratory, USA; C. Roecker, Purdue University, USA; I. Jovanovic, The Pennsylvania State University, USA

NP1.M-169 Development of a High-Frame-Rate Camera for Pulsed Neutron Transmission Spectroscopic Radiography
M. Yamashita, K.-I. Mochiki, Tokyo City University, Japan; T. Kiiyama, Y. Kiyani, Kokkaido University, Japan

NP1.M-171 Parallel Optimization-Based Spectral Transformation for Detection and Classification of Buried Radioactive Materials
W. Wei, Q. Du, N. Younan, Mississippi State University, USA

NP1.M-173 Accelerator-Based Neutron Tomography Using Vacuum Tube Type Image Intensifier with Blanking Function
T. Kamiyama, Y. Kiyani, Kokkaido University, Japan

NP1.M-175 Study of Boron 10 Coated “Folding Fan” Detector for Neutron Scattering Experiments
Y. Tian1,2, H. Takahashi1, Y. Li1,2, Y. Yang1,2, Y. Li1,2
1Tsinghua University, China; 2Ministry of Education, China; 3The University of Tokyo, Japan

NP1.M-177 High Sensitive Standard Measurement to Determine Strength of an I-125 Brachytherapy Source
Y. Unno1,2, T. Kurosawa1, A. Yunoki1, T. Yamada1,3, Y. Sato1
1National Metrology Institute of Japan, Japan; 2The Graduate University for Advanced Studies, Japan; 3Japan Radioisotope Association, Japan

NP1.M-179 Development of Wavelength-Shifting-Fiber Neutron Image Detector with a Fiber–Optic Taper with a High Spatial Resolution
T. Nakamura1, R. Yasuda1, M. Katagiri1, K. Toh1, K. Sakasai1, A. Birumachi1, M. Ebine1, K. Soyama1
1Japan Atomic Energy Agency, Japan; 2Ibaraki University, Japan

NP1.M-181 Feasibility Study on Visualization of Transient Phenomena using High Resolution On-line Neutron Imaging System at J-PARC
M. Segawa, T. Kai, M. Ooi, M. Kureta
Japan Atomic Energy Agency, Japan
NP1.M-183 Active Neutron Detection with Ultra-Thin 3D Silicon Detectors in Radiotherapy Linacs
C. Guardiola, C. Fleta, D. Quirion, J. Rodriguez, G. Pellegrini, J. P. Balbuena, M. Lozano, Instituto de Microelectronicas de Barcelona, IMB-CNMT (CSIC), Spain; F. Gomez, X. Gonzalez, D. Gonzalez, J. Pardo, Universidad de Santiago de Compostela, Spain; F. Garcia, Helsinki Institute of Physics, University of Helsinki, Finland

NP1.M-185 Design and Performance Evaluation of Neutron Monitor for Measurement of Cosmic-Ray and Observation of Solar Activity
D.-Y. Jang, J. S. Kang, Y. H. Kim, Y.-K. Kim
Hanyang University, South Korea

NP1.M-187 A Compact Low Energy Gamma Ray Detector Working in High Magnetic Field
CEA Saclay, France

NP1.M-189 Neutron Imaging Detector Based on the μPIC Micro-Pixel Gaseous Chamber
Kyoto University, Japan; 2Japan Atomic Energy Agency, Japan

NP1.M-191 Fiber Optic-Coupled CCD Based Neutron Imaging Detector for High Resolution and Sensitivity
1KAIST, South Korea; 2KAERI, South Korea

NP1.M-193 Characterization and Calibration of Thermal Neutron Detectors for ESA Space Flight Applications
Z. Kohout, C. Granja, M. Krallik, A. Owens, R. Venn, L. Jankowski, S. Pospisil, J. Vacik
1Faculty of Mechanical Engineering, Czech Technical University in Prague, Czech Republic; 2Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic; 3Czech Metrology Institute, Czech Republic; 4ESTEC, European Space Agency ESA, The Netherlands; 5Cambridge Microlab Ltd. Cambridge, United Kingdom; 6Nuclear Physics Institute, Ac. of Sciences of the Czech Republic, and Research Center Rez, Czech Republic

NP1.M-194 FTIR and UV-Vis Studies of PVDF Homopolymers Applied to High Dose Dosimetry
A. S. Medeiros, Universidade Federal de Minas Gerais, Brazil; L. O. Faria, Centro de Desenvolvimento da Tecnologia Nuclear - CDTN, Brazil

NP1.M-195 A Directional Neutron Detector with High Gamma Ray Rejection, High Neutron Efficiency and High Counting Rate
A. Suhami, Suhami Associates, Israel

NP1.M-196 A New GEM Based Neutron Diagnostic Concept for High Power Deuterium Beams
1Istituto di Fisica del Plasma, Italy; 2University of Milano-Bicocca, Physics Department, Italy; 3Consorzio RFX Euratom – ENEA Association, Italy; 4INFN-LNF, Italy

NP1.M-197 Development of an Integrated CMOS Sensor for Efficient Neutron Counting
University of Strasbourg, France

NP1.M-198 Development of Thermal Neutron Flux Monitor Using Small Scintillator Array Coupled with Quartz Fibers for Boron Neutron Capture Therapy
Kyoto University Research Reactor Institute, Japan
NP1.M-199 Neutron Imaging Experiments Using Magnetic Scattering and Small Angle Scattering Signals
S. W. Lee¹, J. Kim¹,², J. Kim¹, M. Moon¹
¹Korea Atomic Energy Research Institute, South Korea; ²Korea Advanced Institute of Science and Technology, South Korea

NP1.M-200 Study on Neutron Image Detection Using New Crystal Scintillator
H. Kim, G. Cho, KAIST, Korea; H. Kim, Kyungpook National University, Korea; R. Gul, Abdul Wali Khan University, Pakistan

NP1.M-201 Pulse Shape Analysis of Cs2LiYCl6:Ce Scintillator Coupled to PSD-capable ASIC Readout System
D. Lee, L. C. Stonehill, A. V. Klimenko, J. R. Terry, S. Tornga
Los Alamos National Laboratory, USA

NP1.M-203 Fast Neutron Spectroscopy Using a Neutron Scatter Camera
J. Brennan, E. Brubaker, R. Cooper, M. Gerling, P. Marleau, N. Mascarenhas, S. Mrowka
Sandia National Laboratories, USA

NP1.M-204 LaBr3-LaCl3 Phoswich Scintillators for the Detection of High Energy Protons and Gamma-Rays
E. Nacher, J. Sanchez Del Rio, A. Perea, O. Tengblad
IEM (CSIC), Spain

NP1.M-205 Thermoluminescent Characterization of Micro and Nano-Sized α-Al2O3 Crystals Doped with Carbon for Gamma Photon Fields
F. C. Silva, C. C. Fontainha, Universidade Federal de Minas Gerais, Brazil; W. B. Ferraz, L. O. Faria, Centro de Desenvolvimento da Tecnologia Nuclear - CDTN, Brazil

NP1.M-206 A Next Generation Water Based Neutron Detector
S. A. Dazeley, A. Bernstein, M. Sweany
Lawrence Livermore National Laboratory, USA

NP1.M-207 Direct Imaging of Ionizing Radiation via the Pockels’ Effect in Electro-Optic Crystals
A. A. Hoops, S. E. Bisson, L. E. Sadler, D. A. H. Shimizu, J. T. Steele, K. E. Strecker
Sandia National Laboratories, USA

NP1.M-208 A Lithium-Based Activation Detector for Thermal Neutrons
K. J. Riley¹, S. Palamakumbura¹, Z. W. Bell¹, V. V. Nagarkar¹
¹Radiation Monitoring Devices, Inc., USA; ²Oak Ridge National Laboratory, USA

NP1.M-209 High Resolution Camera for Gamma-Ray Spectroscopy and Imaging in Nuclear Physics Research
P. Busca¹³, R. Pelosi¹², C. Fiorini¹², N. Blasi¹, F. Camera³, B. Million², O. Wieland¹
¹Politecnico di Milano, Dipartimento di elettronica e informazione, Italy; ²INFN, Sezione di Milano, Italy; ³Università degli Studi di Milano, Dipartimento di Fisica, Italy

NP1.M-210 The BC-704 Scintillation Screen with Light Readout by Wavelength Shifting Fibers as a Highly Efficient Neutron Detector
J. Iwanowska, L. Swiderski, M. Moszyński, D. Wolski, Soltan Institute for Nuclear Studies, Poland; F. Kniest, Saint-Gobain Crystals, The Netherlands; G. Catto, GC Technology GmbH, Germany
Lead-Based Glasses for Selective, Efficient Detection of MeV Photons via the Cherenkov Effect
R. E. Johnson1, J. P. Hayward2, Z. W. Bell2, L. A. Boattner1, J. O. Ramey3, G. E. Jellison1, C. L. Hobbs1, B. Ayaz-Maiherhafer1
1UTK, USA; 2ORNL, USA

Analysis of Neutron Induced Defects in Silver Doped Lithium Tetraborate
B. E. Kananen1, A. T. Brant2, D. A. Buchanan1, L. W. McClory1
1Air Force Institute of Technology, USA; 2West Virginia University, USA

Thermal Neutron Detection Using Alkali Halide Scintillators with Li-6 and Pulse Shape Discrimination
E. Brubaker, D. Dibble, P. Yang
Sandia National Laboratories, CA, USA

Software Realization of Real-Time N/γ Pulse Shape Discrimination Module for Radiation Portal Monitor Using CUDA Platform
V. A. Kolbasin, A. I. Ivanov, V. Y. Pedash
Institute for Scintillation Materials NAS of Ukraine, Ukraine

Initial Performance of Sealed Straw Modules for Large Area Neutron Science Detectors
J. L. Lacy, L. Sun, C. S. Martin, R. Nguyen, A. Athanasides
Proportional Technologies, Inc., USA

Design and Characterization of a 227Ac-13C Neutron Source
Z. W. Bell, C. W. Alexander
Oak Ridge National Laboratory, USA

Neutron-Gamma Discrimination in a Ce:LiCaAlF6 Scintillator Based on Pulse Shape Discrimination Using Digital Signal Processing
K. Watanabe1, Y. Kondo1, A. Yamazaki1, A. Uritani1, T. Iguchi1, N. Kawaguchi1, T. Yanagida1, Y. Fujimoto1, Y. Yokota1, K. Kamada1, K. Fukuda1, T. Suyama2, A. Yoshikawa1
1Nagoya University, Japan; 2Tokuyama Corporation, Japan; 3Tohoku University, Japan

Optimization of Pulse-Height Sharing in Long Rods of NaI(Tl) for Use below 150 keV
P. J. Boyle, D. S. Hann, A. M. MacLeod
McGill University, Montreal, Canada, Canada; P. R. Saull, National Research Council, Canada; H. C. Seyward, L. E. Sinclair, National Resources Canada, Canada

Development of a Compton Imager Based on Scintillator Bars
A. M. L. MacLeod, P. Boyle, D. S. Hanna, McGill University, Canada; P. R. B. Saull, National Research Council, Canada; H. C. J. Seyward, L. E. Sinclair, Natural Resources Canada, Canada

On the Applicability of Compressed Sensing for Rotating Modulation Imagers
B. R. Kowash, R. W. Thomas, Air Force Institute of Technology, USA; D. K. Wehe, University of Michigan, USA

Stability of a Neutron Beam Monitor for NOVA at J-PARC
H. Ohshita1, M. Shoji1, T. Otomo1, K. Ikeda1, T. Uchida1, S. Uno1, N. Kaneko1, T. Koike1, K. Suzuya1, T. Seya1, M. Tsubota1
1HIGH ENERGY ACCELERATOR RESEARCH ORGANIZATION, KEK, Japan; 2The Graduate University for Advanced Studies, Japan; 3International University of Health and Welfare, Japan; 4Japan Atomic Energy Agency, Japan

Design Considerations of a Coded Source Neutron Imaging System at the PULSTAR Reactor
Z. Xiao, A. I. Hawari, North Carolina State University, USA

Benchmarking the Position and Timing Response of Neutron Block Detectors for Imaging of Nuclear Materials
M. A. Laubach, X. Zhang, J. P. Hayward, J. E. Sparger, J. W. Cates
University of Tennessee, USA
NP1.M-224 Unattended Multi-Detector System for Unattended Uranium Enrichment Monitoring
Los Alamos National Lab, USA

NP1.M-225 Graphene Field Effect Transistor as Radiation Sensor
A. Patil1, I. Childress1, M. Fox2, G. Lopez3, C. Roecker1, J. Boguski1, J. J. Gu1, M. L. Bolan1, M. A. Capano1, P. D. Ye1, I. Jovanovic3, Y. P. Chen1
1Purdue University, USA; 2The Pennsylvania State University, USA

NP1.M-226 NeuSand, a Large-Area Neutron Detector Based on a Sandwiched Neutron Scintillator/Moderator-Light Pipe Structure to Replace He-3 in Portal Monitors
J. D. Valentine, R. M. Polichar, W. L. Hicks, B. P. Huntley, R. A. Sullivan, M. A. Peressini, L. G. Chavez, J. J. Martinez-Millan, J. Baltgavis
SHIC, USA

NP1.M-227 Characterization of Multielement Monolithic Germanium Detectors for X-Ray Fluorescence

NP1.M-228 Characterization of HPGe- and Si(Li)-Detectors Structured with a 1D-Fine Pitch Strip-Structure
T. Kirings, C. Ross, D. Protic
SEMIKON Detector GmbH, Germany

NP1.M-229 Antiproton Beam Profile Measurements Using Gas Electron Multipliers
G. Tranquille, P. Carriere, S. Duarte Pinto, J. Spanggaard
CERN, Switzerland

NP1.M-230 Strategy for Calibrating the Non-Linear Characteristic of the DSSC Detector for XFEL
G. Weidenspointner1,2, R. Andritschke1,2, S. Granato1,2, M. Porro1,2, C. Sandow1,2, L. Strueder1,2, K. Hansen2, P. Fischer2, T. Sant2, S. Aschauer3, P. Lechner4, G. Lutz5
1MPI Halbleiterlabor, Germany; 2Max-Planck-Institut fuer extraterrestrische Physik, Germany; 3DESY, Germany; 4Universitaet Heidelberg, Germany; 5Universitaet Siegen, Germany; 6PNSensor GmbH, Germany

NP1.M-231 The ATLAS Diamond Beam Diagnostic Systems
A. Gorisek, Jozef Stefan Institute, Slovenia
On behalf of the The ATLAS BCM Group

NP1.M-232 Improved Count Rate Corrections for Highest Data Quality with PILATUS Detectors
P. Trueb1, B. A. Sobott2, R. Schnyder1, T. Loeliger1, M. Schneebebi1
1Dectris Ltd, Switzerland; 2School of Physics, The University of Melbourne, Australia

NP1.M-233 Radiation Tolerance Investigation of XAMPS Detectors
G. A. Carini, A. Kuczewski, D. P. Siddons
Brookhaven National Laboratory, USA

NP1.M-234 Handling of the LHC Beam Loss Monitoring System Abort Thresholds
CERN, SWITZERLAND

NP1.M-235 Portable Tracker Based on the ATLAS SCT Modules Controlled by USB-Based Readout Interface
P. Masek, IEAP CTU in Prague, Czech Republic

NP1.M-236 Evaluation of COTS Silicon Carbide Photodiodes for a Radiation-Hard, Low-Energy X-Ray Spectrometer
J. R. Terry, J. R. Distel, R. M. Kippen, R. Schirato, M. S. Wallace
Space Science and Applications - Los Alamos National Lab, USA
**NP1.M-237** The Performance of the Beam Conditions and Radiation Monitoring System of CMS
A. E. Dabrowski, *CERN, Switzerland*
On behalf of the CMS Collaboration

**NP1.M-238** A 256-Channel Correlator Design Based on an FPGA for X-Ray Photon Correlation Spectroscopy
Z. Y. A. Li, D. Misra, T. Tyson, *New Jersey Institute of Technology, USA*; A. Fluerasu, D. P. Siddons, *Brookhaven National Laboratory, USA*
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N10  High Energy Physics and Nuclear Physics Detectors: Vertex and Tracking Detectors I

Tuesday, Oct. 25  08:30-10:15  VCC, Auditorium 1

Session Chairs: Marcel Demarteau, Argonne National Laboratory, Hwanbæ Park, Kyungpook National University, South Korea

N10-1  (08:30) Radiation Life of the CDF Run II Silicon Detector
I. Redondo Fernandez, CIEMAT, Spain
On behalf of the CDF Collaboration

N10-2  (08:45) The Silicon Vertex Detector of the Belle II Experiment
T. Bergauer, C. Irmler, M. Friedl, I. Gfaii, M. Valenat
HEPHY Vienna, Austria

N10-3  (09:00) Performance of the LHCb Vertex Locator
M. Van Beuzekom, NIKHEF, NL
On behalf of the LHCb VELO

N10-4  (09:15) The ALICE ITS Upgrade
S. Rossegger, CERN, Switzerland
On behalf of the ALICE ITS upgrade collaboration

N10-5  (09:30) Simulations and Electrical Characterization of Double-Side Double Type Column 3D Detectors
A. Cristofoli1, A. Dalla Costa1, M. Boscardin2, V. Cindro3, G.-F. Dalla Betta4, F. Driussi1, G. Giacomini2, M. P. Giordani1, P. Palestri1, M. Povoli1, S. Ronchin1, L. Selmi1, E. Vianello2
1University of Udine, Italy; 2Fondazione Bruno Kessler, Italy; 3Instut Jozef Stefan, Slovenia; 4University of Trento, Italy

N10-6  (09:45) Optimization of Double Side 3D Detector Technology for First Production at FBK
E. Vianello1, A. Bagolini1, P. Bellutti1, M. Boscardin1, G.-F. Dalla Betta1, G. Giacomini1, C. Piemonte1, M. Povoli1, N. Zorzi1
1Fondazione Bruno Kessler, Italy; 2INFN Sezione di Padova e Universita di Trento, Italy

N10-7  (10:00) The New Forward Silicon Vertex Tracker for the PHENIX Experiment at RHIC
J. S. Kapustinsky, Los Alamos National Laboratory, USA
On behalf of the PHENIX Collaboration

N11  Homeland Security 1

Tuesday, Oct. 25  08:30-10:15  VCC, Auditorium 2

Session Chairs: Peter E. Vanier, Brookhaven National Laboratory, United States
Nathaniel Bowden, Lawrence Livermore National Laboratory, United States

N11-1  (08:30) System-Level Simulations for Dual Gamma Ray and Neutron Imaging and Spectroscopy
J. P. Hayward1,2, M. A. Blackston2, K. P. Ziock2, P. A. Hausladen2, B. Ayaz-Maierhafter1, L. Fabis2, M. Squillante2
1University of Tennessee, United States; 2Oak Ridge National Laboratory, United States; 3Radiation Monitoring Devices, United States

N11-2  (08:45) Gamma-Ray Mirror Notch-Filters for Direct Measurement of Spent Nuclear Fuel
M. J. Pivovarov, Lawrence Livermore National Laboratory, USA; K. P. Ziock, M. J. Harrison, Oak Ridge National Laboratory, USA
N11-3 (09:00) Detection of Prompt Neutrons from Photofission Induced by a Single, Intense Bremsstrahlung Pulse
S. L. Jackson1, R. J. Allen1, J. P. Apruzese1,2, R. J. Commissio1, G. Cooperstein1,2, D. D. Hinshelwood1, D. Mosher1,2, J. W. Schumer1, S. B. Swanekamp1, A. C. Young1,2, J. C. Zier1, A. W. Hunt1, E. S. Cardenas1
1Naval Research Laboratory, DC; 2Consultant through L-3 Services, VA; 3Idaho State University, ID

N11-4 (09:15) Prompt Neutrons from Photofission (PNPF) and Its Use in Homeland Security Applications
A. Danagoulian, Passport Systems, Inc., USA
On behalf of the Passport Systems Inc.

N11-5 (09:30) Detection of Special Nuclear Material (SNM) by (γ-γ-n) Triple Coincidence
J. Dioszegi, C. Salwen, Brookhaven National Laboratory, USA; L. Forman, Ion Focus Technology, USA

N11-6 (09:45) Performance of a Straw-Based Portable Neutron Coincidence/Multiplicity Counter
J. L. Lacy, A. Athanasiades, L. Sun, C. S. Martin, G. J. Vazquez-Flores, Proportional Technologies, Inc., USA; S. Mukhopadhyay, National Security Technologies, Inc., USA

N11-7 (10:00) Neutron Detector Sensitivity Measurements and Their Variation
K. McKinny, T. Anderson, N. Johnson, GE, USA

N12 Photodetectors 2
Tuesday, Oct. 25 08:30-10:15 Meliá, Valentia A

Session Chairs: Dennis R. Schaart, Delft University of Technology, Netherlands
Marek Moszynski, Soltan Institute for Nuclear Studies, Poland

N12-1 (08:30) Enhanced Blue-Light Sensitivity P on N Silicon Photomultipliers
M. Mazzillo, S. Abbisso, G. Condorelli, D. Sanfilippo, G. Valvo, B. Carbone, A. Piana, G. Fallica, STMicroelectronics, Italy

N12-2 (08:45) SiPM with Significantly Better PDE than Classical PMTs
R. Mirzoyan1, B. Dolgoshein2, E. Popova2, P. Buzhan2, M. Teshima1
1Max-Planck-Institute for Physics, Germany; 2Moscow Engineering and Physics Institute, Russia

N12-3 (09:00) Performance Measurements for a New Low Dark Count UV-SiPM
P. Berard, M. Couture, P. Deschamps, F. Laforce, H. Dautet
Excelsia Technologies, Canada

N12-4 (09:15) A CMOS Mini-SiPM Detector with in-Pixel Data Compression for PET Applications
L. H. C. Braga1, L. Pancheri1, L. Gasparini1, M. Perenzoni1, R. Walker2, R. K. Henderson2, D. Stoppa1
1Fondazione Bruno Kessler (FBK), Italy; 2The University of Edinburgh (UEDIN), U.K.

N12-5 (09:30) SiPMs with Bulk Integrated Quench Resistors
J. Ninkovic1, L. Andricek1, C. Jendrysik1, G. Liemann1, G. Luxz2, H. G. Moser1, R. Richter1
1Max Planck Institute for Physics - Semiconductor Laboratory, Germany; 2PNSensor, Germany

N12-6 (09:45) Detection Efficiency and Afterpulsing in Silicon Photomultipliers
A. Para, P. Rubinov, Fermilab, USA; I. Vasilis, University of Cyprus, Cyprus

N12-7 (10:00) Dead Time of SiPM Pixels
M. Grodzicka, M. Moszyński, T. Szczęśniak, M. Szawlowski, D. Wolski, K. Leśniewski, Soltan Institute for Nuclear Studies, Poland
Tuesday, Oct. 25  08:30-10:00  Meliá, Valentia B

Session Chairs:  Marco Battaglia, LBNL and UC Berkeley, United States  
                 Giorgio Chiarelli, INFN Sez. di Pisa, Italy

N13-1 (08:30) DEPFET Active Pixel Sensor with Non-Linear Amplification
P. H. Lechner\textsuperscript{1}, L. Andricek\textsuperscript{1}, S. Aschauer\textsuperscript{1}, G. De Vita\textsuperscript{1}, G. Lutz\textsuperscript{1}, M. Porro\textsuperscript{3},  
R. H. Richter\textsuperscript{2}, C. Sandow\textsuperscript{1}, H. Soltau\textsuperscript{1}, L. Strueder\textsuperscript{3}
\textsuperscript{1}PNSensor GmbH, Germany; \textsuperscript{2}MPI fuer Physik, Germany; \textsuperscript{3}MPI fuer extraterrestrische Physik, Germany

N13-2 (08:45) A Very Large Area (100 mm$^2$) Silicon Drift Detector
S. Barkan, V. D. Saveliev, L. Feng, M. Takahashi, E. V. Damron, C. R. Tull
SII NanoTechnology USA, USA

N13-3 (09:00) Environmental Effects on Photomultiplication Propagation in Silicon
M. W. Fishburn, E. Charbon, Delft University of Technology, Netherlands

N13-4 (09:15) Longitudinal Profile of the Charge Cloud at High Charge Levels in Multi-Linear Silicon Drift Detectors for Position-Sensing Applications
A. Castoldi\textsuperscript{1,2}, C. Guazzoni\textsuperscript{1,2}, D. Mezza\textsuperscript{1,2}, G. Montemurro\textsuperscript{1,2},  
R. Hartmann\textsuperscript{3}, L. Strueder\textsuperscript{4,5,6}, L. Carraresi\textsuperscript{2}, F. Taccetti\textsuperscript{2}
\textsuperscript{1}Politecnico di Milano, Italy; \textsuperscript{2}INFN, Italy; \textsuperscript{3}PNSensor GmbH, Germany; \textsuperscript{4}Max-Planck Institut, Germany; \textsuperscript{5}Max-Planck Institut fuer extraterrestrische Physik, Germany; \textsuperscript{6}Universitat Siegen, Germany; \textsuperscript{7}Universita degli Studi di Firenze, Italy

R. H. Redus, A. C. Huber, J. Pantazis, T. Pantazis, Amptek, Inc., 01730

N13-6 (09:45) Radiation-Hard Imaging Detectors Based on Diamond Electronics
M. Girolami\textsuperscript{1}, A. Galbiati\textsuperscript{2}, S. Salvatori\textsuperscript{1}
\textsuperscript{1}Roma TRE University, Italy; \textsuperscript{2}Solaris Photonics, United Kingdom

N13 Solid State Hybrid and Monolithic Detectors 2

Tuesday, Oct. 25  08:30-10:00  Meliá, Valentia C

Session Chairs:  Michael Squillante, RMD Inc., United States  
                 Karl Zeitelhack, TU Munich, Germany

N14-1 (08:30) Time Encoded Neutron/Gamma Imager for Large Stand-off SNM Detection
P. A. Marleau, J. Brennan, E. Brubaker, J. Steele
Sandia National Laboratories, USA

N14-2 (08:45) A High-Speed Neutron Radiography System to Visualize Grease Dynamics in a Rolling Bearing
H. Nose, A. Ito, T. Takano, IHI Corporation, Japan; K.-I. Mochiki, Tokyo City University, Japan

N14-3 (09:00) Implementation and Performance of the Electronics and Computing System for the Gamma Ray Energy Tracking in-Beam Nuclear Array (GRETTINA)
S. Zimmermann\textsuperscript{1}, D. Doering\textsuperscript{1}, J. T. Anderson\textsuperscript{2}, J. M. Joseph\textsuperscript{1},  
C. A. Lionberger\textsuperscript{1}, T. Stezelberger\textsuperscript{1}, H. Yaver\textsuperscript{1}
\textsuperscript{1}Lawrence Berkeley National Laboratory, USA; \textsuperscript{2}Argonne National Laboratory, USA

N14-4 (09:15) Real-Time, Digital Imaging of Neutrons and Gamma Rays with a Fast Liquid Scintillation Detector
M. J. Joyce, K. A. A. Gamage
Lancaster University, United Kingdom

N14-5 (09:30) Pulse Shape Discrimination in CLYC Using Pole Zero Crossover Correction Method
S. Mukhopadhyay, J. Glodo, K. S. Shah
Radiation Monitoring Devices, United States

N14 Gamma Ray and Neutron Detection 1
**N14-6 (09:45) Fission Spectrum Measurements at LANSCE Using Liquid Organic Scintillators**

**N14-7 (10:00) Neutron-Sensitive Anger Camera Development for SNS Protein Crystal Neutron Diffractometry Instrument (MaNDi)**
J. D. Richards, C. Donahue, V. Theodore, L. G. Clonts *SNS/ORNL, USA*

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**N15 Tools and Techniques for Biomedical Research**

**Tuesday, Oct. 25**

08:30-10:00  Meliá, Meeting 1&2&3

Session Chairs: **Stan Majewski**, West Virginia University, United States; **Youngho Seo**, University of California, San Francisco, United States

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**N15-1 (08:30) Performance Characterization of High-Purity Germanium Detector for Small-Animal SPECT Imaging**
L. C. Johnson, D. L. Campbell, T. E. Peterson, *Vanderbilt University, USA*

**N15-2 (08:45) Signal Shape of a PET Detector Based on LSO:Ce,Ca Crystals and SiPM**
G. De Luca¹, M. G. Bisogni¹, G. Collazuol², A. Argentieri³, F. Corsi³, C. Marzocca³, C. Piemonte⁴, A. del Guerra¹
¹University and INFN of Pisa, Italy; ²University and INFN of Padova, Italy; ³DEE-Politecnico di Bari, Italy; ⁴ITT-IRST, Italy

**N15-3 (09:00) Readout Technologies for the BNL-UPenn MRI-Compatible PET Scanner for Rodents**
M. L. Purschke¹, J. Fried², E. Gualtieri³, J. S. Karp², P. O’Connor¹, D. Schlyer¹, V. Vaska¹, C. Woody³
¹Brookhaven National Lab, USA; ²University of Pennsylvania, USA

**N15-4 (09:15) Characterization and Test of a Data Acquisition System for PET**
M. Morrocchi¹,², S. Marcatili¹,², N. Belcari¹,², M. G. Bisogni¹,², G. Collazuol³,⁴, G. Ambrosi³, F. Corsi³,⁴, M. Foresta⁶,⁷, C. Marzocca⁶,⁷, G. Mataresse⁶,⁷, G. Sportelli⁶,⁷, P. Guerra⁶, A. Santos⁸,⁹, A. del Guerra¹,²
¹INFN Pisa, Italy; ²University of Pisa, Italy; ³INFN Padova, Italy; ⁴University of Padova, Italy; ⁵INFN Perugia, Italy; ⁶Politecnico di Bari, Italy; ⁷INFN Bari, Italy; ⁸Universidad Politecnica de Madrid, Spain; ⁹CIBER-BBN, Spain

**N15-5 (09:30) Comparison of Epitaxial and SOI Based Large Area Microdosimeters**
J. Livingstone¹, D. A. Prokopovich¹, M. Petasseca¹, M. L. F. Lerch¹, M. I. Reinhardt², A. S. Dzurak³, D. N. Jamieson⁴, V. L. Perevertaylo⁵, A. Kryukov⁵, V. L. Pisacane⁶, M. Zaidër⁷, J. F. Dicello⁸, A. B. Rosenfeld¹
¹University of Wollongong, Australia; ²Australian Nuclear Science and Technology Organisation, Australia; ³University of New South Wales, Australia; ⁴University of Melbourne, Australia; ⁵SPA BIT, Ukraine; ⁶United States Naval Academy, USA; ⁷Memorial Sloan-Kettering Cancer Center, USA; ⁸Loma Linda University Medical Center, USA

**N15-6 (09:45) High Resolution Measurements of Mass Attenuation Coefficients for Photon Energies of 40 keV to 1.4 MeV**
C. Crewson, C. C. Rangacharyulu *University of Saskatchewan, Canada*

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**N16 Analog and Digital Circuits 1**

**Tuesday, Oct. 25**

11:00-12:45  VCC, Auditorium 1

Session Chairs: **Yasuo Arai**, KEK, Japan; **Angelo Rivetti**, Istituto Nazionale di Fisica Nucleare - INFN - Sezione di Torino, Italy
N16-1 (11:00) PXD18k - Fast Single Photon Counting Chip with Energy Window for Hybrid Pixel Detector
R. Szczygieł, P. Grybos, P. Maj, M. Zoladz
AGH University of Science and Technology, Poland

N16-2 (11:15) ToPiX: a CMOS 0.13 M Silicon Pixel Readout ASIC for the PANDA Experiment
G. Marza¹, S. Bonacini², D. Calvo¹, P. De Remigis¹, T. Kugathasan¹,³, M. Mignone¹, A. Rivetti¹, L. Toscano¹, R. Wheadon¹
¹INFN, Italy; ²CERN, Switzerland; ³Università di Torino, Italy

N16-3 (11:30) Characterisation of a Low Power Hybrid Pixel Detector ASIC with Real-Time Energy Binning
W. S. Wong¹, G. Anton², R. Ballabriga¹, M. Boehnel², M. Campbell¹, T. Gabor², H. Erikk¹, L. Xavier¹, M. Thilo¹, R. Ritter¹, T. Poikela¹, P. Sievers³, P. Valerio¹
¹CERN, Switzerland; ²University of Erlangen-Nuremberg, Germany

N16-4 (11:45) High Throughput Multichannel Design for the Integrated Analog Readout of SDDs
L. Bombelli¹,²,³, R. Alberti¹, C. Fiorini¹,², S. Moser¹, R. Quaglia¹,², A. Tocchio¹
¹Politecnico di Milano Dip. Elettronica e Informatica, Italy; ²INFN Sezione di Milano, Italy; ³XGLab SRL, Italy

N16-5 (12:00) VERITAS: a 128-Channel ASIC for the Readout pnCCDs and DEPFET Arrays for X-Ray Imaging, Spectroscopy and X-Ray FEL Applications. Experimental Results and New Designs
M. Porro¹,², D. Bianchi¹,², G. De Vita¹,², S. Herrmann¹,², A. Wassatsch¹,², R. Hartmann¹,², G. Hauser¹,², L. Strueder¹,²
¹Max Planck Institut fuer Extraterrestrische Physik, Germany; ²MPI Halbleiterlabor, Germany; ³Max Planck Institut fuer Physik, Germany; ⁴PNSensor GmbH, Germany

N17 Homeland Security 2
Tuesday, Oct. 25 11:00-12:45 VCC, Auditorium 2

Session Chairs: Michael C. Wright, Oak Ridge National Laboratory, United States
Belkis Cabrera-Palmer, Sandia National Laboratories, United States

N17-1 (11:00) Prototype Testing and Algorithm Development for the Cosmic Ray Inspection and Passive Tomography (CRiPT) Project
¹Atomic Energy of Canada Limited, Canada; ²Carleton University, Canada; ³Advanced Applied Physics Solutions, Canada; ⁴Canadian Border Services Agency, Canada; ⁵International Safety Research, Canada; ⁶Defence Research and Development Canada, Canada; ⁷Health Canada, Canada

N17-2 (11:15) Parametric Evaluation of Active Neutron Interrogation for the Detection of Shielded Highly Enriched Uranium
D. L. Chichester, E. H. Seabury, S. J. Thompson, R. R. C. Clement
Idaho National Laboratory, USA

N17-3 (11:30) Minimal Detectable Fissile Masses from Active Interrogation Using Delayed Neutron, Delayed Gamma Ray and Prompt Neutron Signatures
A. W. Hunt¹, E. S. Cardenas¹, E. T. E. Reedy¹, H. A. Seipel¹, B. H. Failor²
¹Idaho State University, USA; ²L-3 Communications, USA
N17-4 (11:45) Cherenkov Counters for the Detection of Gamma Rays from Active Interrogation
A. N. Erickson, R. C. Lanza, Massachusetts Institute of Technology, USA; M. V. Hynes, B. W. Blackburn, Raytheon Corporation, USA; A. Bernstein, S. Dazeley, Lawrence Livermore National Laboratory, USA

N17-5 (12:00) Machine Vision Assisted Volumetric Gamma-Ray Imaging
L. Mihaielscu1, P. Mordohai2, X. Hu3, J. Maltz1, D. Gunter1, T. Aucott1, C. Bates1, A. Haefner1, R. Barnowski1, M. Amman1, J. Wallig1, T. Loew1, K. Vetter1
1Lawrence Berkeley National Laboratory, USA; 2Stevens Institute of Technology, USA; 3UC Berkeley, USA

N17-6 (12:15) 3D Compton Image Reconstruction Using a Moving 3D-Sensitivity Room-Temperature CdZnTe Detector Array
J. M. Jaworski, Z. He, University of Michigan, USA

N17-7 (12:30) Timing Resolution Study of an Associated Particle Detector for Fast Neutron Imaging
J. W. Cates1, J. P. Hayward1, X. Zhang1, P. Hausladen2, B. Dabbs1
1University of Tennessee, USA; 2Oak Ridge National Laboratory, USA

N18 Scintillators

Tuesday, Oct. 25 11:00-12:45 Melià, Valentia A

N18-1 (11:00) Effect of Host and Activator on Nonproportionality of Scintillators
S. A. Payne, B. Sturm, S. Hunter, N. Cherepy, L. Ahle, S. Sheets, LLNL, USA; W. Moses, W.-S. Choong, G. Bizarri, LBNL, USA

N18-2 (11:15) Nonproportionality and Scintillation Studies of SrI2(Eu) from 9 K to 300 K
S. Lam, R. M. Gaume, M. Gascon, R. S. Feigelson, Stanford University, USA; R. Hawrami, K. Shah, Radiation Monitoring Devices, Inc., USA

N18-3 (11:30) The Study of Scintillator Nonproportionality Through the Application of High Isostatic Pressure
M. Gascon, R. M. Gaume, S. Lam, R. S. Feigelson, Stanford University, USA; W. Setyawan, S. Curtarolo, Duke University, USA

N18-4 (11:45) Gamma-ray and Electron Response in Doped Alkali Halide Scintillators

N18-5 (12:00) Subpoisson Statistics and Estimation of Fano Factor in Inorganic Scintillators
V. Bora, H. H. Barrett, University of Arizona, USA; K. S. Shah, J. Glodo, Radiation Monitoring Devices, Inc., USA

N18-6 (12:15) Interaction of Ionizing Radiation with Nanoparticles: How Much Energy Is Deposited Within the Particle?
A. Vasil'ev, Lomonosov Moscow State University, Russia; A. Belsky, A.-L. Bulin, A. Dujardin, University Lyon1, France

N18-7 (12:30) Effects of Photonic Crystals on the Light Output of Heavy Inorganic Scintillators
A. Knapiotisch1, E. Auffray2, C. W. Fabjan1, J.-L. Leclercq3, P. Lecoq4, X. Letartre5, C. Seassal6
1Institute of Atomic and Subatomic Physics, Vienna University of Technology, Austria; 2CERN, Switzerland; 3Universite de Lyon, Institut des Nanotechnologies de Lyon-INL, France
N19  Gaseous Detectors 2

Tuesday, Oct. 25  11:00-12:45  Meliá, Valentia B

Session Chairs:  Maxim Titov, CEA Saclay, France
                Chilo Garabatos, GSI, Germany

N19-1 (11:00) Design and Construction of a Cylindrical GEM Detector as Inner Tracker Device at KLOE-2
D. Domenici, LNF - INFN, Italy
On behalf of the KLOE-2 Inner Tracker sub-group

N19-2 (11:15) Design, Construction and Test of a Precursor GEM-TPC for PANDA
R. Arora, GSI Helmholtzzentrum fuer Schwerionenforschung GmbH, Germany
On behalf of the GEM-TPC Collaboration

N19-3 (11:30) Calibration of the GEM-TPC Prototype for PANDA with 83m Kr
D. Kaiser, HISKP University Bonn, Germany
On behalf of the GEM-TPC Collaboration

N19-4 (11:45) Time Projection Chamber with Triple GEM and Highly Granular Readout
C. Brezina1, K. Desch1, J. Kaminski1, M. Killenberg1, T. Krautschied1, M. Schultens1, R. Ulman1, S. Zimmermann1
1University of Bonn, Germany; 2CERN, Switzerland

N19-5 (12:00) Performance of ALICE TPC Readout Electronics
A. U. Rehman, CERN, Switzerland
On behalf of the ALICE TPC Collaboration

N19-6 (12:15) A Compact TPC GEM for High Intensity Beam Diagnostics
F. Murtas, A. Balla, G. Claps, G. Corradi, C. Paglia, Laboratori Nazionali di Frascati INFN, Italy; D. Tagnani, Sezione Roma I INFN, Italy; P. Valente, Sezione Roma 3 INFN, Italy

N19-7 (12:30) Test Beam Results of the GE1/1 Prototype for CMS High-Eta Muon System Future Upgrade
S. Colafranceschi, CERN, SWISS

N20  Gamma Ray and Neutron Detection 2

Tuesday, Oct. 25  11:00-12:45  Meliá, Valentia C

Session Chairs:  Edith Bourret-Courchesne, LBL, United States
                Bruno Guerard, ILL, France

N20-1 (11:00) Revolutionizing Beta-Delayed Neutron Spectroscopy Using Trapped Radioactive Ions
1UC Berkeley, USA; 2Lawrence Livermore National Laboratory, USA; 3Argonne National Laboratory, USA; 4McGill University, CAN; 5University of Chicago, USA; 6University of Manitoba, CAN; 7Northwestern University, USA

N20-2 (11:15) Investigation of Aerogel, Saturated Foam, and Foil for Thermal Neutron Detection
Kansas State University, USA

N20-3 (11:30) Results from Above Ground Water Cherenkov Antineutrino Detector Deployment for Reactor Safeguards
G. Keefe, A. Bernstein, N. Bowden, S. Dazeley, Lawrence Livermore National Laboratory (LLNL), U.S.A.; D. Reyna, B. Cabrera-Palmer, S. Kiff, J. Lund, Sandia National Laboratory (SNL), U.S.A.

N20-4 (11:45) A Survey of Neutron Capture Correlation Signals, Backgrounds, and Detectors
N. Bowden, S. Dazeley, M. Sweany
Lawrence Livermore National Laboratory, USA
N20-5 (12:00) Conceptual Design and Modeling for Online Uranium Enrichment Monitoring
L. E. Smith, A. R. Lebrun, International Atomic Energy Agency, Austria

N20-6 (12:15) Detection of Actinides with an Electron Accelerator by Active Photoneutron Interrogation Measurements
A. Sari1, F. Carrel1, M. Gnar1, F. Laine1, A. Lyoussi2, S. Normand1
1CEA, LIST, France; 2CEA, DEN, DER, SPEX, France

N20-7 (12:30) Liquid Scintillator Neutron Detector for Real-Time Nuclear Material Assay
A. Lavietes, M. Pickrell, R. Plenteda, N. Mascarenhas, C. Liguori, International Atomic Energy Agency, Austria; M. Aspinall, Hybrid Instruments, Inc., United Kingdom; M. Joyce, University of Lancaster, United Kingdom

N21 Solid State Hybrid and Monolithic Detectors 3

Tuesday, Oct. 25 11:00-12:30 Meliá, Meeting 1&2&3

Session Chairs: Marco Battaglia, LBNL and UC Berkeley, United States
Marcel Demarteau, Argonne National Laboratory, United States

N21-1 (11:00) Development of FD-SOI Monolithic Pixel Devices for High-Energy Charged Particle Detection
K. Har, K. Shinsho, University of Tsukuba, Japan; Y. Arai, T. Miyoshi, Y. Ikemoto, R. Ichimiya, T. Tsuboyama, T. Kohriki, Y. Yasu, High Energy Accelerator Research Organization (KEK), Japan; Y. Onuki, H. Katsurayama, Tohoku University, Japan; A. Takeda, The Graduate University for Advanced Studies, Japan; K. Hanagaki, Osaka University, Japan

N21-2 (11:15) Monolithic SOI Pixel Detector for x-Ray Imaging Applications with high Dynamic Range and MHz Frame-Rate
L. Petic, F. Mandl, University of Heidelberg, Germany

N21-3 (11:30) Test Results of X-Ray Imaging Sensor with SOI CMOS Technology
A. Takeda, the Graduate University for Advanced Studies (SOKENDAI), Japan; Y. Arai, T. Miyoshi, R. Ichimiya, Y. Ikemoto, KEK / IPNS, Japan; S. G. Ryu, T. G. Tsuru, S. Nakashima, Kyoto Univ., Japan

N21-4 (11:45) Characterisation of a Thin Fully-Depleted SOI Pixel Sensor with Soft X-Ray Radiation
M. Battaglia1, D. Bisello2, D. Contarato3, P. Denes1, S. Mattiazzo2, C. Tindall1
1LBNL and UC Santa Cruz, USA; 2INFN and Universita', Italy; 3LBNL, USA

N21-5 (12:00) Hole Based CMOS Active Pixel Sensor for Medical X-Ray Imaging
H. Jang, S. E. Park, S. J. Hwang, C. H. Choi, J. Hwang, Dongbu Hitek Co., Ltd, Korea

N21-6 (12:15) The CCD-Strip Detector: High-Resolution Tracking of Compton Electrons
D. H. Chivers1, B. Plimley1, A. Coffer1, A. Haefner1, A. Karcher1, P. Barton2, C. Tindall1, K. Vetter1.2
1University of California, Berkeley, U.S.A.; 2Lawrence Berkeley National Laboratory, U.S.A.

N22 High Energy Physics and Nuclear Physics Detectors: Muon Detection System

Tuesday, Oct. 25 14:30-15:45 VCC, Auditorium 2

Session Chairs: Hiroyuki Iwasaki, KEK, Japan
Yong-Kyun Kim, Hanyang University, South Korea

N22-1 (14:30) Performance of the Trigger Detectors of the ALICE Muon Spectrometer During the First Year of Data Taking at LHC
A. Piccotti, Istituto Nazionale di Fisica Nucleare, ITALY
On behalf of the ALICE Collaboration
N22-2 (14:45) Study of the Performance of the ATLAS Muon Spectrometer  
C. Bini, Sapienza Universita' and INFN Roma, Italy  
On behalf of the ATLAS Collaboration

N22-3 (15:00) Calibration and Performance of the Precision Chambers of the ATLAS Muon Spectrometer  
C. Bini, Sapienza Universita' and INFN Roma, Italy  
On behalf of the ATLAS Collaboration

N22-4 (15:15) CMS Drift Tubes System During LHC 2010 Operation  
C. F. Bedoya, CIEMAT, Spain - On behalf of the CMS Collaboration

N22-5 (15:30) Test Beam Results of the SuperB Muon Detector Prototype  
G. Cibinetto, Ferrara University - INFN, Italy  
On behalf of the SuperB IFR group

N23 Gamma Ray and Neutron Detection 3

Tuesday, Oct. 25 14:30-15:45 Meliá, Valentia B
Session Chairs: Klaus Zippe, ORNL, United States  
Nolan E. Hertel, Georgia Institute of Technology, United States

N23-1 (14:30) Arrayed 6x6-Device High Efficiency Dual-Integrated Microstructured Semiconductor Neutron Detectors  
R. G. Fronk, S. L. Bellinger, D. S. McGregor, Kansas State University - S.M.A.R.T. Laboratory, USA; T. J. Sobering, Kansas State University - Electronics Design Laboratory, USA

N23-2 (14:45) Neutron Imaging with Micrometric Spatial Resolution  
D. Vavrik, Institute of Theoretical and Applied Mechanics, Czech Republic; J. Jakubek, S. Pospisil, Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic; J. Vacik, Nuclear Physics Institute AS CR, & Research Center Rez, Czech Republic

N23-3 (15:00) Overview of the High Efficiency Multimode Imager  
1University of California at Berkeley, U.S.; 2Lawrence Berkeley National Laboratory, U.S.; 3Redlen Technologies, Canada

C. H. de Mesquita, P. A. S. Vasquez, M. M. Hamada, IPEN/CNEN-SP, Brazil

N23-5 (15:30) Background Characterization with the Mobile Imaging and Spectroscopic Threat Identification (MISTI) System  
T. Aucott1, D. Chivers1, K. Vetter1,2  
1University of California, Berkeley, US; 2Lawrence Berkeley National Lab, US

N24 High Energy Physics and Nuclear Physics Detectors : Vertex and Tracking Detectors II

Tuesday, Oct. 25 16:30-18:15 VCC, Auditorium 2
Session Chairs: Massimo L. Caccia, Università dell’Insubria, Italy  
Marco Battaglia, LBNL and UC Berkeley, United States

N24-1 (16:30) Silicon Strip Detectors for the ATLAS sLHC Upgrade  
Y. Unno, KEK, Tsukuba, Japan, On behalf of the ATLAS Collaboration

N24-2 (16:45) Upgrade of the CMS Tracker for the High Luminosity LHC  
M. Dragicevic, HEPHY, Austria  
On behalf of the CMS Tracker Collaboration

N24-3 (17:00) Hybrid Silicon Jstrip and GEM Tracker for JLab Hall A High Luminosity Experiments  
P. Musico1, V. Bellini2, M. Capogni3, E. Cisbani4, S. Colilli4, R. De Leo5,  
1University of California, Berkeley, US; 2Lawrence Berkeley National Laboratory, US; 3Ferrara University - INFN, Italy; 4INFN Roma, Italy; 5INFN Napoli, Italy
1INFN Genova, Italy; 2INFN Catania and Catania University, Italy; 3ENEA Casaccia and INFN Roma Sapienza group, Italy; 4INFN Roma Sapienza group and Italian National Institute of Health, Italy; 5INFN Bari and University of Bari, Italy; 6CERN, Switzerland; 7INFN Roma and Sapienza Roma University, Italy; 8Haute Ecole Paul Henri Spaak, Belgium; 9INFN Lecce, Italy

N24-4 (17:15) Upgrade of the Novel 2D Position-Sensitive Microstrip Detector.
D. Bassignana, M. Lozano, G. Pellegrini, D. Quirion, IMB-CNM (CSIC), Spain; M. Fernandez, R. Jaramillo, F. J. Munoz, I. Vila, IFCA (CSIC-UC), Spain

N24-5 (17:30) Performance of the LHCb Silicon Tracker at the LHC
V. Fave, University of Santiago de Compostela, Spain
On behalf of the LHCb Silicon Tracker Group

N24-6 (17:45) A Novel Alignment Procedure and Results for the LHCb Silicon Tracker Detector
F. Dupertuis, LPHE, Ecole Federale de Lausanne (EPFL), Switzerland
On behalf of the LHCb Silicon Tracker Group

N24-7 (18:00) Results from the First Prototype of Large 3D Active Edge Sensors
1SINTEF, Norway; 2Fondazione Bruno Kessler, Italy; 3University of Trento, Italy; 4University of Manchester, UK; 5INFN Genova, Italy; 6SLAC National Accelerator Laboratory, USA; 7University of Hawaii, USA; 8Centro National de Microelectronica, Spain

N25 Solid State Hybrid and Monolithic Detectors 4
Tuesday, Oct. 25 16:30-18:00 Meliá, Valentia B
Session Chairs: Laci Andricek, MPI Halbleiterlabor, Germany
Ingrid-Maria Gregor, DESY, Germany

N25-1 (16:30) SLID-ICV Vertical Integration Technology for the ALAS Pixel Upgrades
A. Macchiolo, L. Andricek, M. Beimforde, H.-G. Moser, R. Nisius, R. Rainer H., P. Weigell
1Max-Planck-Institut fuer Physik, Germany; 2MPP Halbleiterlabor, Germany

N25-2 (16:45) 2D and 3D Thin Pixel Technologies for the Layer0 of the SuperB Silicon Vertex Tracker
G. Rizzo, Universita di Pisa & INFN, Italy
On behalf of the SuperB SVT Group

N25-3 (17:00) Active-Edge Planar Silicon Sensors for Large-Area Pixel Detectors
M. Bosma, E. Heijne, J. Kallioopuska, J. Visser, E. Koffeman
1Nikhef - National Institute for Subatomic Physics, The Netherlands; 2CERN, Switzerland; 3VTT, Finland

N25-4 (17:15) Development of Active and Slim Edge Terminations for 3D and Planar Detectors
G.-F. Dalla Betta, A. Bagolini, M. Boscardin, G. Giacomini, M. Povoli, E. Vianello, N. Zorzi
1University of Trento and INFN, Italy; 2Fondazione Bruno Kessler, Italy

N25-5 (17:30) Ultra-Thin Fully Depleted DEPFET Active Pixel Sensors
1Max-Planck-Institut für Physik, Germany; 2MPI Halbleiterlabor, Germany; 3TU Berlin, Germany; 4Charles University, Czech Republic

N25-6 (17:45) Edge-on Detectors with Active Edge for X-Ray Photon Counting
D. T. Hansen, N. Ahmed, SINTEF ICT, Norway; A. Ferber, G. Bouquet, SINTEF ICT, Norway
R05  CdTe I

Tuesday, Oct. 25  08:30-09:55  VCC, Auditorium 3 A & B

Session Chair:  Paul J. Sellin, University of Surrey, United Kingdom

R05-1  (08:30, invited) Development of Spectroscopic Imaging Arrays Using Epitaxially Grown Thick Single Crystal CdTe Layers on Si Substrate
M. Niraula, K. Yasuda, N. Fujimura, T. Tachi, H. Inuzuka, S. Namba, T. Kondo, S. Muramatsu, Y. Agata
Nagoya Institute of Technology, Japan

R05-2  (08:50, invited) Te Inclusions in Large Size CdTe THM Crystals
A. Raulo, G. Hennard, M. Sowinska, EURORAD, France; R. B. James, Brookhaven National Laboratory, USA; A. Fauler, M. Fiederle, Albert-Ludwigs-Universitat, Germany

R05-3  (09:10) Measurement of the Electron-Hole Pair Generation Energy in Cadmium Telluride by X and Gamma Photons
G. Bertuccio1,2, M. Bonanomi1
1Politecnico di Milano, Italy; 2National Institute of Nuclear Physics, Italy

R. Grill, J. Franc, E. Belas, M. Bugar, P. Moravec, P. Hoschl
Charles University, Institute of Physics, Czech Republic

R05-5  (09:40) High Energy and Position Resolution CdTe Diode Double-Sided Strip Detectors
S. Watanabe1,2, S. Takeda1,2, G. Sato1, K. Hagiho1,2, T. Sato1,2, Y. Ichinohe1,2, S. Saito1,2, T. Fukuyama1,2, M. Okita1, H. Odaka1, M. Kokubun1, T. Takahashi1,2
1Japan Aerospace Exploration Agency, Japan; 2University of Tokyo, Japan; 3RIKEN, Japan

R06  Alternative Materials I

Tuesday, Oct. 25  11:00-12:10  VCC, Auditorium 3 A & B

Session Chair:  Arnold Burger, Fisk University, United States

R06-1  (11:00, invited) Manufacturing by Bridgman Method of the 2-Inch-(Cd,Mn)Te Crystal Rods, and Their Characterization.
A. Mycielski, D. Kochanowska, M. Witkowska-Baran, A. Szadkowski, B. Witkowska, W. Kaliszek, A. Marciniak, R. Jakiela, W. Domukhowski, A. Suchocki, A. Dużyńska, Institute of Physics, Polish Academy of Sciences, Poland; M. Sowińska, EURORAD, France; P. Siffert, E-MRS Headquarters, France

R06-2  (11:20) Thermomigration of Te Inclusions in Cd(Mn,Zn)Te Crystals
P. Fochuk1, R. Grill2, O. Kopach1, G. Yang1, A. Bolotnikov3, K. H. Kim1, C. Giuseppe1, A. Hossain1, I. Nakonechnyi1, R. Gul1, O. Panchuk1, R. James3
1Chernivtsi National University, Ukraine; 2Charles University, Czech Republic; 3Brookhaven National Laboratory, USA

R06-3  (11:35, invited) Heavy Metal Iodides for Radiation Detectors: from Bulk Crystals and Crystalline Layers to Nanostructures
L. Fornaro1, I. Aguiar2, A. L. Noguera1, M. E. Prez1, H. Bentos Pereira1, N. Sasen2
1Centro Universitario de la Regin Este, Uruguay; 2Facultad de Qumicia, Uruguay

R06-4  (11:55) Influence of Polar-Bond Containing Organics on the Growth of Hgl2 Tetragonal Prismatic Crystals
E. Ariesanti, D. S. McGregor, SMART Laboratory, USA
R08-1 (16:30, invited) Crystal Growth of CZT Using SiC Pedestal and pBN Crucible
J. Crocco, H. Bensalah, Q. Zheng, E. Dieguez
University de Autonoma de Madrid, Spain

U. N. Roy, S. Weiler, J. Stein, FLIR Radiation (Formerly known as ICx Radiation Inc.), USA; A. Bolotnikov, G. Camarda, A. Hossain, G. Yang, R. Gul, R. James, Brookhaven National Laboratory, USA

R08-3 (17:10) Performance of Vapour Grown Pixelated (Cd,Zn)Te Radiation Detectors:

R08-4 (17:25) Similarities in Properties Between as Grown Cd0.9Zn0.1Te Crystals with Low and High Te Secondary Phase Concentrations
A. Datta, S. K. Swain, S. Bhaladhare, K. G. Lynn
Washington State University, United States

R08-5 (17:40) Pulse Splitting in Photon Counting X-Ray Detectors
K. J. Engel, R. Steadman, C. Herrmann
Philips Research Laboratories, Germany

R08-6 (17:55) Multi-Material Decomposition Using Low-Current X-Ray and a Photon-Counting CZT Detector
S. Kim¹, A. Hernandez¹, F. Alhassen¹, R. G. Gould¹, M. Pivovaroff², H.-M. Cho³, Y. Seo³
¹University of California, San Francisco, USA; ²Lawrence Livermore National Laboratory, USA; ³Yonsei University, South Korea
**NP2.S Poster Session Front End Electronics, DAQ & Trigger**

**Tuesday, Oct. 25** 08:30-10:30  
Sorolla, Gran Recati

**Session Chairs:**  
**Christian Bohm,** University of Stockholm, Department of Physics, Sweden  
**Christophe de la Taille,** LAL/IN2P3/CNRS, France  
**Alberto Aloisio,** University of Naples Federico II and INFN, Italy  
**Jean-Francois C. Genat,** CNRS/IN2P3/LPNHE, France

**NP2.S-1 TOT02, a Time-over-Threshold Based Readout Chip in 180 nm CMOS Process for Long Silicon Strip Detectors**  
K. Kasinski, R. Szczepiel, P. Grybos  
*AGH University of Science and Technology, Poland*

**NP2.S-3 FSDR16 a Low Noise, Fast Silicon Strip Detector Readout IC with a 5th Order Complex Shaping Amplifier in 180 nm CMOS**  
R. Kleczek, P. Grybos  
*AGH - University of Science and Technology, Poland*

**NP2.S-5 Vertical Integration Approach to the Readout of Pixel Detectors for Vertexing Applications**  
A. Manazza, L. Gaioni, M. Manghisoni, L. Ratti, V. Re, G. Traversi, S. Zucca  
1University of Pavia, Italy; 2INFN section of Pavia, Italy; 3University of Bergamo, Italy

**NP2.S-7 Characterisation of an ASIC Front-End Electronics Dedicated to the Silicon Drift Detectors**  
1INAF/IASF-Bologna, Italy; 2Universita di bologna, Italy; 3INFN Sezione di Bologna, Italy; 4Universita' di Pavia, Italy; 5Politecnico di Milano, Italy; 6INAF/LASF Roma, Italy; 7INFN - Sezione di Roma 2, Italy; 8ENEA Frascati, Italy; 9INFN - Sezione di Trieste, Italy; 10INFN - Laboratori Nazionali di Legnaro, Italy; 11Università di Padova, Italy; 12Shumen University, Bulgaria; 13INFN - Sezione di Padova, Italy

**NP2.S-9 Ultra-Fast Compact Multi-Channel Readout System for SDDs**  
R. Alberti, L. Bombelli, C. Fiorini, T. Frizzi, S. Moser, R. Quaglia  
1XGLab S.R.L., Via Moretto da Brescia 23, I-20133, Italy; 2Politecnico di Milano, Piazza Leonardo da Vinci 32, I-20133, Italy

**NP2.S-11 Multi-Dimensional Optimization of Charge Preamplifier in 0.18μm CMOS Technology for Low Power CdTe Spectro-Imaging System**  
A. Michalowska, O. Gevin, O. Limousin, CEA, France

**NP2.S-13 Low-Noise Front-End ASIC with A/D Conversion for Silicon and CdTe Detectors**  
G. Sato, T. Kishishita, H. Ikeda, S. Watanabe, T. Takahashi  
1ISAS/JAXA, Japan; 2University of Tokyo, Japan

**NP2.S-15 Analysis of Full Charge Reconstruction Algorithms for X-Ray Pixelated Detectors**  
1Fermilab, USA; 2BNL, USA; 3AGH-UST, Poland

**NP2.S-17 8 Bit 5 MS/s per-Pixel ADC in an 8-by-8 Matrix**  
C. Reckleben, K. Hansen, P. Kalavakuru, I. Diehl  
DESY, Germany
NP2.S-19 Tests of FPDR90 IC for Hybrid Detector Readout for High Frame Rate X-Ray Applications
R. Szczygiel, P. Grybos, P. Maj
AGH University of Science and Technology, Poland

NP2.S-21 Performance of a High Accuracy Injection Circuit for in-Pixel Calibration of a Large Sensor Matrix
E. Quartiéri, Università di Pavia, Italy; M. Manghisoni, Università di Bergamo, Italy

NP2.S-23 Design Considerations for Electronics for Linear Position Sensitive Neutron Detectors Using Charge Division Method
T. Huang, H. Gong, B. Shao, Tsinghua University, China

NP2.S-25 A Tezzaron-Chartered 3D-IC Electronic for SLHC/ATLAS Hybrid Pixels Detector: Test Results and Irradiations Performance
1CNRS/IN2P3, Université de la Méditerranée, France; 2Physikalisches Institut der Universität Bonn, Germany; 3Lawrence Berkeley National Laboratory, USA

NP2.S-27 Reliability of 130nm CMOS Transistors at 300 K and 77K
J. R. Haff, G. W. Deptuch, R. J. Yarema
Fermi National Accelerator Laboratory, USA

NP2.S-29 Novel Readout Technique Based on Signal Modulation for X-Ray or Gamma-Ray Detection Systems
I.-J. Jung, Y.-W. Choi, Chung Ang University, KOREA

NP2.S-31 A Novel Structure of Front-End ASIC for Micro-Pattern Gaseous Detectors
L. He, Z. Deng, Y. N. Liu, Tsinghua University, China

NP2.S-33 Readout Electronics for the Central Drift Chamber of the Belle II Detector

S. Ahmad, P. Barrillon, S. Blin-Bondil, S. Dagoret-Campagne, C. de la Taille, F. Dulucq, G. Martin-Chassard, Laboratoire de l’Accelerateur Lineaire, FRANCE, Y. Kawasaki, RIKEN, Japan; H. Ikeda, ISAS/JAXA, Japan; F. Kajino, Konan University, Japan

NP2.S-37 Evaluation of Front-End Electronics for Unattended Safeguards Instruments
L. E. Smith, T. Pochet, K. Buben, International Atomic Energy Agency, Austria

Z. Deng,1,2 Y. Wang,1,2 Y. Liu1,2
1Tsinghua University, China; 2Ministry of Education, China

NP2.S-41 Development of BELLEI-CDC Front-End ASIC
S. Shimazaki, T. Taniguchi, M. Tanaka, N. Taniguchi
1High Energy Accelerator Research Organization, KEK, Japan; 2Okayama University, Japan

NP2.S-43 A Radiation-Tolerant 5 Gb/s Laser Driver in CMOS 130 nm Technology
1INFN, Italy; 2Southern Methodist University, USA; 3CERN, Switzerland

NP2.S-45 Application of Dynamic Time over Threshold Method to Germanium Detector
K. Shimazoe, T. Orita, Y. Wang, H. Takahashi, The University of Tokyo, Japan

NP2.S-47 Autoranging Readout Electronics for the Monitoring System of the TOP-IMPLART Proton Therapy Beam
E. Basile, A. Carloni,2 D. M. Castelluccio, E. Cisbani, S. Colilli, R. Fratoni, S. Frullani, F. Giuliani, M. Gricia, M. Lucentini, F. Santavenere, G. Vacca
1Istituto Superiore di Sanita’, Italy; 2Universita’ degli Studi La Sapienza, Italy; 3ENEA, Italy
J.-P. Walder, P. Dene, C. Grace, H. von der Lippe, B. Zheng
Lawrence Berkeley National Lab, USA

NP2.S-51 Analog Circuit for Timing Measurements with Large Area SiPMs Coupled to LYSO Crystals
A. Gola, C. Piemonte, A. Tarolli
Fondazione Bruno Kessler, Italy

NP2.S-53 A CMOS ASIC Design for SiPM Arrays
E. W. Sun, W. C. J. Hunter, R. S. Miyaoa, B. P. Otis, D. J. Allstot, T. K. Lewellen
University of Washington, USA

NP2.S-55 VMM1 - an ASIC for Micropattern Gas Detectors
G. De Geronimo, S. Li, N. Nambiar, V. Polychronakos
Brookhaven National Laboratory, USA

NP2.S-57 Direct Measurement of Noise Spectra at the 1 nV/√(Hz) Level
W. K. Warburton, J. T. Harris, XIA LLC, USA

NP2.S-59 Pole-Zero Adjustment Based on Digitally Synthesized Multi-Peak Pulse Shapes
V. T. Jordanov, Yantel, LLC, USA

NP2.S-61 Ultra Linear Dynamic Time-over-Threshold with a Simple CR-RC Filtering
T. Orita, H. Takahashi, K. Shimazoe, T. Fujiwara
The University of Tokyo, Japan

NP2.S-63 A Low Area, Ultra-Low Power Baseline Holder for the APD-Based LabPET II Detector
1Department of Electrical and Computer Engineering, Canada; 2Department of Nuclear Medicine and Radiobiology, Canada

NP2.S-65 AGET, the GET Front-End ASIC, for the Readout of the Time Projection Chambers Used in Nuclear Physics Experiments
1CEA Saclay, France; 2CENBG, France; 3NSCL/MSU, United States

NP2.S-67 Wideband (500 MHz) 16 Bit Dynamic Range Current Mode Input Stage for Photodetector Readout
D. Gascon, A. Sanuy, J. M. Paredes, M. Rib, ICC. Universitat de Barcelona, Spain; J. Sieiro, Universitat de Barcelona, Spain

NP2.S-69 A Time over Threshold-Based 64-Channel Readout ASIC for the LabPET II APD Array Dedicated to Small Animal Imaging PET Scanner
Universite de Sherbrooke, Canada

NP2.S-71 BeamCal Instrumentation IC: Design, Implementation and Test Results
A. Abusleme, A. Dragone, G. Haller, B. A. Wooley
1Pontificia Universidad Catolica de Chile, Chile; 2Stanford University, USA; 3SLAC National Accelerator Laboratory, USA

NP2.S-73 A Cryogenic Ultra-Low Noise CMOS Preamplifier for Point-Contact HPGe Detectors
X. Zhu, Z. Deng, Y. Li, Y. Liu, Q. Yue, J. Li
1Tsinghua University, China; 2Ministry of Education, China; 3Institute of High Energy Physics, China

NP2.S-75 A 6-Channel Fast Waveform Sampling ASIC Using 130nm CMOS Technology
E. Oberla, H. Grabas, University of Chicago, USA

NP2.S-77 High Voltage Regulation Circuits with Low Voltage Sensing and Inrush Current Limiting Functions for Solid-State Detectors in PET
N. Zhang, M. Loope, M. Schmand
Siemens Molecular Imaging, USA
NP2.S-79 A Time-to-Digital Converter Using Vernier Delay Line with Time Amplification Technique
M. H. Chung, H.-P. Chou
National Tsing Hua University, Taiwan

NP2.S-81 High Voltage Power Supply for Triple GEM Detectors
F. Murta\textsuperscript{1}, G. Corradi\textsuperscript{1}, D. Tagnani\textsuperscript{2}, C. Paglia\textsuperscript{3}
\textsuperscript{1}Laboratori Nazionali di Frascati INFN, Italy; \textsuperscript{2}Roma 3 INFN, Italy

NP2.S-83 Active Voltage Divider for Improved Estimation of Interacting Radiation Energy with Photomultiplier Tubes Coupled to High Light Yield Scintillators
S. Riboldi\textsuperscript{1,2}, F. Camara\textsuperscript{1,2}, N. Blasi\textsuperscript{1}, S. Brambilla\textsuperscript{1}, C. Boiano\textsuperscript{1}, F. C. L. Crespi\textsuperscript{1}, A. Giaz\textsuperscript{1,2}, B. Million\textsuperscript{1}, R. Nicollini\textsuperscript{1,2}, L. Pellegrini\textsuperscript{1,2}, O. Weiland\textsuperscript{3}
\textsuperscript{1}Universita’ degli Studi di Milano, Italy; \textsuperscript{2}INFN, Italy

NP2.S-85 An Upgraded Front-End Switching Power Supply Design for the ATLAS TileCAL Detector of the LHC
G. Drake, Argonne National Laboratory, USA
On behalf of the ATLAS Tile Calorimeter group

NP2.S-87 Programmable Power Supply System for SiPM Bias
A. Gil, J. Rodriguez, V. Alvarez
Instituto de Fisica Corpuscular (CSIC-Universidad de Valencia), Spain

NP2.S-89 A Very Low Noise Ac/DC Power Supply System for Large Arrays of Cryogenic Detectors
A. Claudio, B. Alessandro, G. Andrea, C. Gotti, M. Maino, A. Passerini, G. Pessina
INFN Istituto Nazionale di Fisica Nucleare di Milano Bicocca, Italy

NP2.S-91 Signal Processing Based on Direct Charge Conversion
K. D. Ianakiev, M. Iliev, M. C. Browne, R. B. Williams, R. F. Parker, H. Nguyen
Los Alamos National Lab, USA

NP2.S-93 A FPGA-Based Emulation of the Timing Trigger and Control Receiver for the LHC Experiments
V. Izzo\textsuperscript{1}, A. Aloisio\textsuperscript{1,2}, R. Giordano\textsuperscript{1,2}, M. Della Pietra\textsuperscript{1,3}, F. Ameli\textsuperscript{1}, V. Bocci\textsuperscript{1}
\textsuperscript{1}Istituto Nazionale di Fisica Nucleare, sezione di Napoli, Italy; \textsuperscript{2}Universita’ degli Studi di Napoli ‘Federico II’, Italy; \textsuperscript{3}Universita’ di Napoli ‘Parthenope’, Italy;
\textsuperscript{4}Istituto Nazionale di Fisica Nucleare, sezione di Roma, Italy

NP2.S-95 A General Purpose Ethernet Based Readout Data Acquisition System
B. Mindur, L. Jachymczyk
AGH University of Science and Technology, Poland

NP2.S-97 Data Acquisition System for the Readout of SiPM Matrix with the VATA64HDR16 Front-End ASIC
V. K. Stankova, C. Lacasta, C. Solaz, J. Barrio, G. Llosa
Inst. de Fisica Corpuscular (IFIC), Spain

NP2.S-99 Hardware Accelerated UDP/IP Module for High Speed Data Acquisition in Nuclear Detector Systems
F. Nagy, G. Hegyesi, I. Valastyan, J. Imrek, J. Molnar
Institute of Nuclear Research of the Hungarian Academy of Sciences, Hungary

NP2.S-101 Optimal Filtering Algorithm Implementation in FPGAs for the TileCal Read-Out Drivers
P. Moreno, IFIC, Spain
On behalf of the the ATLAS Tile Calorimeter group

NP2.S-103 Upgrade of the Second Level of the Readout Electronics for the CMS DT Subdetector
A. Navarro Tobar, CIEMAT, Spain
On behalf of the CMS DT group

NP2.S-105 TEL62: an Integrated Trigger and Data Acquisition Board
E. Pedreschi\textsuperscript{1}, B. Angelucci\textsuperscript{2}, S. Gallorini\textsuperscript{3}, G. Lamanna\textsuperscript{1}, M. Sozzi\textsuperscript{1}, F. Spinella\textsuperscript{1}, S. Venditti\textsuperscript{2}
\textsuperscript{1}INFN, Italy; \textsuperscript{2}University of Pisa, Italy; \textsuperscript{3}Scuola Normale Superiore di Pisa, Italy; \textsuperscript{4}CERN, Switzerland
NP2.S-107 A Linux-Based DAQ System with CAMAC Serial Highway System
Y. Nagasaka, Hiroshima Institute of Technology, Japan; M. Sato, Japan Atomic Energy Agency, Ibaraki

NP2.S-109 Event Processing, Coincidence Determination for Fully Digital Time-Mark PET
Q. Gong, Tsinghua Univ. Beijing, P.R.China; T. Xue, ,

NP2.S-111 Design and Development of Data Acquisition System in China JinPing Deep Underground Laboratory
Q. Du, J. Li, T. Xue, H. Yu, K. Kang
Tsinghua University, China

NP2.S-113 Automation of the ERNA Line at 3MV Pelletron Tandem Accelerator at CIRCE Laboratory
F. Toglia1,2, R. de Asmundis1, A. Di Leva1, L. Gialanella2,3, D. Schurmann3, F. Strieder3, F. Terrasi2,1
1Istituto Nazionale di Fisica Nucleare, Italy; 2Seconda Universita’ degli Studi di Napoli, Italy; 3Ruhr Universitaet of Bochum, Germany

NP2.S-115 A Physics uTCA Solution for the EuXFEL Clock and Control System
E. Motuk, M. Postranecky, M. Warren, M. Wing
University College London, UK

NP2.S-117 An Early Slice Prototype for the Upgraded Readout Electronics of TileCal
S. L. Muschter, Stockholm University, Sweden
On behalf of the ATLAS Tile Calorimeter group

NP2.S-119 Characterization and Performance of a DAQ System for the Read-out of Silicon Pixel Detectors
V. Stankova1, E. Chesi2, V. Cindro3, N. Clithorne4, E. Cochran2, A. Gil1, B. Grosic4, K. Honscheid2, H. Kagan2, C. Lacasta1, V. Linhart1, G. Llosa1, M. Mikuz1, C. Solaz2, A. Studen3, P. Weilhammer2, D. Zontar3
1Inst. de Fisica Corpuscular (IFIC), Spain; 2Ohio State University, USA; 3Josef Stefan Institute, Slovenia; 4University of Michigan Ann Arbor, USA

NP2.S-121 A Test System for Characterization of ASIC and CdTe Hybrid Pixel Detectors
A. Mohan1, R. Veljanovski1, G. Panjkovic1, C. Farmer2, D. Fitrio1
1Monash University, Australia; 2CPE Systems, Australia

NP2.S-123 GANDALF - Pulse Shape Analysis with a Multifunctional Electronic Readout Framework
F. Herrmann, M. Buechele, H. Fischer, K. Koenigsmann, C. Schill, S. Schopferer, University of Freiburg, Germany

NP2.S-125 Digital Pulse-Shape Analysis for Ge Compton Camera
T. Fukuchi1, S. Motomura1, S. Takeda1, M. Hiromura1, A. Fukunaka1, H. Haba1, Y. Watanabe1, S. Enomoto1,2
1RIKEN, Japan; 2Okayama University, Japan

NP2.S-127 Real Time Pulse Pile-up Recovery for High Throughput Digital Pulse Processing
P. A. B. Scoullar1, R. J. Evans2, C. C. Mclean1
1Southern Innovation, Australia; 2The University of Melbourne, Australia

L. Epshteyn, Y. Yudin, Budker Institute of Nuclear Physics, Russia

NP2.S-131 A Digital Pulse Processor for High-Rate High-Resolution X and Gamma-Ray Spectroscopy

NP2.S-133 Experimental Implementation of LMS Synthesis of Optimum FIR Filters with Arbitrary Time and Frequency Constraints and Noises
F. Caponio, A. Abba, A. Geraci, G. Ripamonti
Politecnico di Milano University, Italy

NP2.S-135 A High Performance, Versatile Digital Pulse Processing System
P. Grudberg, J. Harris, XIA LLC, USA; P. Scoullar, C. Mclean, D. Scoullar, Southern Innovation, Australia
NP2.S-137 Adaptive Spectroscopy Digital Filters for Enhanced Rate and Gaussian Peaks Preservation
G. Ripamonti, A. Abba, F. Caponio, A. Geraci
Politecnico di Milano University, Italy

NP2.S-139 Electronic Pulse Processing in Transient Current Technique: Application for Si, CdTe and (CdZn)Te X-Ray and Gamma-Ray Detectors
P. Praus, E. Belas, R. Grill, S. Uxa, J. Franc, P. Hoschil
Charles University in Prague, Czech Republic

NP2.S-141 Digital Adaptive Filtering for Resolution and Live-Time Maximization
A. Abba, A. Geraci, G. Ripamonti
Politecnico di Milano University, Italy

NP2.S-143 Digital anti-Coincidence Counting Method with Emulated Live-Time of the Extending Dead-Time: Ga-67 Standardization

NP2.S-145 Development of Data Acquisition System for Nearby Supernova Bursts at Super-Kamiokande
T. Yokozawa1, Y. Hayato1, M. Ikeno1, M. Nakahata1, S. Nakayama1, Y. Obayashi1, K. Okumura1, M. Shiozawa1, T. Tomura1, T. Uchida2, S. Yamada3
1Kamioka Observatory, Japan; 2KEK, High Energy Accelerator Research Organization, Japan; 3Institute for Cosmic Ray Research, Japan; 4Research Center for Neutrino Science, Japan

NP2.S-147 A Multichannel High-Resolution (5 ps RMS between two channels) Time-to-Digital Converter (TDC) Implemented in a Field Programmable Gate Array (FPGA)
E. Bayer1, M. Traxler2, P. Zipf1
1University Kassel, Germany; 2GSI Helmholtz Centre for Heavy Ion Research, Germany

NP2.S-149 Interfacing Low-Noise Charge-Sensitive Preamplifiers to High-Resolution Flash ADCs
A. Pullia1,2, 1University of Milano, Italia; 2INFN, Italia
On behalf of the AGATA Collaboration

NP2.S-151 VHDL Implementation of a SPI Controller for PANDA Digital Signal Processing
M. Greco, M. P. Bussa, L. Ferrero, M. Maggiora, A. Verna
University and INFN- Torino, Italy

NP2.S-153 Design and Test Equipment of Digital Processors for Output Analysis from Radiation Detectors
A. Geraci, A. Abba, F. Caponio, G. Ripamonti
Politecnico di Milano, Italy

NP2.S-155 Electronics and data acquisition for a PET with parallel detector readout
X. Sun1, K. Lan1, C. Bircher1, Z. Deng2,3, X. Zhu2,3, Y. Liu2,3, Y. Shao1
1UT MD Anderson Cancer Center, USA; 2Tsinghua University, China; 3Ministry of Education, China

NP2.S-157 Timing optimization with position information for TransPET
M. Niu1,2, J. Zhu1,2, A. Long1,2, D. Xi1,2, P. Xiao1,2, Q. Xie1,2
1Huazhong University of Science and Technology, China; 2Wuhan National Laboratory for Optoelectronics, China

NP2.S-159 An investigation of coincidence detection methods for TransPET
A. Long1,2, P. Xiao1,2, W. Liu1,2, Z. Wu1,2, X. Chen1,2, Q. Xie1,2
1Huazhong University of Science and Technology, China; 2Wuhan National Laboratory for Optoelectronics, China

NP2.S-161 The NA62 Liquid Krypton Electromagnetic Calorimeter Level 0 Trigger
A. Salamon1, V. Bonaiuto1, A. Fucci1, G. Paoluzzi1, G. Salina1, E. Santovetti2, F. Sargeni2, V. M. Scarfi1
1INFN Sezione di Roma Tor Vergata, Italia; 2Università degli Studi di Roma Tor Vergata, Italia
NP2.S-163 Performance Study of GPU in Real-Time Applications for HEP Experiments  
S. Amerio1, D. Bastieri2, M. Bauce3, W. Ketchum3, Y.-K. Kim4, T. Liu3, D. Lucchesi5, G. Urso6  
1INFN Padova, Italy; 2University of Padova & INFN, Italy; 3University of Chicago, USA; 4University of Chicago & Fermilab, USA; 5FERMILAB, USA; 6Orma Software, Italy

NP2.S-165 A Measurement of the ATLAS Di-Muon Trigger Efficiency in Proton-Proton Collisions at $\sqrt{s} = 7$ TeV  
F. A. Conventi, On behalf of the ATLAS Collaboration

NP2.S-167 A Prototype of High-Level Trigger System for the PANDA EMC Detector Based on an FPGA-Based Compute Node  
Q. Wang, Z. A. Liu, H. Xu, D. H. Sun, Institute of High Energy Physics, Chinese Academy of Sciences, China; W. Kuehn, S. Lange, M. Liu, Physics Institute II, Giesen University, Germany

NP2.S-169 Design of the Trigger Test Board for the Daya Bay Reactor Neutrino Experiment  
X. Wang1,2, H. Gong3, G. H. Gong1, T. Xue1, S. M. Chen1, B. B. Shao1  
1Tsinghua University, China; 2National University of Defense Technology, China

NP2.S-171 An All-Digital Coincidence-Selection and Coincidence-Trigger Generation for a Small RPC-PET Camera  
F. M. C. Clemencio, Escola Superior de Tecnologia da Sade do Porto/IPP, Portugal; C. F. M. Loureiro, J. Landeck, Universidade de Coimbra, Portugal

NP2.S-173 An Asynchronous Trigger Using UDP  
M. T. Rissi, K. E. Hines, E. Bolle, O. Rhone  
Universitetet i Oslo, Oslo, Norway, Norway

NP2.S-175 Global Trigger Processing and System Design for Jefferson Labs 12GeV Experimental Physics Program  
S. Kaneta, C. Cuevas, B. Raydo, W. Gu, E. Jastrzembski  
Thomas Jefferson National Accelerator Facility (Jefferson Lab), USA

NP2.S-177 Results on Damage Induced by High-Energy Protons in LYSO:Ce Calorimeter Crystals  
F. Nessi-Tedaldi, G. Dissertori, D. Luckey, F. Pauss, R. Wallny, ETH Zurich, Switzerland; M. Glaser, CERN, Switzerland

NP2.S-179 Effects on Electronics of Neutrons Generated by a High-Energy Linear Accelerator  
H. R. Snyder, P. C. Berry, G. E. Dale, W. L. Myers  
Los Alamos National Laboratory, USA

NP2.S-181 A Versatile Readout and Control System for Silicon Photomultipliers  
G. Balbi1, M. Boldini1, V. Cafaro1, I. D’Antone1, A. Ferri2, V. Giordano1, F. Fabbri1, I. Lax1, A. Montanari1, R. Travaglini1, G. Torromeo1, N. Tosi2  
1INFN, Italy; 2University, Italy

NP2.S-183 Evaluation of Transimpedance Amplifiers for Readout of a PSAPD  
A. A. Dooraghi1, R. W. Silverman1, D. L. Prout1, R. Taschereau1, N. T. Vu1, A. Chatziioannou1  
1UCLA School of Medicine, USA; 2Sofie Biosciences, USA

NP2.S-185 Delivering Phase Controlled Jitter Attenuated Clock Signals to Data Acquisition System  
N. Nganga  
Thomas Jefferson National Accelerator Facility, USA

P. Branchini, V. Bocci, INFN, Italy; A. Aloisio, Universita Federico II, Italy

NP2.S-189 Conditioned Solid-State Photomultiplier Pixels for Use in Harsh Environments  
1Radiation Monitoring Devices, USA; 2Augustine Engineering, USA
Tuesday, Oct. 25  11:00-13:00  Meliá, Room A&B

Session Chairs:  Mark Pearce, Kungl Tekniska Högskolan, KTH, Sweden
               Douglas Wright, Lawrence Livermore National Laboratory, United States

**NP3.M-2 Development of low-noise radiation hard sensors and thin readout cables for the CBM Silicon Tracking System**
S. Chatterji1, M. Singla2, A. Lymanets3, W. F. J. Mueller4, M. Merkin3, J. M. Heuser1
1GSI, Germany; 2FIAS, University of Frankfurt, Germany; 3SINP, Moscow State University, Russia

**NP3.M-4 ATLAS Silicon Microstrip Tracker Operation and Performance**
M. Moreno Llacer, LBNL, USA, On behalf of the ATLAS Collaboration

**NP3.M-6 The Punch-Through Effect in Silicon Strip Detectors**
C. Betancourt, H. Sadrozinski, V. Faddeev, C. Parker, N. Ptak, J. Wright, Z. Butko, A. Bielecki
University of California Santa Cruz, USA

**NP3.M-8 Prototype Development of an AC-Coupled Pad Matrix Sensor**
H. J. Hyun1, J. B. Bae1, D. H. Kah2, H. J. Kim3, H. O. Kim1, H. Park1
1Kyungpook National University, South Korea; 2Electronics and Telecommunications Research Institute, South Korea

**NP3.M-10 TimePix Silicon Pixel Telescope for Double Electron Capture Experiment TGV**
J. M. Jose, P. Cermak, I. Stekl, J. Čermak, E. Rukhadze, Institute of Experimental and Applied Physics, CTU in Prague, Czech Republic; N. I. Rukhadze, V. B. Brudanin, A. A. Klymenko, A. Kovalik, Y. A. Shitov, Joint Institute for Nuclear Research, Russia; P. Loaiza, Laboratoire Souterrain de Modane, France

**NP3.M-12 Dopant Profiles of Planar Pixel Sensors for the Upgrade of the ATLAS Inner Detector**
N. Ding1, A. Lounis1, M. Benoit1, G. Calderini2, J. Idarraga1, F. Jomard3, G. Marchiori2
1LAL/IN2P3/CNRS, France; 2LPNHE/IN2P3/CNRS, France; 3GEMaC/IN2P3/CNRS, France

**NP3.M-14 Performance of the CMS Pixel Detector for the Phase I Upgrade at HL-LHC**
G. L. Bruno, Université catholique de Louvain, Belgium
On behalf of the CMS Collaboration

**NP3.M-16 Hybrid Pixel Detectors in the Search for Rare Decays: Low Background Studies with a Timepix Detector**
J. Durst1, T. Michel1, M. Schwenke2, K. Zuber2, G. Anton1
1Erlangen Centre for Astroparticle Physics (ECAP), Germany; 2Institut fuer Kern- und Teilchenphysik, Technische Universitaet Dresden, Germany

**NP3.M-18 Track based alignment of the ATLAS Inner Detector tracking system**
S. Marti-Garcia, Instituto de Fisica Corpuscular (IFIC), Spain
On behalf of the ATLAS Collaboration

**NP3.M-20 Specification and Design of a Radial Vane Silicon Tracker for a New Measurement of the Muon Anomalous Magnetic Moment g-2 and Electric Dipole Moment at J-PARC**
K. Ueno1, H. Inumasa2, M. Iwasaki1, T. Kakurai2, T. Kohrikii2, T. Mibe3, O. Sasaki2, N. Saito2
1RIKEN, Japan; 2KEK, Japan

**NP3.M-22 Performance of the CMS Silicon Tracker at LHC**
G. L. Bruno, Université catholique de Louvain, Belgium
On behalf of the CMS Collaboration

**NP3.M-24 Evaluation of VTT’s Edgeless Detectors for Construction of Large Area Coverage**
X. Wu1, J. Kalliopuska1, M. Bosma2, J. Jakubek3, S. Eransen1, T. Virolainen1
1VTT, Finland; 2NIKHEF, Netherlands; 3IEAP-CTU, Czech Republic
J. Hasi1, E. Brown2, C. J. Kenney3, S. I. Parker4, A. Thompson5,  
E. Westbrook6, C. Da’Vita7, S. Watts8, A. Kok9, T. T-E. Hasen10, J. Morse11  
1SLAC, USA; 2Reed College, USA; 3University of Hawaii, USA; 4Molecular  
Biotechnology Consortium, USA; 5University of Manchester, UK; 6SINTEF, Norway;  
7European Synchrotron Research Facility, France.

NP3.M-28 New 3D Stripixel Detectors  
D. Bassignana, C. Fleta, M. Lozano, G. Pellegrini, D. Quirion, IMB-CNMT  
(CSIC), Spain; Z. Li, BNL, USA.

NP3.M-30 Studies of the Effects of Oxygent and CO2 Contamination of  
The Neon Gas Radiator on the Performance of the NA62 RICH Detector  
E. M. Gersabeck, INFN, Perugia, Italy On behalf of the NA62 RICH WG.

NP3.M-32 Characterization Studies of Silica Aerogel for Cherenkov  
Radiator  
M. Tabata1, Y. Hatakeyama1, I. Adachi1, H. Kawai1, M. Kubo1, T. Sato2  
1Japan Aerospace Exploration Agency (JAXA), Japan; 2Chiba University, Japan;  
3High Energy Accelerator Research Organization (KEK), Japan.

NP3.M-34 Development of the New Silica Aerogel Cherenkov Counter  
Using WLSF and MPPC  
M. Kubo1, H. Kawai1, Y. Kishi1, K. Mase1, T. Nakano1, H. Nakayama1,  
M. Ono1, T. Sato1, M. Tabata1, M. Yosoi3  
1Graduate School of Science, Chiba University, Japan; 2RCNP, Osaka University,  
Japan; 3Institute of Space and Astronautical Science (ISAS), Japan Aerospace  
Exploration Agency (JAXA), Japan.

NP3.M-36 A Focussing Disc DIRC for PANDA  
F. N. Cowie, University of Glasgow, United Kingdom  
On behalf of the PANDA Cherenkov Group

NP3.M-38 Detection of Internally Reflected Cherenkov Photons in the  
Barrel DIRC of the PANDA Detector  
C. Schwarz, GSI Helmholtzzentrum, Germany  
On behalf of the PANDA Cherenkov Group.

NP3.M-40 First Results from Online Radiation Dose Monitoring System  
in ATLAS Experiment  
I. Mandić1, V. Cindro1, M. Delierygjiev1, A. Gorić1, G. Kramberger1,  
M. Mikulic1, J. Harter1, S. Franz1, I. Dawson1, L. Nicolos1  
1Jožef Stefan Institute, Slovenia; 2University of Ljubljana, Slovenia; 3Physikalisches  
Institut Universitaet Freiburg, Germany; 4CERN, Switzerland; 5University of  
Sheffield, UK.

NP3.M-42 Alignment of CMS Structures Using Silicon Photo-Detectors  
G. Giomea, Instituto de Fisica de Cantabria, Spain  
On behalf of the CMS Collaboration

NP3.M-44 Prompt Reconstruction of ATLAS Data in 2010 and 2011  
M. Limper, University of Iowa, USA  
On behalf of the ATLAS Collaboration

NP3.M-46 Front-End Control and Monitoring System for the Resistive  
Plate Chambers at the CMS Experiment  
F. Thysen, Ghent University, Belgium  
On behalf of the CMS RPC Collaboration

NP3.M-48 DEAP, Dark Matter Experiment with Liquid Argon Pulse  
Shape Discrimination  
F. Retiere, TRIUMF, Canada  
On behalf of the DEAP.

NP3.M-50 First Radiation Background Studies for the TOTEM Roman  
Pot and T2 Detectors  
F. Ravotti, CERN, Switzerland  
On behalf of the TOTEM Collaboration

NP3.M-52 The Meta-Crystals Calorimeter Concept. Overview, R&D  
Studies and Challenges.  
G. Mavromanolakis, E. Auffray, P. Lecoq, K. Pauwels, European Organization  
for Nuclear Research, CERN, Switzerland; R. Chipaux, CEA, France
NP3.M-54 Construction of a Large Scale Prototype of a SiW
Electromagnetic Calorimeter for a Future Lepton Collider - EUDET Module
R. Poeschl, CNRS/IN2P3, France, On behalf of the CALICE Collaboration

NP3.M-56 Calibration of the CMS Electromagnetic Calorimeter with √s = 7 TeV LHC Collisions Data
L. Di Matteo, University & INFN of Milano Bicocca, Italy
On behalf of the CMS Collaboration

NP3.M-58 Performance of the Prototype of the PANDA-EMC
D. A. Bremer, II. Physikalisches Institut, University Giessen, Germany
On behalf of the PANDA Collaboration

NP3.M-60 Experimental characterization of novel microfluidic scintillation detectors
A. Mapelli1, B. Gorini1, M. Haguenaured, S. Jigue1, G. Lehmann Miottot, P. Renaud4, N. Vic Trivinot4
1CERN, Switzerland; 2Ecole Polytechnique, France; 3Gesellschaft Sarl, Switzerland; 4EPFL, Switzerland

NP3.M-62 Upgrade of the CMD-3 BGO Endcap Calorimeter
D. N. Grigoriev, R. R. Akhmetshin, V. F. Kazanin, Y. V. Yudin
Budker Institute of Nuclear Physics, Russia

NP3.M-64 Response of AGATA Segmented HPGe Detectors to Gamma-Rays up to 15.1 MeV
F. C. L. Crespi1, R. Avigo1, F. Camerat, G. Benzonit, N. Blasit, S. Bottonit, A. Bracco1, S. Brambilla1, P. Casatti1, F. Coniglio1, A. CORSIT, A. Giaz1, S. Leonit, B. Million1, R. Nicolinib, L. Pellegrin, V. Vandone1, O. Wieland1, S. Akkoyum1, A. Atac1, D. Bazzacco1, M. Bellato1, D. Bortolato1, E. Calore1, M. Ciennala1, E. Farnea1, A. Gadea1, A. Gottardo1, M. Kmiciek1, A. Maj1, D. Mengers1, C. Michelagnol1, D. Montanari1, D. R. Napoli1, J. Nyberg2, F. Recchia1, E. Sahin3, P.-A. Soderstrom1, C. Ur3, J. V. Valiente Dobon1
1Universit di Milano / INFN, Italy; 2INFN Milano, ITALY; 3Ankara University, Turkey; 4INFN Padova, Italy; 5INFN, Laboratori Nazionali di Legnaro, Italy; 6The Niewodniczanski Institute of Nuclear Physics, PAN, Poland; 7IFIC, Spain; 8Universit di Padova / INFN, Italy; 9Uppsala University, Sweden

G. L. Bruno, Université catholique de Louvain, Belgium
On behalf of the CMS Collaboration

NP3.M-68 Experimental Studies of Scintillation and Cherenkov Light Yield of Scintillating Crystals with SiPM Readout
F. Ptochos, L. Vasilas, University of Cyprus, Cyprus; A. Para, P. Rubinov, H. Wenzel, Fermilab, USA; B. Bilki, University of Iowa, USA

NP3.M-70 Monte Carlo Simulations and Experimental Study of a Symmetric AGATA Detector
K. K. Mitevt, A. Korichit, T. M. H. Ha3, A. P. Minkova1
1Sofia University, Bulgaria; 2CSNSM, France; 3

NP3.M-72 The Large-Angle Photon Veto System for the NA62 Experiment at CERN
M. Moulson, INFN - Laboratori Nazionali di Frascati, Italy
On behalf of the NA62 Collaboration

NP3.M-74 Development of a Detector with Two Photo-Strip Sensors and a Crystal Scintillator Between Sensors
1Kyungpook National University, South Korea; 2Electronics and Telecommunications Research Institute, South Korea

NP3.M-76 Towards a Full Scale Prototype of the CALICE Tile Hadron Calorimeter
M. Reinecke, DESY, Germany, On behalf of the CALICE Collaboration

NP3.M-78 Very High Resolution Hadron Calorimetry
A. Para, Fermilab, USA

NP3.M-80 Calibration System with Optical Fibres for Calorimeters at Future Linear Collider Experiments
J. Zalesak, Institute of Physics of the ASCR, Czech Republic
On behalf of the CALICE Collaboration
NP3.M-82 Identification of Pile-up Using the Quality Factor of Pulse Shapes in the ATLAS Tile Calorimeter
P. Klimek, Stockholm University, Sweden
On behalf of the ATLAS Tile Calorimeter group

NP3.M-84 CALIFA: a High Performance Calorimeter for the R3B Experiment at the New FAIR Facility
D. Cortina-Gil, Universidad de Santiago de Compostela, Spain
On behalf of the R3B collaboration

NP3.M-86 Compton Scattering X-Ray Polarimeter at the Focus of Hard X-Ray Optics: Study of Possible Configurations by Monte Carlo Simulations
S. V. Vadawale, Physical Research Laboratory, India

S. Neff1, S. Hauf1, P. Lang1, J. Ling1, M. Roth1, M. Guenther1, O. Deppert1, D. H. H. Hoffmann1, M. Kuster1, M. G. Pia1, Z. W. Bell4
1TU Darmstadt, Germany; 2European XFEL GmbH, Germany; 3INFN Sezione di Genova, Italy; 4Oakridge National Laboratory, USA

NP3.M-90 Design and Development of Trigger-Driven Readout with X-Ray SOI Pixel Sensor
S. G. Ryu, S. Nakashima, T. G. Tsuru, Kyoto University, Japan; A. Takeda, Y. Ikemoto, Y. Arai, High Energy Accelerator Research Org., KEK, Japan; T. Imamura, T. Ohmoto, A. Iwata, A-R-Tec Corp., Japan

S. Nakashima, R. G. Syukyo, T. G. Tsuru, Kyoto University, Japan; Y. Arai, A. Takeda, Institute of Particle and Nuclear Studies, High Energy Accelerator Research Org., KEK, Japan; H. Nakajima, H. Tsunemi, Osaka University, Japan; J. P. Doty, Nogis Aerospace Ltd., USA; T. Imamura, T. Ohmoto, T. Maeda, A. Iwata, A-R-Tec Corp., Japan

NP3.M-94 Application of an EMCCD Camera for Calibration of Hard X-Ray Telescopes
J. K. Vogel, M. J. Pivovaroff, Lawrence Livermore National Laboratory (LLNL), USA; V. V. Nagarkar, H. Kudrolli, Radiation Monitoring Devices, USA; K. Kruse Madsen, Caltech, USA; F. E. Christensen, F. Brejnholt, Danish Technical University Space Center, Denmark

G. Kriegelhoefer1, J. Girones Lopez1, J. Brueckner2, L. Duston2, D. Schmanke1, M. Blumers3, B. Bernhard4, P. Lechner4,6
1Johannes Gutenberg Universitait Mainz, Institut fur Anorganische und Analytische Chemie, Germany; 2Max-Planck-Institut fuer Chemie, Germany; 3Centre d’Etude Spatiale des Rayonnements, France; 4Von Hoerner & Sulger GmbH, Germany; 5PMSensor, Germany; 6MPI Halbleiterlabor, Germany

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

NP3.M-100 Simulation Study for the Higher Sensitivity of an Electron Tracking Compton Camera at over 1 MeV
A. Takada1, T. Tanimori1, H. Kubo2, K. Miuchi2, S. Kabuki2, J. D. Parker1, Y. Kishimoto3, T. Mizumoto3, K. Ueno3, S. Kurosawa2, S. Iwaki2, T. Sawano1, K. Taniue1, K. Nakamura1, N. Higashi1, Y. Matsuoka1, S. Komura1, Y. Sato1
1Kyoto University, Japan; 2Toukai University, Japan; 3High Energy Accelerator Research Organization, Japan; 4RIKEN, Japan; 5Touhoku University, Japan

NP3.M-102 Micromachined Tantalum Collimators for Space Applications
B. F. Philips, M. Christophersen, U.S. Naval Research Laboratory, USA; L. A. Jackson, Praxis, Inc., USA
B. Krieger, D. Gnani, Lawrence Berkeley National Lab, USA; Y. Saito, Japan Aerospace Exploration Agency, Japan

V. Solovov, LIP -Coimbra, Portugal
On behalf of the ZEPLIN III collaboration

A. M. Parsons1, J. G. Bodnarkin1,2, D. Burger1, L. Evans1, S. Floyd1, L. Lim1, T. McClanahan1, M. Namkung1, S. Nowicki1,4, J. Schweitzer1, R. Starr1,6, J. Trombka1,7
1NASA/Goddard Space Flight Center, USA; 2Vanderbilt University, USA; 3Computer Sciences Corporation, USA; 4University of Michigan, USA; 5University of Connecticut, USA; 6Catholic University of America, USA; 7University of Maryland, USA

NP3.M-110 Background Models for the I XO Wide Field Imager and the ATHENA Wide Field Imager
S. Hauf1, M. Kuster2, D. H. H. Hoffmann1, S. Neff1, A. Stefanescu1,4, L. Struether1,4, M. G. Pia3
1TU Darmstadt, Germany; 2European XFEL GmbH, Germany; 3Max Planck Institut, Germany; 4Max Planck Institut fuer extraterrestrische Physik, Germany; 5INFN Sezione de Genova, Italy

NP3.M-112 ADC System with on-Board Demodulation for QUIET-II Experiment
K. Ishidoshiro, M. Nagai, T. Higuchi, M. Ikeno, M. Hasegawa, M. Hazumi, O. Tajima, T. Uchida, KEK, Japan

NP3.M-114 Front-End Electronics and Data Acquisition System for the MIDAS Experiment
M. Bogdan, M. Bohacova, P. Facal, J.-F. Genat, M. Monasor, P. Privitera, L. Reyes, C. Williams
The University of Chicago, USA

NP3.M-116 Data Correction from Reciprocal Contamination Between Electrons and Protons in the Radiation Belts: Akebono Observation and Geant4 Simulation
K. T. Asai1, T. Takashima2, T. Koi3, T. Nagai4
1Tokyo Institute of Technology, Japan; 2JAXA, Japan; 3SLAC, Japan

NP3.M-118 Measurements of I-131, Cs-134 and Cs-137 in Environmental Samples in Bulgaria after the Fukushima Accident.
K. K. Mitev1, R. H. Tsibranski2, V. G. Avramov2, B. K. Stoenelova2, I. S. Dimitrova1, T. A. Boshkova1, S. B. Georgiev1
1Sofia University, Bulgaria; 2"Kozloduy" NPP, Bulgaria

NP3.M-120 Non-Destructive Measurement of High-Enriched Fuel Burnup
J. Navarro, Idaho National Laboratory/USRA, USA; R. Aryaeinjad, D. W. Nigg, Idaho National Laboratory, USA

NP3.M-122 Measurements of Charge Transfer Inefficiencies in Highly Irradiated CCDs with High-Speed Column Parallel Readout
A. Sopczak, Bochum University, Germany; S. Aoulmit, K. Bekhouche, L. Dehimi, D. Djendouii, N. Sengouga, Biskra University, Algeria

NP4.M Poster Session Simulation & Computing
Tuesday, Oct. 25 16:30-18:30 Meliá, Room A&B
Session Chairs: Pedro Rato Mendes, CIEMAT, Spain
Dimitry Ginzburg, Radiation Detection Department, Rotem Industries Ltd, Israel

NP4.M-126 Multivariate Optimization of a 3He-Based Radiation Portal Monitor
M. R. Williamson, Y-12 National Security Complex, USA; L. F. Miller, University of Tennessee, USA
R. Khelif, Universit Saad Dahlab Blida, Algeria; P. Bode, TU Delft, The Netherlands

NP4.M-130 Realta - a Real-Time Analyzer for Gamma-Ray Detectors Based on MEGAlib
A. Zoglauer1, M. Galloway1, M. Amman2, S. E. Boggs1
1 University of California at Berkeley, USA; 2 Lawrence Berkeley National Laboratory, USA

NP4.M-132 Simulation Studies of PC-HPGe Detector
Y. Li1, Z. Lv1, J. Li1, Q. Yue1, H. Wong2, Y. Li1
1 Tsinghua University, China; 2 Academia Sinica, Taiwan

B. Ghammaoui, J. Tabary, C. Paulus, V. Moulin, L. Verger, CEA-Leti, MINATEC Campus, FRANCE; P. Duvautchelle, CNDRI-Ins Lyon, FRANCE

J. P. Hayward, University of Tennessee Department of Nuclear Engineering, United States; M. A. Blackston, K. P. Ziock, L. Fabris, Oak Ridge National Laboratory, United States

NP4.M-138 Preliminary Study of Rotary Motion Blur in a Novel ICT Imaging System
M. Chang1,2, Y. Xiao1,2, Z. Chen1,2
1 Tsinghua University, China; 2 Ministry of Education, China

NP4.M-140 Improvements in the Monte Carlo Code for Simulating 4-Pi-Beta-Gamma Coincidence System
M. S. Dias, M. N. Takeda, M. O. Tongu, M. F. Koskinas IPEN-CNEN/SP, Brazil

NP4.M-142 MCNP-PoliMi Simulation of a Small Form Factor Neutron Scatter Camera Backpack
M. D. Gerling, S. Kiff, N. Mascarenhas Sandia National Laboratories, USA

NP4.M-144 Mask Plane Simulations for a Compact, Dual Neutron/Gamma Imager
B. Ayaz-Maierhafer, J. P. Hayward, University of Tennessee, USA; M. A. Blackston, K. P. Ziock, L. Fabris, Oak Ridge National Laboratory, USA

NP4.M-146 Active Interrogation Source Based on Deuteron Reactions
M. A. Norsworthy1, S. D. Clarke1, S. A. Pozzi1, T. A. Antaya2
1 University of Michigan, USA; 2 Massachusetts Institute of Technology, USA

B. Ayaz-Maierhafer, J. P. Hayward, University of Tennessee, USA; M. A. Blackston, K. P. Ziock, L. Fabris, Oak Ridge National Laboratory, USA

A. Morozov, LIP-Coimbra, Portugal
On behalf of the NMI3 FP7 Project 226507 collaboration

NP4.M-152 Comprehensive New Approach to Gamma Spectrum Analysis Algorithms

J. Kim1, H. Yoon1, S. W. Lee1, H. K. Kim2
1 Korea Atomic Energy Research Institute, Republic of Korea; 2 Busan National University, Republic of Korea


138 TUESDAY - NSS POSTER PRESENTATIONS
NP4.M-158 Simulation Studies of Optical Photons in Monolithic Block Scintillators  
C. Yoon, W. Lee, Korea Univ., Korea

NP4.M-160 MCNP Simulation of the Photoneutron Dose Contribution in Linac Radiotherapy Treatments with Multileaf Collimation Systems  
B. Juste, B. Juste, spain; R. Mir, R. Mir, spain; G. Verd, G. Verd, spain; S. Dez, S. Dez, spain; J. M. Campayo, J.M. Campayo, spain

J. M. C. Brown1, M. R. Dimmock1, J. E. Gillam2, D. M. Paganin1  
1Monash University, Australia; 2Universitat de Valencia, Spain

NP4.M-164 Photon Dose Kernels Dataset for Nuclear Medicine Dosimetry, Using GATE Monte Carlo Toolkit  
P. Papadimitroulas1,2, G. Loudos2, P. Georgoulas3, G. Kagkadis1  
1Medical School, University of Patras, Greece; 2Technological Educational Institute of Athens, Greece; 3Medical School, University of Thessaly, Greece

NP4.M-166 Validation of MCNP5 Linac Multileaf Collimator Calculations Coupled with Planning System PLUNC  
V. Abella, R. Mir, B. Juste, G. Verd  
Institute for Industrial, Radiophysical and Environmental Safety (ISIRYM), spain

A. Sofiienko, V. Degoda, Ukratominstruments Corporation, Ukraine

NP4.M-170 Simulations of Charge Multiplication Effect in 3D-DDTC Silicon Strip Detectors  
J. P. Balbuena1, G. Pellegrini1, R. Bates2, M. Breindl3, P. Martinez-Fernandez2, C. Fleta1, S. Hidalgo1, M. Koehler1, M. Lozano1, U. Parzefall3, M. Ullan1  
1Instituto de Microelectronica de Barcelona IMB-CNM (CSIC), Spain; 2University of Glasgow, United Kingdom; 3Universitt Freiburg, Germany

NP4.M-172 Advantages of Neural Networks for Deriving an Electrons Spectrum from Depth-Charge Curve  
O. U. Baice, V. T. Lazaruk, V.N. Karazin Kharkiv National University, Ukraine

NP4.M-174 Simulation of Low- and Medium-Energy Neutrons: Comparison of MCNPX to Geant4  
A. V. Klimenko, L. C. Stonehill, J. R. Terry, D. W. Lee  
Los Alamos National Laboratory, USA

S. Bentridi, Laboratoire de l’Energie et des Systemes Intelligents, Algeria; B. Gall, Institut Pluridisciplinaire Hubert Curien, France; F. Gauthier-Lafaye, Laboratoire d’Hydrologie et de Gachimie de Strasbourg, France; A. Seghour, Centre de Recherches Nuclaires d’Alger, Algeria

NP4.M-178 Study of the D-T Generator Associated Alpha-Particle Detector with Geant4  
X. Zhang1, J. P. Hayward1,2, J. W. Cates1, P. A. Hausladen1, M. A. Laubach1, J. E. Sparger1, S. B. Donnald1  
1Tennessee University, USA; 2Oak Ridge National Lab, USA

NP4.M-180 Nucleonica: Web-Based Software Tools for Simulation and Analysis  
J. Magill, R. Dreher, Nucleonica GmbH, Germany; Z. Soti, Institute for Transuranium Elements, Germany; G. P. Lasche, Sandia National Laboratories, USA

NP4.M-182 New Edition of the Karlsruhe Nuclide Chart  
Z. Soti, Joint Research Centrum of European Commission, Germany; J. Magill, R. Dreher, Nucleonica GmbH, Germany
NP4.M-184 Comparison Between Geant4 and EGSnrc of Dosimetric Quantities and Spectra Simulation for Electrons Beams
V. F. Cassola, Universidade Federal de Pernambuco, Brazil; G. Hoff, Pontificia Universidade Catlica do Rio Grande do Sul, Brazil

NP4.M-186 Computation of Alignment and Calibration Constants in CMS
G. L. Bruno, Université catholique de Louvain, Belgium
On behalf of the CMS Collaboration

NP4.M-188 Experience Using Databases in CMS in the First Year of Data-Taking and Prospect for the Future
G. L. Bruno, Université catholique de Louvain, Belgium
On behalf of the CMS Collaboration

NP4.M-190 Rejection of Multi-Jet Background in an Hadron Collider Environment Through a SVM Classifier
F. Sforza1, V. Lippi2, G. Chiarelli1, S. Leone1
1INFN Sez. di Pisa, Italy; 2Scuola Superiore S.Anna, Italy
J1 MIC-NSS Joint Session

Tuesday, Oct. 25  14:30-16:00  VCC, Auditorium 1

Session Chairs:  Patrick J. Le Du, IPNL, IN2P3, France
                 Tom K. Lewellen, University of Washington, United States

J1-1 (14:30) Performance and Applications of Transparent Ceramic Scintillators

J1-2 (14:45) Time-of-Flight PET with Cherenkov Photons
R. Pestotnik¹, R. Dolenec¹, S. Korpar², P. Krizan³, A. Stanovnik⁴, Jozef Stefan Institute, Slovenia; University of Maribor, Slovenia; University of Ljubljana, Slovenia

J1-3 (15:00) Investigation of a Sub-Millimeter Resolution PET Detector with Depth of Interaction Encoding Using Digital SiPM Single Sided Readout
P. M. Dueppenbecker¹, S. Lodomez¹, B. W. Sturm, T. A. Hurst, P. A. Theilin, S. E. Fisher, Lawrence Livermore National Laboratory, USA; K. S. Shah, R. Farrell, Radiation Monitoring Devices, USA

J. R. Meijlink¹, C. Veerappan², S. Seifert², D. Stoppa², R. Henderson³, E. Charbon¹, D. R. Schaart¹
Delft University of Technology, The Netherlands; Fondazione Bruno Kessler - IRST, Italy; University of Edinburgh, United Kingdom

J1-5 (15:30) All-Optical Encoding of PET Detector Signals
A. M. Grant, P. D. Olcott, C. S. Levin
Stanford University, USA

J1-6 (15:45) Novel Analog Memory Based PET Detector Approach with Real-Time Digital Processing
D. Stricker-Shaver¹, A. Kolb¹, S. Ritt², E. Breeding¹, J. Camp³, C. Wilson³, J. Young³, N. Zhang³, M. Schmand³, B. Pichler¹
University of Tuebingen, Germany; Paul Scherrer Institute, Switzerland; Siemens Molecular Imaging, USA

J2 MIC-RTSD Joint Session

Tuesday, Oct. 25  16:30-18:30  VCC, Auditorium 1

Session Chairs:  Katia Parodi, Heidelberger Ionentherapie, Heidelberg, Germany
                 Kenichi Watanabe, Nagoya University, Division of Quantum Science and Energy Engineering, Japan

J2-1 (16:30) The Use of Prompt Gamma-Rays for in-vivo Dosimetry at Therapeutic Proton and Ion Beams
F. Fiedler¹, U. Dersch¹, C. Golnik¹, T. Kornmoll¹, A. Miller³, H. Rohling³, S. Schne¹, W. Enghardt²
Helmholtz-Zentrum Dresden-Rossendorf, Germany; OncoRay, TU Dresden, Germany

J2-2 (16:45) Detector Development for Proton Computed Tomography
V. Rykalin¹, G. Coutrakon¹, V. Zutschi¹, A. Dyskant¹, F. Hurley², R. Schulte³, V. Bashkirov³, H. Sadrozinski³, S. Penfold⁴, P. Rubinov³, K. Schubert³, B. Erdelyi³
**J2-3** (17:00) Achieving Sub-Mm PET Resolution Using DOI Modules Based on Double-Sided SiPM Readout

A. V. Stolin\(^1\), S. Majewski\(^1\), E. Delfino\(^1\), R. R. Raylman\(^1\), J. Proffitt\(^2\), P. Martone\(^1\)

\(^1\)West Virginia University, USA; \(^2\)Adaptive I/O Technologies, USA

**J2-4** (17:15) Small Animal Optical Multispectral Cerenkov Tomography

A. E. Spinelli\(^1\), C. Kuo\(^2\), B. W. Rice\(^2\), R. Calandrino\(^1\), P. Marzola\(^1\), A. Sbarbati\(^3\), F. Boschi\(^3\)

\(^1\)San Raffaele Scientific Institute, Italy; \(^2\)Caliper Life Sciences, USA; \(^3\)University of Verona, Italy

**J2-5** (17:30) SiPM Based Preclinical PET/MR Insert for a Human 3T MR: First Imaging Experiments

V. Schulz\(^1,2\), B. Weissler\(^1\), T. Solf\(^1\), C. W. Lerche\(^1\), P. Fischer\(^3\), M. Ritzert\(^1\), V. Mlotok\(^3\), C. Piemonte\(^3\), B. Goldschmidt\(^3\), S. Vandenberghe\(^3\), A. Salomon\(^3\), P. Gebhardt\(^3\), T. Schaeffter\(^3\), P. K. Marsden\(^3\)

\(^1\)Philips Research Europe - Aachen, Germany; \(^2\)RWTH-University, Germany; \(^3\)University of Heidelberg, Germany; \(^4\)Foundation Bruno Kessler Trento, Italy; \(^5\)University of Ghent, Belgium; \(^6\)King's College London, United Kingdom

**J2-6** (17:45) Pre-Clinical Tests of a Compact CZT-Based Gamma Camera for Prostate Cancer Imaging

Y. Cui\(^1\), T. Lall\(^2\), G. Mahler\(^1\), P. Vaska\(^1\), G. De Geronimo\(^1\), P. O’Connor\(^1\), G. Meinken\(^1\), M. Ritzert\(^1\), B. Tsui\(^3\), M. Pomper\(^3\), S. A. Komarov\(^1\), Y. Yin\(^2,3\), H. Wu\(^4\), J. Wen\(^4\), H. Krawczynski\(^1\), L.-J. Meng\(^4\), Y.-C. Tai\(^1\)

\(^1\)Washington University in St. Louis, USA; \(^2\)Lanzhou University, PRC; \(^3\)University of Illinois at Urbana-Champaign, USA

**J2-7** (18:00) Feasibility Study of Sub-500um Resolution PET Imaging Using Pixelated CdZnTe Detectors

S. A. Komarov\(^1\), Y. Yin\(^2,3\), H. Wu\(^4\), J. Wen\(^4\), H. Krawczynski\(^1\), L.-J. Meng\(^4\), Y.-C. Tai\(^1\)

**J2-8** (18:15) First Results on Patients and Phantoms of a Fully Integrated Clinical Whole-Body PET/MRI

H. Schmidt\(^1\), N. Schwenzer\(^1\), I. Bezrukow\(^1,2\), A. Kolb\(^1\), F. Mantlik\(^1,2\), J. Kupferschlaeger\(^1\), C. Lois\(^3\), A. Sauter\(^1\), C. Brendle\(^1\), C. Pfannenberg\(^1\), B. J. Pitchler\(^1\)

\(^1\)University of Tuebingen, Germany; \(^2\)Max Planck Institute for Intelligent Systems, Germany; \(^3\)University of Santiago de Compostela, Spain
Tuesday - RTSD Poster Presentations

RTSD.S Poster Session I

Tuesday, Oct. 25 14:30-16:00  Sorolla, Gran Recati

Session Chair:  Krishna C. Mandal, University of South Carolina, United States

RTSD.S-231 Development of Temperature Stable X-Ray Detectors and Gamma-Radiation Detectors Based on Wide-Gap Semiconductor ZnSe
A. Sofienko, V. Degoda
Ukratominstruments Corporation, Ukraine

RTSD.S-232 Characterization of Thallium Bromide Chloride Crystals for Radiation Detectors
T. Onodera¹, K. Hitomi², C. Onodera³, T. Shoji³, K. Mochizuki³
¹Tohoku Institute of technology, Japan; ²Tohoku University, Japan; ³Towada Technical Senior High School, Japan; ⁴Ishinomaki Senshu University, Japan

RTSD.S-233 Development of AlGaAs Avalanche Diodes for Soft X-Ray Photon Counting
J. E. Lees, A. M. Barnett, D. J. Bassford, University of Leicester, UK; J. S. Ng, C. H. Tan, N. Babazadeh, R. B. Gomes, P. Vines, University of Sheffield, UK; R. D. McKeag, D. Boe, Centronic Limited, UK

RTSD.S-234 Operating Monitoring of the Activity in the First Coolant Circuit of the VVER Reactor
A. A. Zakharchenko, D. V. Kutniy, A. V. Rybka, V. E. Kutny
National Science Center Kharkiv Institute of Physics and Technology (NSC KIPT), Ukraine

RTSD.S-235 Self-Compensation Limited Conductivity in Semi-Insulating Indium-Doped Cd0.9Zn0.1Te Crystals
L. A. Kosyachenko¹, O. L. Maslyanchuk¹, O. V. Sklyarchuk¹, V. M. Sklyarchuk¹, M. Fiederle², H. Lambropoulos³, E. V. Grushko¹
¹Chernivtsi National University, Ukraine; ²Freiburger Materialforschungszentrum, Albert Ludwigs University, Germany; ³Technological Educational Institute of Chalkida, Greece

RTSD.S-236 ELECTRICAL PROPERTIES of Cd0.95Mn0.05Te:In SINGLE CRYSTALS
P. Fochuk¹, O. Parfeniuk¹, K. H. Kim², R. Grill³, I. Nakonechnyi¹, A. Bolotnikov², C. Giuseppe², A. Hossain², R. Kul², G. Yang², O. Kopach¹, O. Panchuk¹, R. James²
¹Chernivtsi National University, Ukraine; ²Brookhaven National Laboratory, USA; ³Charles University, Czech Republic

A. C. Stowe, Be-III Y-12 National Security Enterprise, USA
On behalf of the sayed hossein masoumi

RTSD.S-238 Spectroscopy and Imaging Results from 20x20x15 Mm3 Pixelated Cadmium Zinc Telluride Semiconductor Detectors
Y. A. Boucher, J. M. Jaworski, Z. He
University of Michigan, USA

RTSD.S-239 Measurements of Gamma Rays above 3 MeV Using 3D Position-Sensitive 20x20x15 mm3 Cadmium Zinc Telluride Semiconductor Detectors
Y. A. Boucher, F. Zhang, W. Kaye, Z. He, University of Michigan, USA

RTSD.S-240 Segregation and Interface Shape Control During EDG Growth of CZT Crystals
J. J. Derby, N. Zhang, A. Yeckel, University of Minnesota, U.S.A.

RTSD.S-241 TCAD Simulations of the Charge Transport and Electrical Properties of CdZnTe Detectors
S. J. Bell¹,², P. Seller¹, M. C. Veale¹, M. D. Wilson¹, P. J. Sellin², M. Baker², S. Babar²
¹Rutherford Appleton Laboratory, UK; ²University of Surrey, UK
Influence of Composition Irregularities on Dielectric Properties of CdZnTe Crystals and on Performance of Gamma-Ray Detectors


Novel Organic Semiconductors for Fast-Neutron Detection

E. V. van Loef, A. Kargar, L. Cirignano, K. S. Shah

Institute for Single Crystals, Ukraine; O. N. Chugai, S. V. Oleynik, D. P. Zherebiatjev, Y. A. Yatsyna, Zhukovsky National Aerospace University, Ukraine; R. James, Brookhaven National Laboratory, USA

Electrical Properties of Cd(Zn)Te Single Crystals Grown by the HPB Method

P. M. Fochuk, I. Nakonechnyi, R. Grill, O. Kopach, V. Verzhak, O. Panchuk, I. Terzín, V. Komar, A. Rybka, V. Kutný, A. Bolotnikov, R. James

1Chernivtsi National University, Ukraine; 2Charles University, Czech Republic; 3Institute for Single Crystals of NAS of Ukraine, Ukraine; 4National Science Centre, Ukraine; 5Brookhaven National Laboratory, USA

Novel Organic Semiconductors for Fast-Neutron Detection

E. V. van Loef, A. Kargar, L. Cirignano, K. S. Shah

Radiation Monitoring Devices, Inc., United States

Electrical Properties of Cd(Zn)Te Single Crystals Grown by the HPB Method

P. M. Fochuk, I. Nakonechnyi, R. Grill, O. Kopach, V. Verzhak, O. Panchuk, I. Terzín, V. Komar, A. Rybka, V. Kutný, A. Bolotnikov, R. James

1Chernivtsi National University, Ukraine; 2Charles University, Czech Republic; 3Institute for Single Crystals of NAS of Ukraine, Ukraine; 4National Science Centre, Ukraine; 5Brookhaven National Laboratory, USA

Interpolation in Pixelated Gamma-Radiation Detectors

D. Meier, M. Gjetanger, C. Gheorghe, T. M. Johansen, G. Maehlum

Gamma Medica - Ideas (Norway) AS, Norway

Improving the Performance of CdZnTe Detectors Using Infrared Stimulation

V. Ivanov, P. Dorogov, A. Loutchanski, ZRF RITEC SIA, Latvia; L. Grigorjeva, D. Miller, Institute of Solid State Physics, Latvia

Investigation of the Influence of Light Illumination on the Characteristics of CdZnTe Detectors

V. Ivanov, P. Dorogov, A. Loutchanski, L. Aleksejeva, ZRF RITEC SIA, Latvia; L. Grigorjeva, D. Miller, Institute of Solid State Physics, Latvia

Novel Organic Semiconductors for Fast-Neutron Detection

E. V. van Loef, A. Kargar, L. Cirignano, K. S. Shah

Radiation Monitoring Devices, Inc., United States

Preliminary Results of Characterization of CdZnTe Crystals Grown by DAVIDOV-MARKOV Method

A. A. Davidov, D. V. Kapkin, N. V. Zhavoronkov, RIMST, Russia; V. I. Ivanov, Ritec, Latvia; A. A. Bulycheva, V. V. Gostilo, Baltic Scientific Instruments, Latvia

Analysis of the Causes of Degradation of CdZnTe Detectors and Development of Methods for Its Suppression


CZT Focal Plane Polarimetric Performances for Laue Lens Photons’ Distributions

J. B. de Campos, R. M. Curado da Silva, C. P. Gloster, A. Pisa, E. Caroli, J. B. Stephen, F. Frontera

1Laboratorio de Instrumentação e Física Experimental de Partículas, Portugal; 2Università di Ferrara, Italy; 3INAF/IASF-Bologna, Italy

Extensive Simulation Studies on the Imaging Resolution of a Position Sensitive Radiation Detector Based on Pixelated Cd(Zn)Te Crystals

K. D. Zachariadou, K. Karafasoulis, I. Kaissas, S. Seferlis, C. Lambropoulos, D. Loukas, K. Potiridis

1Greek Atomic Energy Commission, Greece; 2Technological Educational Institute of Chalkida, Greece; 3National Center for Scientific Research Demokritos, Greece

Novel Semiconductors for Thermal Neutron Detection


Radiation Monitoring Devices, Inc., USA

Chessboard-Pixel-Anode Detector Measurements to Study Electric Field Non-Uniformities of CZT Radiation Detectors

G. S. Camarda, A. E. Bolotnikov, Y. Cui, R. Gull, A. Hossain, K. Kim, B. Raghoothamachar, G. Yang, R. B. James

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

Comprehensive Study of Semi-Insulated Cd$_1-x$Zn$_x$Te Grown by the Bridgman Method

V. Babentsov, Institute of Semiconductor Physics, Ukraine; J. Franc, Charles University in Prague, Czech Republic; E. Dieguez, Universidad Autonoma de Madrid, Spain; M. V. Sochinsky, Consorzio CIRE, Italy; R. B. James, Brookhaven National Laboratory, USA
RTSD.S-255 Characterization of CdZnTe after Argon Ion Beam Bombardment
H. Bensalah1, J. L. Plaza1, V. Hortelano2, O. Martínez2, J. Crocco1, Q. Zheng3, V. Carcelén1, E. Dieguez1
1 Universidad Autónoma de Madrid, Spain; 2 Universidad de Valladolid, Spain

RTSD.S-256 Effect of Different Superheating Temperature on Te Inclusions of Cd0.9Zn0.1Te Crystals Grown by Vertical Gradient Freezing
H. Bensalah, J. Crocco, J. L. Plaza, Q. Zheng, E. Dieguez
Universidad Autónoma de Madrid, Spain

RTSD.S-257 Investigation of Optoelectronic and Radiation Detection Properties of CdTe and Cd0.9Zn0.1 Te Crystals Grown from a Low Temperature Solution Process
K. C. Mandal, R. M. Krishna, P. G. Muzykov, T. C. Hayes, S. Ma
University of South Carolina, USA

RTSD.S-258 Fabrication and Characterization of High Barrier Cd0.9Zn0.1Te Schottky Diodes for High Resolution Nuclear Radiation Detectors
K. C. Mandal, P. G. Muzykov, R. M. Krishna, T. C. Hayes, S. Das, S. Patel, J. Williams
University of South Carolina, USA

RTSD.S-259 Investigation of Generated Defects Due to Processes of Metallisation on CdZnTe Detectors
Q. Zheng1, F. Dieter1, J. Franc, J. Crocco1, H. Bensalah1, V. Corregidor1, E. Alves1, E. Ruiz1, O. Vela2, J. M. Perez2, E. Dieguez1
1 Universidad Autónoma de Madrid, Spain; 2 Charles University, Czech Republic;

RTSD.S-260 Spectral Characterization of CdZnTe Detectors with a Planar, Hemispherical, or Single Pixel Geometry
Q. Zheng1, F. Dieter1, J. Crocco1, H. Bensalah1, O. Vela2, J. M. Perez2, E. Dieguez1
1 Universidad Autónoma de Madrid, Spain; 2 CIEMAT, Spain

RTSD.S-261 Indium Iodide (InI) a Potential Next-Generation Room-Temperature Radiation Detector
A. Hossain, A. E. Bolotnikov, G. S. Camarda, Y. Cui, R. Gul, K. Kim, G. Yang, R. B. James
Brookhaven National Laboratory, USA

RTSD.S-262 Minimization of the Surface Leakage Current and Passivation of the Surface of the (Cd,Mn)Te Crystal Plates for Radiation Detectors
M. Witkowska-Baran, A. Mycielski, D. M. Kochanowska, A. Szadkowski, B. Witkowska
Institute of Physics Polish Academy of Sciences, Poland

RTSD.S-263 Electric Field in Seminsulating CdTe and (CdZn)Te under Laser and X-Ray Irradiation
V. Dešic1, J. Franc, P. J. Sellin2, R. Grill1, P. Veeramani2
1 Charles University, Czech Republic; 2 University of Surrey, Great Britain

RTSD.S-264 A Simulation Tool for Designing and Characterizing CdZnTe γ-Ray Detectors
CIEMAT, Spain

RTSD.S-265 Evaluation of a Statistical Reconstruction Algorithm for a Medipix3-CT
J. Luebke1, S. Procz2, A. Fauler2, A. Zwerger2, M. Fiederle2, M. Mix1
1 University Hospital of Freiburg, Germany; 2 FMF - Freiburger Materialsforschungszentrum, Germany

RTSD.S-266 Current Mode ASIC with Single Discriminator for Photon Counting Imaging Applications
J. Luo, Z. Deng, Y. N. Liu, Tsinghua University, China; L. Zhang, Nuctech Company Limited, China
RTSD.S-267 Vacuum Carbon Coating of Quartz and pBN Crucibles Applied to VGF Growth of Cadmium Zinc Telluride
J. D. Crocco, H. Bensalah, Q. Zheng, I. Gallardo, E. Dieguez
University de Autonoma de Madrid, Spain

RTSD.S-268 Photon Counting and Charge Sharing Studies on a 200um Hexagonal Pixel CdTe Detector Medical Imaging System
M. Ruat, A. Lynch, M. Dimmock, G. Panjkovic
Monash University Australia

RTSD.S-269 Pockels effect imaging of polarisation and its temporal evolution in CdTe detector with Al Schottky contacts
M. Ruat, Monash University, Australia; D. Prokopovich, M. Reinhard, ANSTO, Australia

RTSD.S-270 Coincidence Measurements and long-term Stability Analysis with Stacked (Cd,Zn)Te Coplanar Grid Detectors
C. Disch1, A. Zwerger1, A. Fautler1, M. Dambacher1, W. Eickhoff1, U. Stoeblcker1, M. Fiederle1
1Freiburger Materialforschungszentrum, Germany; 2Bundesamt fuer Strahlenenschutz, Germany; 3CTBTO, Austria

RTSD.S-271 Design and Preliminary Performance of a Readout ASIC for CZT Based High Resolution PET
M. Voelker1, J. Carrascal2, A. Soriao-Ansensi3, J. M. Cela3, F. Sanchez3, J. M. Perez2, J. Hauer1, J. M. Benlloch3
1Fraunhofer Institute for Integrated Circuits IIS, Germany; 2CIEMAT, Spain; 3I3M, Centro mixto CSIC-UPV-CIEMAT, Spain

RTSD.S-272 IBIC Micron scale study of charge sharing in a rear illuminated CdTe pixel detector
M. Ruat, Monash University, Australia; D. Prokopovich, M. Reinhard, ANSTO, Australia

RTSD.S-273 Statistical Characteristics of Pulse-Height Spectra of Gamma-Radiation Detectors Based on the Mercuric Compounds
A. A. Zakharchenko1, L. M. Prokhoarenko2, M. A. Khazhmuradov1
1National Science Center Kharkov Institute of Physics and Technology (NSC KIPT), Ukraine; 2Institute of Electrophysics and Radiation Technologies of NASU, Ukraine

RTSD.S-274 Study of the Physical Factors Influencing the Spatial Resolution of CZT Detectors
S. Lux1, G. Montémont1, O. Rossetto2, L. Verger1
1CEA-Liste, MINATEC Campus, FRANCE; 2LPSC, UJF, CNRS/IN2P3, INPG, FRANCE

RTSD.S-275 Characterization of CdTe Detector for Use in PET
G. Arino1, M. Chmeissani2, C. Puigdengoles2, G. De Lorenzo1, R. Diener2, Y. Calderon1, J. Macias1, E. Mikhaylova1, D. Uzon2, P. Arce1, M. Canadas3, R. Martinez3, E. Cabruja3
1Institut de Fisica d’Altes Energies, Spain; 2DESY, Germany; 3CIEMAT, Spain; 4Centro Nacional de Microelectronica, Spain

RTSD.S-276 Current Transients by Variable Wavelength Optical Pulses in CdTe/CZT Nuclear Detectors
A. Cola, I. Farella, CNR, Italy; M. Anni, University of Salento, Italy

RTSD.S-277 CdTe/CdZnTe Pixel Detector for Gamma-Ray Spectrometry with Imaging and Polarimetry Capability in Astrophysics
J. M. Alvarez, J. L. Galvez, M. Hernandez, J. Isen, Institut de Ciencies de l’Espai (CSIC-IEEC), Spain; M. Lozano, G. Pellegrini, Centro Nacional de Microelectronic (IMB-CNMB(CSIC)), Spain; M. Chmeissani, Institut de Fisica d’Altes Energies (IFAE), Spain; E. Caroli, Istituto di Astrofisica Spaziale e Fisica Cosmica (INAF/IASF-BO), Italy; R. Da Silva, Universidad De Coimbra, Portugal

RTSD.S-278 Performance of Front-End Electronics for CdTe Pixelated Detectors for Spectro-Imaging in the MeV Range
J. L. Galvez, J. M. Alvarez, M. Hernandez, J. Isen, Institut de Ciencies de l’Espai (CSIC-IEEC), Spain; M. Chmeissani, C. Puigdengoles, Institut de Fisica d’Altes Energies (IFAE), Spain; M. Lozano, G. Pellegrini, R. Martinez, Centro Nacional de Microelectronica (IMB-CNMB(CSIC)), Spain
RTSD.S-279 Detection Performance Prediction for CdZnTe Array
D. J. Lingenfelter, J. A. Fessler, C. D. Scott, Z. He
University of Michigan, USA

RTSD.S-280 Annealing Effects in (Cd,Mn)Te Crystals
D. M. Kochanowska, A. Mycielski, M. Witkowska-Baran, B. Kowalski, A. Reszka, A. Suchocki, P. Lach, K. Izdebska, R. Jakiela
Institute of Physics Polish Academy of Sciences, Poland

RTSD.S-281 Preliminary Results of Neutron Source Identification from a Solid State Position Sensitive Moderating Type Neutron Spectrometer
T. M. Oakes1, S. L. Bellinger2, S. Karki3, W. H. Miller4, T. J. Sobering4, P. R. Scott1, D. S. McGregor5, J. K. Shultis6, A. N. Caruso7
1University of Missouri - Columbia, USA; 2Kansas State University, USA; 3University of Missouri - Kansas City, USA

RTSD.S-282 MCSAD: Monte Carlo Simulation of Atom Displacements Induced by Fast Electrons in Solids.
C. M. Cruz1, I. Pinera1, C. Correa1, Y. Abreu1, A. Leyva1
1Center of Technological Applications and Nuclear Developments (CEADEN), Cuba; 2High Institute of Technologies and Applied Sciences (InSTEC), Cuba

RTSD.S-283 Correction of Properties of Crystals CdZnTe for Gamma Radiation Dose Rate Probe
O. V. Maslov, M. V. Maksimov, R. U. Kharchenko, L. L. Kalnev
Odessa National Polytechnic University, Ukraine

RTSD.S-284 Radiation Detection Materials Characterization at NSLS to Achieve Better Detectors
G. S. Camarda1, A. E. Bolotnikov1, Y. Cui1, R. Gul1, A. Hossain1, K. Kim1, B. Raghothamachar1, R. Tappero2, G. Yang1, R. B. James1
1Brookhaven National Lab, USA; 2Stony Brook University, USA

RTSD.S-285 Performance Improvements in the Polaris Gamma-Ray Imaging Spectrometer
F. Zhang, Z. He, The University of Michigan, USA

RTSD.S-286 Li6X(BO3)3:Ce3+ (X=Lu, Y) Scintillators for Neutron Detectors
Y. Heng, Institute of High Energy Physics, China; R. Jia, Central China Normal University, China; Z. Fu, Nanjing University, China; G. Ren, S. Pan, Shanghai Institute of Ceramics, China

RTSD.S-287 Atomic and Electronic Structure of a Dislocation in CdTe
V. Lordi, E. Cho, Lawrence Livermore National Lab, USA; D. Trinkle, University of Illinois, USA

RTSD.S-288 Effects of Doping on Ionic Mobility in TiBr
C. R. Leao, V. Lordi, Lawrence Livermore National Lab, USA

RTSD.S-289 Energy Weighting with a CdTe Spectrometric Detector
J. Rousseau, Universit Joseph Fourier, France; P. Radisson, C. Boudou, Thales Electron Devices, France

RTSD.S-290 The Investigation of a Connection Between AHP Crystal Growth Conditions and Properties of CZT Crystals
V. D. Golyshev, Crystals Nord Technology Oy, Finland; S. V. Bykova, Granit A Ltd, Russia

RTSD.S-291 Characterization of Al Schottky CdTe Detectors
L. Abbene, G. Gerardi, G. Raso, A. A. Turturici, F. Principato, Dipartimento di Fisica , Università di Palermo, Italy; S. Del Sordo, INAF/LASF Palermo, Italy

RTSD.S-292 Twin Shaping Filter Technique for Signals Compensation in CZT Detectors Grown by the Vertical Bridgman Method
N. Auricchio, E. Caroli, F. Schiavone, S. Silvestri, INAF, Italy; L. Marchini, A. Zappettini, CNR, Italy

RTSD.S-293 Development of GaAs Pixel Detectors for Application with Synchrotron Radiation
M. Fiederle1,2, A. Fauler1, M. Pichotka1, E. Hamann2
1Freiburger Materialforschungszentrum, Germany; 2Karlsruher Institut für Technologie, Germany

RTSD.S-294 Achieving Material Information Through Energy Resolved X-Ray Imaging
M. Fiederle, A. Fauler, M. Pichotka, S. Procz
Freiburger Materialforschungszentrum, Germany
A Balloon-Borne 3D CZT Scattering Polarimeter for Hard X-Ray Astrophysics


1INAF/IASF-Bologna, Italy; 2Institut de Cincies de l’Espai, Spain; 3DTU Space, Denmark; 4LIP, Portugal; 5INAF/IASF-Palermo, Italy; 6University of Breira Inerior, Portugal; 7IMEM/CNR, Italy

Standardized Pixel Detector Characterization and Comparison of Different Readout Systems for Medipix Detectors

E. Hamann, A. Cecilia, J. Butzer, T. dos Santos Rolo, S. Procz, A. Zwerger, A. Fauler, M. Fiederle, T. Baumbach

1Karlsruhe Institute of Technology (KIT) ISS/ANKA, Germany; 2Karlsruhe Institute of Technology (KIT), Germany; 3Freiburger Materialforschungszentrum der Albert-Ludwigs-Universität, Germany

Spatial resolved determination of the weighting factor on CZT-CPG detectors

D. Gehre, Dresden University of Technology, Germany

On behalf of the COBRA collaboration

X-Ray Imaging Using Directly Deposited CdTe Films

R. Sorgenfrei, A. Zwerger, S. Schuett, M. Fiederle

Freiburger Materialforschungszentrum der Albert-Ludwigs-Universität, Germany

Determination of Electric Field Profile in CdTe and (CdZn)Te Detectors Using Transient-Current Technique

S. Ura, E. Bela, R. Grill, P. Praus, J. Franc, V. Dedic, R. B. James, L. Sedivy, J. Pekarek, V. Bares

1Institute of Physics, Charles University in Prague, Czech Republic; 2Brookhaven National Laboratory, USA

Optimization of a Lead Detection Instrument Using Monte Carlo Modeling

N. M. Rensing, T. C. Tiernan, M. R. Squillante

Radiation Monitoring Devices, Inc, USA

Multiple-Source Detection and Identification Using 3D-Position-Sensitive Semiconductor Detectors

C. G. Wahl, Z. He, University of Michigan, USA

Trial Electrode Topology of Low Energy X-Ray Detector Based on Semi-Insulating GaAs: Design, Modeling and Performance Testing

F. Dubeczy, B. Zarko, G. Vanko, E. Gombia, P. Pribytny, C. Ferrari, P. Bohaček, D. Donoval

1Inst. of Electrical Engineering, Slovak Academy of Sciences, Slovak Republic; 2CNR-IMEM, Italy; 3Inst. of Electronics and Photonics, Slovak University of Technology, Slovak Republic

Effect of O2 Atmosphere Drying Method at Low Vacuum State in X-Ray Conversion Film Fabrication Process for Dark-Current Reduction and High Stability


1Inje University, Republic of Korea; 2Ewha Womans University Mokdong Hospital, Republic of Korea

Simulation and Characterization of the Material Properties of CdTe/(Cd,Zn)Te Grown by the Multi-Tube Physical Vapour Transport Method

M. Ayoub, D. Maneuski, T. S. Wright, V. O’Shea, I. Radley

1Kromek Ltd., U.K.; 2University of Glasgow, U.K.

Effect of Interfacial Layers on CdTe/CdZnTe Detector Performance: Modelling and Electrical Characterisation

D. Maneuski, M. Ayoub, P. W. Hollis, V. O’Shea, I. Radley

1University of Glasgow, U.K.; 2Kromek Ltd., U.K.

Materials Identification Results from a High Count Rate Photon Counting, Multispectral Linear Array

P. D. Scott, D. E. Joyce, M. Ayoub, P. Schirru, N. Laver, I. Radley

Kromek Ltd., U.K.
RTSD.S-307 Nuclear Radiation Responses Derived from Wide Band-Gap Nanocrystalline Semiconductor Assemblies Comprised of CdTe or PbSe
M. D. Hammig, G. Kim, D. Kondapalli
University of Michigan, USA

RTSD.S-308 Passive Algebraic Tomography of Nuclear Fuel When the CdZnTe-Detectors Are Situated on the Cooling Pond Walls
O. V. Maslov, M. V. Maksimov, S. N. Pelykh
Odesa National Polytechnic University, Ukraine

RTSD.S-309 Charge Correction in X and Gamma Ray Detectors Based on CZT
M. Zanichelli1, M. Pavesi1, A. Zappettini1, E. Caroli2
1IMEM-CNR, Italy; 2University of Parma, Italy; 3INAF-IASF, Italy

RTSD.S-310 Identification and Reconstruction of Multiple Interaction under Single Anode Pixel Events
H. Yang, J. C. Kim, Z. He, University of Michigan, US

RTSD.S-311 Luminescence Properties of CZT Crystals in the Presence of Tellurium Inclusions
N. Zambelli, N. Armani, L. Marchini, G. Benassi, D. Calestani, A. Zappettini
IMEM-CNR, Italy

RTSD.S-312 Electroless Ink-Jet Printing on CdZnTe
N. Zambelli, G. Benassi, L. Marchini, D. Calestani, A. Zappettini
IMEM-CNR, Italy

RTSD.S-313 A New Model to Derive the Transport Parameters in CZT Detectors with a Liner Decreasing Internal Electric Field
M. Zanichelli1, L. Marchini1, M. Pavesi2, A. Zappettini1
1IMEM-CNR Parma, Italy; 2University of Parma, Italy

RTSD.S-314 Improvement of CdZnTe Radiation Detectors Parameters by Laser Radiation
A. Mychko, A. Medvid’, E. Dauksta, Riga Technical University, Latvia; V. Ivanov, L. Alekseeva, ZRF RITEC SLA, Latvia; E. Dieguzs, Universidad Autonoma de Madrid, Spain

RTSD.S-315 Preliminary Results of KSU Frisch-Collar CZT Array
P. B. Ugorowski, A. Brooks, T. Sobering, D. Mcgregor
Kansas State University, USA

RTSD.S-316 Polarisation Performance of the CdTe/CZT Caliste Detector Modules
O. Limousin, P. Ferrando, C. Blondel, B. Horeau, A. Meuris, P. Laurent, R. Chipaux, CEA, France; E. Caroli, S. Del Sordo, J. Stephen, INAF, Italy; R. M. C. Da Silva, J. M. Maia Pereira, University of Coimbra, Portugal; V. Honkimaki, ESRF, France

RTSD.S-317 Growth and Characterization of Ga2(SexTe1-x)3 Semiconductors
N. M. Abdul-Jabbar1,2, E. D. Bourtre-Courchesne2, B. D. Wirth1,3
1University of California, USA; 2Lawrence Berkeley National Laboratory, USA; 3University of Tennessee, USA

RTSD.S-318 High-Flux Experiment and Simulation Results of Pulse-Mode 3D-Position-Sensitive CdZnTe Pixelated Detectors
M. L. Rodriguez, Z. He, University of Michigan, USA

RTSD.S-319 A Study of Coplanar and Pixilated CdZnTe Detectors for Neutrino Research
J. Miyamoto, T. Kutter, A. Leder
Louisiana State University, USA

RTSD.S-320 Detector Motion Compensated Coded Aperture Imaging Using Thick 3D-Position-Sensitive CdZnTe Detectors
S. Joshi Kaye, J. M. Jaworski, Z. He
University of Michigan, USA

RTSD.S-321 Digital Spectrometer Based on Detection Unit with PIN CdTe Detector, Equipped with the Suppression System of Detector Polarization
Y. Petukhov, Center of Radiation and Nuclear Safety Technologies, Latvia
On behalf of the RNIHRP
RTSD.S-322 Calculation and Application of System Response Function for Pixelated 3-D Position Sensitive CdZnTe Detectors with Digital Waveform Readout
Y. Zhu, Z. He, University of Michigan, United States

RTSD.S-323 6 MeV Energy Calibration and Reconstruction with Pixelated CZT Detectors Using Digital Methods
S. E. Nowicki1,2, S. E. Anderson1, A. M. Parsons1
1NASA Goddard Space Flight Center, USA; 2University of Michigan, USA;

RTSD.S-324 Characteristics of Cd(Zn)Te Radiation Detectors Developed at KAERI
H. S. Kim, J. H. Ha, K. H. Lee
Korea Atomic Energy Research Institute, Republic of Korea

RTSD.S-325 A Low-Power 2-D ASIC for High-Resolution Gamma-Ray Spectroscopy
M. Claius, S. Snyder, E. Tumer, T. Tumer, A. Volkovskii
NOVA ReD, Inc., USA

RTSD.S-326 Characteristics of Indium-Doped CdZnTe(CZT) Crystals Grown by Bridgman Method
K. Lee, H. S. Kim, J. H. Ha
Korea Atomic Energy Research Institute, Republic of Korea

RTSD.S-327 Development of X-Ray Detector for Dynamic Image Using the Lead(II) Oxide
S. Jeon1, J. Shin1, K. Oh1, G. Cho2, Y. Lee3, H. Park1, J. Park1, S. Nam1
1INJ University, Republic of Korea; 2Ewha Womans University, Republic of Korea;

RTSD.S-328 Informatic Models for Estimating Carrier Transport Properties of Semiconducting Materials
K. F. Ferris, Pacific NW National Laboratory, USA; D. M. Jones, Proximate Technologies, LLC, USA

RTSD.S-329 Pulsed X-Ray Induced Carrier Dynamics Within CdZnTe Crystals
Y. Xu, W. Jie, Northwestern Polytechnical University, China; X. Zhao, Northwestern Institute of Nuclear Technology, China

RTSD.S-330 Optoelectronic Properties of Mercuric Iodide Crystals
S. L. Sharma
Indian Institute of Technology, Kharagpur, India

RTSD.S-331 Polycrystalline Hgl2 Film for Imaging
L. Zhang, Nuctech Company Limited, China

RTSD.S-332 Development of Large Area Micro-Channel Plates Photo-Detectors and Integrated Readout Electronics
H. Grabas1, E. Oberla1, K. Attenkauf1, M. Bogdan1, H. J. Frisch1, J- F. C. Genat1, R. Northrop1, G. S. Varner1
1University of Chicago, USA; 2Argonne National Laboratory, USA; 3CNRS/IN2P3, France; 4University of Hawaii, USA

RTSD.S-333 X-Ray Based Methods for 3D Characterization of Charge Collection and Homogeneity of Si, GaAs and CdTe Sensors with the Use of Timepix Chip
J. Zemlicka, J. Jakubek, S. Pospisil, Z. Vykydal, Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic; G. A. Chelkov, U. Kruchonak, V. Elkin, Joint Institute for Nuclear Research, Russia; M. Friedle, Freiburger Materialforschungszentrum FhM, Germany

M. Platkevic1, J. Jakubek1, S. Pospisil1, Z. Vykydal1, G. A. Chelkov2, M. Fiederle1, C. Leroy1, P. Allard1, G. Bergeron1, P. Cermak1, A. Fauler1, P. Souci4, I. Stekl1, C. Teyssier1, O. Tolhanov1, A. Tyazhev3, J. Vissers3, R. Yapoudjian4
1Institute of Experimental and Applied Physics, Czech Technical University Prague, Czech Republic; 2Joint Institute for Nuclear Research, Russia; 3Freiburger Materialforschungszentrum FhM, Albert-Ludwigs-Universitt Freiburg, Germany; 4Universite de Montreal, Canada; 5Tomsk State University, Russia; 6Nikhef, Netherlands
RTSD.S-335 Reach-Through APDs for X-Ray Detection
A. L. Gouvea, L. P. Fernandes, J. M. F. Santos
GIAN, Portugal

RTSD.S-336 CZT Breast Camera from CZT: Performance Assessment
I. M. Blevis, N. Wartski, Y. Grobstein, N. Bishara, R. Khamaisi, T. Rafaeli, O. Zak
General Electric Healthcare, Israel
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<tr>
<td>08:00</td>
<td>Meliá Meeting 162A3 Refresher: NSS Geant4</td>
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<td>09:00</td>
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<td>10:00</td>
<td>Sorolla Gran Recati NP5.5 Poster Session Detection Components</td>
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<td>11:00</td>
<td>Sorolla Arenas-Perellonet R11 Poster Session II</td>
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<td>VCC Conference</td>
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<td>Conference Reception</td>
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N26  High Energy Physics and Nuclear Physics Detectors: TPC and Particle Identification Systems

Wednesday, Oct. 26 08:30-10:15  VCC, Auditorium 2

Session Chairs: Peter Krizan, University of Ljubljana, Slovenia  
Harry van der Graaf, Nikhef, Netherlands

N26-1 (08:30) High-Pressure Xenon Gas TPC for Neutrino-Less Double-Beta Decay in 136Xe: Progress Toward the Goal of 1% FWHM Energy Resolution
D. R. Nygren, A. Goldschmidt, H. Spieler, J. Renner, Lawrence Berkeley National Laboratory, USA; J. White, Texas A&M University, USA

N26-2 (08:45) TPC Development by the LCTPC Collaboration for the ILD Detector at ILC
D. Peterson, Cornell University, USA

N26-3 (09:00) The TOTEM Experiment at LHC
J. Baechler, CERN, Switzerland - On behalf of the TOTEM Collaboration

N26-4 (09:15) TOTEM T2 Detector at LHC
V. Greco1,2, M. Berretti1, P. Brogi1, F. Garcia Fuentes1, J. Heino3, T. Hilden3, S. Lami3, G. Latino3, E. Oliveri1,4, F. Oljemark3, N. Turini1,4, J. S. Welti1, L. Magalotti1
1CERN, Switzerland; 2University of Siena, Pisa; 3Helsinki Institute of Physics and University of Helsinki, Finland; 4INFN Pisa, Italy; 4INFN Bari, Italy

R. Bertoni, M. Bonesini, Sezione INFN Milano Bicocca, Italy; A. de Bari, Sezione INFN e Dipartimento di Fisica Nucleare e Teorica, Italy

N26-6 (09:45) Study of Aging and Radiation Tolerance of a 144-channel HAPD for the Belle II Aerogel RICH Detector
S. Korpai1,2, 1University of Maribor, Slovenia; 2J. Stefan Institute, Slovenia
On behalf of the Belle II Aerogel RICH group

N26-7 (10:00) The Focal Plane Detection System of S3 at SPIRAL2
R. L. Lozeva, IPHC, CNRS, IN2P3, France
On behalf of the S3-FPDETS collaboration

N27  Synchrotron Radiation and Accelerator Instrumentation 1

Wednesday, Oct. 26 08:30-10:15  Meliá, Valentia B

Session Chairs: Niels van Bakel, Nikhef, The Netherlands  
Peter Siddons, BNL, United States

N27-1 (08:30) Performance of the EIGER Single Photon Counting X-Ray Detector
R. Dinapoli1, A. Bergamaschi1, D. Greiffenberg1, B. Henrich1, R. Horisberger1, I. Johnson1, A. Mozzanica1, V. Radicci1,2, B. Schmitt1, X. Shi1
1Paul Scherrer Institut, Switzerland; 2ESRF, France

N27-2 (08:45) A New High-Speed pnCCD Camera for Full-Field Spectral Resolved X-Ray Imaging
S. Ihle, I. Ordavo, R. Hartmann, H. Soltau, PNSensor GmbH, Germany

N27-3 (09:00) Development of the DSSC: A Large Format X-Ray Imager with MHz Readout Capability for the European XFEL
M. Porto1,2, 1Max Planck Institut fuer Extraterrestrische Physik, Germany; 2MPI Halbleiterlabor, Germany
On behalf of the DSSC Consortium

N27-4 (09:15) A New Four Side Buttable Camera for X-Ray Imaging and
Spectroscopy with Large Dynamic Range for Present and Future FELs
L. W. J. Strueder,1 R. Hartmann2, H. Soltanz,3 R. Stecker4, J. Ullrich3
1MPe, Germany; 2PNSensor GmbH, Germany; 3MPI fuer Kernphysik, Germany

N27-5 (09:30) Modelling the Response of a High Resolution Silicon Detector in a Synchrotron Therapeutic X-Ray Microbeam
A. Cullen1, M. L. F. Lerchi, M. Petasecca1, S. Gutekii,1 H. Requardt2, E. Brauer-Krisch3, A. Bravin2, A. B. Rosenfeld5
1University of Wollongong, Australia; 2European Synchrotron Radiation Facility, France

N27-6 (09:45) High Resolution Silicon Detectors Used for Real-Time Dosimetry in Microbeam Radiation Therapy
M. Lerchi1, M. Petasecca1, A. Cullen1, H. Requardt2, E. Brauer-Krisch3, A. Bravin2, V. Pervertaylo3, A. Kryukov3, A. B. Rosenfeld5
1University of Wollongong, Australia; 2European Synchrotron Radiation Facility, France; 3SPA BIT, Ukraine

N27-7 (10:00) Status of LPD R&D Activities

N28 Analog and Digital Circuits 2

N28-1 (08:30) Low Power 12-Bit Current-Mode ADC for a Liquid Argon TPC
N. Nambiar, G. De Geromino, J. Fried, E. Vernon
Brookhaven National Laboratory, USA

N28-2 (08:45) Multiplexed Oversampling Digitizer in 65nm CMOS for Column-Parallel CCD Readout
C. R. Grace, J.-P. Walder, H. von der Lippe
Lawrence Berkeley National Laboratory, USA

N28-3 (09:00) PARISROC, an Autonomous Front-End ASIC for Triggerless Acquisition in Next Generation Neutrinos Experiments
F. Dulucq,1 S. Conforti Di Lorenzo,1 C. de la Taille,1 S. Drouer,1 A. El Berni,1 G. Martin-Chassard1
1Laboratoire de l Accelerateur Lineaire, FRANCE; 2Institut de Physique Nucleaire d Orsay, FRANCE

N28-4 (09:15) Low Noise Front End ASIC with Current Mode Active Cooled Termination for the Upgrade of the LHCb Calorimeter
D. Gascon,1 E. Picatoste,1 C. Abellan,1 O. Duarte,1 L. Garrido,1 E. Graugs,1 J. Lefrancois,1 F. Machefert,1 X. Vilasis-Cardona1
1ICC. University of Barcelona, Spain; 2LIFAELS, La Salle, Universitat Ramon Llull, Spain; 3LAL, Universit Paris-Sud, CNRS/IN2P3, France

N28-5 (09:30) KLaUo - a Charge Readout and Fast Discrimination Chip for Silicon Photomultipliers (SiPMs)
W. Shen, T. Harion, G. Sidlauskas, M. Dorn, M. Kolpin, H.-C. Schultz-Coulon, University of Heidelberg, Germany

N28-6 (09:45) NECTAr0, a New High Speed Digitizer ASIC for the Cherenkov Telescope Array
E. Delagnes1, J. Bolmont,2 D. Drahini,3 F. Feinstein,1 D. Gascon1, J.-F. Glicenstein,1 F. Guilloux1, C. L. Naumann,3 P. Nayman,1 A. Sanuy1, F. Tousset1, P. Vincent,1 S. Vorobiov,1 J.-P. Varennet,2 P. Corona2, F. Rarbi3
1CEA/IRFU, France; 2IN2P3/LPNHE, France; 3IN2P3/LPSC, France

N28-7 (10:00) GeFRO, a New Front-End Approach for the Phase II of the GERDA Experiment
C. Cattadori,1 A. Giachero,1 C. Gotti1, M. Maino1, G. Pessina1
1INFN section of Milano Bicocca and University of Milano Bicocca, Italy; 2University of Firenze, Italy
N29 High Energy Physics and Nuclear Physics Detectors: Calorimeters I

Wednesday, Oct. 26 11:00-12:45  VCC, Auditorium 2

Session Chairs:  Rainer W. Novotny, 2nd Physics Institute, University Giessen, Germany
Jae Yu, Univ. of Texas Arlington, United States

N29-1 (11:00) Beam Test Performance of the CALICE Silicon Tungsten Electromagnetic Calorimeter Physics Prototype
R. Poeschl, CNRS/IN2P3, France
On behalf of the CALICE

N29-2 (11:15) Design Studies for a Compact Tungsten Scintillator Electromagnetic Calorimeter
C. L. Woody, E. Kistenev, A. Sickles, S. Stoll, A. Sukhanov
Brookhaven National Lab, USA

N29-3 (11:30) Performance of the CMS Electromagnetic Calorimeter at the LHC
G. Della Ricca, Universita' di Trieste & INFN Sezione di Trieste, Italy
On behalf of the CMS Collaboration

N29-4 (11:45) CMS ECAL Radiation Damage Effects
A. Singowski, University of Minnesota, MN, USA, USA
On behalf of the CMS ECAL group

N29-5 (12:00) Experimental Studies of Scintillation and Cherenkov Light Yield of Scintillating Crystals with SiPM Readout
B. Bilki1, A. Para2, F. Ptochos2, P. Rubinov2, L. Vasilas2, H. Wenzel2
1University of Iowa, USA; 2Fermilab, USA

N29-6 (12:15) Optimization of Light Response Uniformity for SuperB Tapered LYSO Crystals with APD Readout
R. Mao, L. Zhang, R.-Y. Zhu
California Institute of Technology, USA

N29-7 (12:30) A SiPM Based Readout System for Shashlik Calorimeters: Status and Perspectives
A. Berra, Universita' degli Studi dell'Insubria & INFN Milano Bicocca, Italy
On behalf of the FACTOR/TWICE

N30 Gamma Ray and Neutron Detection 4

Wednesday, Oct. 26 11:00-12:45  Meliá, Valentia B

Session Chairs:  Carlos Lacasta, IFIC, CSIC-UVEG, Valencia, Spain
Stephen A. Payne, LLNL, United States

N30-1 (11:00) A Fundamental Study of Recoil Electron Tracking Enhanced Compton Imaging
J. M. C. Brown1, J. E. Gillam2, M. R. Dimmock2, D. M. Paganin1
1Monash University, Australia; 2Univiversitat de Valencia, Spain

N30-2 (11:15) High Energy Resolution Gamma Ray Spectroscopy at MHz Count Rates with LaBr3 Scintillators
M. Tardocchi1, M. Nocentci2, C. Cazzaniga1, I. Chugonov1, F. Ana1, D. Gin1, G. Grosso1, V. Kiptily1, A. Neto1, A. Olariu1, S. Olariu1, R. C. Pereira1, A. Shevlev1, M. Silva1, J. Sousa1, G. Gorini2
1Istituto di Fisica del Plasma EURATOM–ENEA-CNR Association, Italy; 2Universita' degli Studi di Milano-Bicocca, Italy

N30-3 (11:30) Dual Particle Imager for Standoff Detection of Special Nuclear Material
University of Michigan, United States
N30-4 (11:45) Electro-Optic Detection of Ionizing Radiation
K. E. Strecker, L. E. Sadler, S. Bisson, A. A. Hoops, J. Lund, J. Steele
Sandia National Laboratories, USA

N30-5 (12:00) High Resolution Neutron Resonance Absorption Imaging at a Pulsed Neutron Beamline
A. S. Tremsin, J. B. McPhate, J. V. Vallerga, O. H. W. Siegmund, University of California, USA; W. Kockelmann, E. M. Schooneveld, N. J. Rhodes, STFC, Rutherford Appleton Laboratory, UK; W. B. Feller, NOVA Scientific, Inc, USA

N30-6 (12:15) Characterization of Hyper-Pure Germanium Crystals for Use in the Advanced Gamma Tracking Array, AGATA
S. J. Colosimo1, A. J. Boston1, H. C. Boston1, B. Bruynel1, J. R. Cresswell1, F. Filmer1, I. Lazarus1, S. Moon1, P. J. Nolan1, J. Simpson1, M. J. Slee1, C. Unswoth1
1University of Liverpool, UK; 2CEA Saclay, France; 3STFC Daresbury Laboratory, UK

N30-7 (12:30) High Spatial Resolution Gamma Camera Devoted to Characterization of Electrical Response in HPGe Segmented Detectors
A. Hernandez-Prieto, B. Quintana, University of Salamanca, Spain; D. Barrientos, University of Valencia, Spain

N31 Analog and Digital circuits 3

Wednesday, Oct. 26 11:00-12:45  Meliá, Valentia C

Session Chairs: Jean-Francois C. Genat, CNRS/IN2P3/LPNHE, France
Chiara Guazzoni, Politecnico di Milano and INFN, Italy

N31-1 (11:00) A Time-Pickoff Method Using Automatic Gain Control for a Fast Count Rate
H. Lim, Kwangwoon University, South Korea

N31-2 (11:15) A Multi-Channel, 10ps Resolution, FPGA-Based TDC with 300MS/s Throughput for Open-Source PET Applications
L. H. Menninga1, C. Favi2, M. W. Fishburn1, E. Charbon1
1Delft University of Technology, Netherlands; 2Ecole Polytechnique Federale de Lausanne, Switzerland

N31-3 (11:30) 1 Gbit/s Serial Data Link Using Multi Level Signaling for Fast Readout Front End or 3D-IC Applications
H. Mathez, D. Contardo, E. Bechetioille, M. Lamouret, Y. Zoccarato
IPNL CNRS IN2P3 MICRHAU, FRANCE

N31-4 (11:45) Implementation of Constant-Fraction-Discriminators (CFD) in Sub-Micron CMOS Technology
S. Garbolino1,2, S. Martoiu3, A. Rivetti1
1INFN, Italy; 2University of Turin, Italy; 3CERN, Switzerland

N31-5 (12:00) DCDB and SWITCHERB, the Readout ASICs for Belle II DEPFET Pixel Detector
J. Peric, P. Fischer, J. Knopf, C. Kreidl
University of Heidelberg, Germany

N31-6 (12:15) Design and Performance of the GEMROC ASIC for 2-D Readout of Gas Electron Multiplier Detectors
W. Dąbrowski, T. Fiutowski, B. Mindur, P. Wiącek, A. Zielińska
AGH University of Science and Technology, Poland

N31-7 (12:30) Embedded Real Time Digital Signal Processing for a 64-channel Pet Detector Module in a 0.18 μm Cmos Asic
Universite de Sherbrooke, Qc, Canada
N32 Synchrotron Radiation and Accelerator Instrumentation 2

Wednesday, Oct. 26 14:30-15:45  Meliá, Valentia A

Session Chair:  Peter Grudberg, XIA LLC, United States

N32-1 (14:30) A Novel Digitization Scheme with FPGA-Based TDC for Beam Loss Monitors Operating at Cryogenic Temperature
J. Wu, A. A. Warner, Fermilab, USA

N32-2 (14:45) Detector Development for the European XFEL: Requirements and Status
M. Kuster, European XFEL GmbH, Germany; H. Graafsm, Deutsches Elektronen-Synchrotron - DESY, Germany

N32-3 (15:00) The MICE Beamline Instrumentation for Precise Emittance Measurements
M. Bonesini, Sezione INFN Milano Bicocca, Italy
On behalf of the MICE Collaboration

N32-4 (15:15) High Speed, Direct Detection 1k Frame-Store CCD Sensor for Synchrotron Radiation
D. Doering1, N. C. Andresen1, D. Contardt1, P. Denes1, J. M. Joseph1, P. J. McVittie1, J.-P. Walder1, J. Wetzelroick2, B. Y. Zheng1
1Lawrence Berkeley National Laboratory, USA; 2Argonne National Laboratory, USA

N32-5 (15:30) Fast, Low-Noise, Low-Power Electronics for the Analog Readout of Non-Linear DEPFET Pixels
S. Facchinetti1,2, L. Bombelli1,2, A. Castoldi1,2, C. Fiorini1,2, C. Guazzoni1,2, D. Mezza1,2, M. Porro2,3, G. De Vita4, F. Erdinger4
1Politecnico di Milano Dip, Elettronica e Informazione, Italy; 2INFN Sez. Milano, Italy; 3Max-Planck Institut fuer extraterrestrische Physik, Germany; 4MPI Halleterlabor, Germany; 5Institute for Computer Engineering, University of Heidelberg, Germany

N33 Astrophysics and Space Instrumentation 2

Wednesday, Oct. 26 14:30-15:45  Meliá, Valentia B

Session Chairs:  Klaus P. Ziock, Oak Ridge National Laboratory, United States
Ingrid-Maria Gregor, DESY, Germany

N33-1 (14:30) The Time Calibration System for KM3NeT Neutrino Telescope
U. Emanuele, IFIC - CSIC - University of Valencia, SPAIN
On behalf of the KM3NeT Consortium

N33-2 (14:45) KM3NeT: a Cubic Kilometre-Scale Neutrino Telescope in the Mediterranean Sea
L. Thompson, University of Sheffield, United Kingdom
On behalf of the KM3NeT

N33-3 (15:00) FACT: A Novel Camera for Cherenkov Telescopes for Ground-Based Gamma-Ray Astronomy
Q. Weitzel, ETH Zurich, Switzerland
On behalf of the FACT Collaboration

N33-4 (15:15) Improvement of an Electron-Tracking Compton Camera for Observation of the Crab Nebula at Balloon Altitudes
T. Sawano1, T. Tanimori1, H. Kubo1, K. Miuchi1, S. Kabuki1, J. D. Parker1, A. Takada1, Y. Kishimoto1, T. Mizumoto1, K. Ueno1, S. Kurosawa1, S. Iwaki1, K. Tanui1, K. Nakamura1, N. Higashi1, Y. Matsuoka1, S. Komura1, Y. Sato1
1Kyoto University, Japan; 2Tokai University, Japan; 3KEK, Japan; 4RIKEN, Japan; 5Tohoku University, Japan

N33-5 (15:30) PING Gamma Ray and Neutron Measurements of a Meter-Sized Carbonaceous Asteroid Analog
J. G. Bodnarek
NASA's Goddard Space Flight Center / Vanderbilt University, USA
**N34 Scintillators**

Wednesday, Oct. 26  14:30-15:30  Meliá, Valentina C

Session Chairs:  
Craig L. Woody, Brookhaven National Lab, United States  
Hee-Joung Kim, Yonsei University, South Korea

**N34-1 (14:30) Fast-Neutron Detection and Pulse Shape Discrimination with Diphenylanthracene and Tetraphenylbutadiene**  
E. van Loef, J. Glodo, S. Mukhopadhyay, N. Zaitseva, S. Payne, K. S. Shah  
1Radiation Monitoring Devices, Inc., United States; 2Lawrence Livermore National Laboratory, United States

**N34-2 (14:45) Single-Layer and Multilayer Composite Scintillators Based on Organic Molecular Crystalline Grains**  
N. Z. Galunov, B. V. Grinyov, N. L. Karavaeva, E. V. Martynenko, V. D. Panikarskaya, O. A. Tarasenko, S. V. Budakovskv
Institute for Scintillation Materials, National Academy of Sciences of Ukraine, Ukraine

**N34-3 (15:00) Radiation Tolerance of LiCaAlF6 Neutron Scintillators**  
H. Takahashi, M. Yonetani, K. Hayashi, I. Park, T. Mizuno, Y. Fukazawa, Hiroshima University, Japan;  
T. Yanagida, Y. Fujimoto, Y. Yokota, A. Yoshikawa, Tohoku University, Japan;  
N. Kawaguchi, S. Ishizu, K. Fukuda, T. Suyama, Tokuyama Corporation, Japan

**N34-4 (15:15) Capabilities of Plastic Scintillation Microspheres for Radionuclide Determination. a Review of Scintillators and Applications.**  
Universitat de Barcelona, Spain

**N35 Gaseous Detectors**

Wednesday, Oct. 26  14:30-15:45  Meliá, Meeting 1&2&3

Session Chair:  
Marcel Demarteau, Argonne National Laboratory, United States  
Serge Duarte Pinto, CERN, Switzerland

**N35-1 (14:30) Tracks Reconstruction with Silicon Photomultipliers in NEXT1-EL**  
N. Yahlali, IFIC, Spain  
On behalf of the NEXT Collaboration

**N35-2 (14:45) Design, Characterization, and First Measurement with a Dual-Phase Argon Detector for Low-Energy Nuclear Recoils**  
1Lawrence Livermore National Laboratory, USA; 2University of Liverpool, UK;  
3The Pennsylvania State University, USA; 4University of California Berkeley, USA

**N35-3 (15:00) Average Energy to Produce an Ion Pair in Gases for High Energy Heavy Ions**  
S. Sasaki, T. Sanami, K. Saito, High Energy Accelerator Research Organization, Japan;  
T. Murakami, National Institute of Radiological Sciences, Japan

**N35-4 (15:15) Innovative Gas Mixtures for Resistive Plate Chambers Operated in Avalanche Mode**  
M. Abbrescia, University of Bari and INFN, Italy  
On behalf of the RPC GAS-LAB Uniba and INFN Group

**N35-5 (15:30) Development of a Plasma Panel Radiation Detector: Recent Progress and Key Issues**  
R. Ball, M. Ben Moshe, Y. Benhammou, J. W. Chapman, E. Etzion, C. Ferretti, P. Friedman, D. S. Levin, Y. Silver, D. Tiesheng, R. L. Varner, C. Weaverdyck, B. Zhou  
1University of Michigan, USA; 2Tel Aviv University, Israel; 3Integrated Sensors LLC, USA; 4Oak Ridge National Laboratory, USA
N36 Nuclear Detectors 1 - Scintillator Based

Wednesday, Oct. 26  16:30-18:15  Meliá, Valentia A

Session Chairs:  Andrew G. Weisenberger, Thomas Jefferson National Accelerator Facility, United States
Carl Zorn, Jefferson Laboratory, United States

N36-1 (16:30) A Segmented Scintillator Detector for Aboveground Detection of Reactor Antineutrinos
D. Reyna, S. Kiff, B. Cabrera-Palmer, Sandia National Laboratories, USA; N. Bowden, G. Keefer, Lawrence Livermore National Laboratory, USA

N36-2 (16:45) A Sensor for the Continuous Monitoring of Alpha and Beta Radionuclides in Prepotable Water
A. Tarancon1, M. Pujadas1, O. Novella2, J. Cros3, G. Rauret1, J. F. Garca1
1Universitat de Barcelona, Spain; 2Adasa Sistemas, Spain

N36-3 (17:00) A Symmetric Resistive Voltage Division Circuit for SiPM Array Readout
S. L. David1, M. Georgiou2, E. Fysikopoulos3, N. Efthimiou4, T. Paipais1, L. Kefalidis1, G. Loudos1
1Technological Educational Institute (TEI) of Athens, Greece; 2University of Thessaly, Greece; 3National Technical University of Athens, Greece; 4University of Patras, Greece

N36-4 (17:15) A Scintillating Fibre Tracker for Muon Radiography
M. Hoek1, A. Clarkson1, D. Hamilton1, R. Kaiser1, T. Keri1, D. Mahon1, B. McKinnon1, M. Murray1, S. L. Nutbeam1, C. Shearer2, G. Yang1
1University of Glasgow, UK; 2National Nuclear Laboratory, UK

N36-5 (17:30) Portable and Active Collimation Imager Using MURA Patterned Scintillator
T. Lee, W. Lee, Korea University, Korea

N36-6 (16:30) Dual-Readout Calorimetry with a Mo-Doped PbWO4 Electromagnetic Section
S. Franchino, Pavia University and INFN, Italy
On behalf of the The DREAM collaboration

N36-7 (16:45) Neutron Response Result of Hybrid Scintillator; Ce:LiCaAlF6 Covered with Plastic Scintillator Coupled to APD
T. Fujiwara1, H. Takahashi1, Y. Mitsuya1, K. Kamada2, T. Yanagida3, K. Fukuda1, N. Kawaguchi1, Y. Fujimoto2, M. Uesaka3
1The University of Tokyo, Japan; 2Tohoku University, Japan; 3Tokuyama Corporation, Japan

N37 High Energy Physics and Nuclear Physics Detectors : Calorimeters II

Wednesday, Oct. 26  16:30-18:15  Meliá, Valentia B

Session Chairs:  Jun Miyamoto, Louisiana State University, United States
Anatoly B. Rosenfeld, University of Wollongong, Australia

N37-1 (16:30) Dual-Readout Calorimetry with a Mo-Doped PbWO4 Electromagnetic Section
S. Franchino, Pavia University and INFN, Italy
On behalf of the The DREAM collaboration

N37-2 (16:45) A BGO-Based Electromagnetic Section for a Dual Readout Calorimeter
D. Pinci, INFN - Sezione di Roma, Italy
On behalf of the DREAM collaboration

N37-3 (17:00) Possible Issues for Dual-Readout Scintillator Materials for HHCAL
A. Vasiliev, SINP, Moscow State University, Russia

N37-4 (17:15) Crystals for Homogeneous Hadron Calorimeter
R. Mao, L. Zhag, R.-Y. Zhu
California Institute of Technology, USA
N37-5 (17:30) Front-End Photodetector for PRIMEX Calorimeter Readout
E. B. Johnson¹, X. J. Chen¹, R. Rines¹, C. J. Stapels¹, C. Whitney¹, M. McElhićn¹, P. Dokhale¹, K. Shah¹, E. Chapman¹, G. Alberghini¹, R. Miskimen², F. L. Augustine³, J. F. Christian¹
¹Radiation Monitoring Devices, Inc., USA; ²University of Massachusetts, USA; ³Augustine Engineering, USA

N37-6 (17:45) Separation of Nuclear Reaction Product Ion Groups at Solenoid Focal Spot
C. Granja¹, P. de Faria², R. Lichtenhalter³, A. Lepine-Szy³, S. Pospisil¹
¹Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic; ²Instituto de Física da Universidade de São Paulo, Brazil

N37-7 (18:00) Detecting Fast Neutrons from Pu Fission Chains Using an Array of Liquid Scintillator Detector
S. A. Ouedraogo, L. Nakae, R. Wurtz, A. Glenn, S. Sheets, N. Snyderman, J. Verbeke, I. Pawelczak, P. Kerr
LLNL, USA

N38 Scintillators 4
Wednesday, Oct. 26 16:30-18:15  Meliá, Valentia C

Session Chairs: Nerine Cherepy, Lawrence Livermore National Laboratory, United States
Edgar V. Van Loef, Radiation Monitoring Devices, Inc., United States

N38-1 (16:30) Praseodymium Valence Determination in Scintillators by X-Ray Absorption Spectroscopy
M. Zhuravleva¹, S. Friedrich², M. Koschan¹, C. Melcher¹
¹University of Tennessee, USA; ²Lawrence Livermore National Laboratory, USA

N38-2 (16:45) Dependence of Scintillation Properties on Cerium Concentration for GPS Single Crystal Scintillators Grown by a TSSG Method
Y. Tsubota¹, J. H. Kaneko¹, M. Higuchi¹, T. Shimaoka¹, S. Nishiyama¹, H. Ishibashi², F. Fujita¹
¹Hokkaido University, Japan; ²Hitachi Chemical co.ltd, Japan

N38-3 (17:00) 2-Inch Size Single Crystal Growth and Scintillation Properties of New Scintillator; Ce:Gd₃Al₂Ga₃O₁₂
K. Kamada¹, T. Yanagida¹, T. Endo¹, K. Tsutsumi¹, Y. Usuki¹, M. Nikl³, Y. Fujimoto¹, A. Fukabori², A. Yoshikawa²
¹Furukawa Co., Ltd., Japan; ²Tohoku University, Japan; ³Institute of Physics, Czech Republic

N38-4 (17:15) Scintillation Yield in Ce-Doped LGSO Scintillators
O. Gektin¹, A. Belsky², S. Neicheva¹, O. Sidletskiy¹, D. Amans², D. Kurtseva¹, V. Tarasov¹
¹Institute for scintillation materials, Ukraine; ²bLPCML, CNRS, Universit Lyon 1, Villeurbanne F-69622, Université de Lyon, France

Institute for Scintillation Materials, National Academy of Science of Ukraine, Ukraine

N38-6 (17:45) Radiation Damage and Recovery Mechanisms in Cooled PbWO₄ Crystals
T. Kuske, ²Physikalisches Institut, University Gießen, Germany
On behalf of the PANDA Collaboration

N38-7 (18:00) Radiation Effects on YAG:Ce Scintillating Fiber
Air Force Institute of Technology, USA
N39 - Solid State Hybrid and Monolithic Detectors

Wednesday, Oct. 26
16:30-18:00
Melià, Meeting 1&2&3

Session Chairs: Yasuo Arai, KEK, Japan
Ingrid-Maria Gregor, DESY, Germany

N39-1 (16:30) BJT Detector for Alpha Particle and Radon Detection and Monitoring
V. Tyzhnyyi, G.-F. Dalla Betta, University of Trento, Italy; G. Verzellesi, University of Modena and Reggio Emilia, Italy; L. Bosisio, University of Trieste, Italy; G. Batignani, University of Pisa, Italy

N39-2 (16:45) Fabrication of a Hybrid Silicon CCD-Strip Detector for Electron Tracking Based Compton Imager
P. J. Barton1, D. Chivers2, C. S. Tindall1, S. E. Holland1, T.-E. Hansen1, K. Vetter1
1Lawrence Berkeley National Laboratory, USA; 2University of California, USA; 3SINTEF, Norway

N39-3 (17:00) DynAMiTe: a Large Area Sensor for Biomedical Applications with Bimodal Dynamic Range and Resolution
M. Esposito1, T. Anaxagoras2, A. Fant3, K. Wells1, A. Konstantinidis4, R. D. Speller5, J. Osmond5, P. M. Evans4, N. M. Allinson2

B. Krieger, D. Contarato, P. Denes, D. Doering, D. Gnani, J. Joseph Lawrence Berkeley National Laboratory, USA

J. Becker1, P. Göttlicher1, H. Graafsmaj1, D. Greiffenberg1, B. Henrich2, H. Hirsemann1, S. Jack1, M. Karagounis1, R. Klanner1, H. Krüger1, A. Marras1, A. Mozzanica1, B. Nilsson1, B. Schmitte1, J. Schwandt1, S. Sengelmann1, F. Tian1,5, U. Trunk1, X. Shi2, J. Zhang1
1DESY Deutsches Elektronen-Synchrotron, Germany; 2PSI Paul Scherrer Institut, Switzerland; 3Universität Bonn, Germany; 4Universität Hamburg, Germany; 5now at Infineon Technologies AG, Germany

N39-6 (17:45) Large Area Ultra-Thin Detector Ladders Based on CMOS Monolithic Pixel Sensors
W. Dulinski, IPHC/IN2P3/CNRS, France
On behalf of the PLUME, SERVIE TTE and PLUMETTE Collaborations
MIC1 Opening and Plenary 1

Wednesday, Oct. 26 08:30-10:30  VCC, Auditorium 1

Session Chair:  
Alberto Del Guerra, University of Pisa, Italy

MIC1-1 (08:30) Welcome and opening  
A. Del Guerra, University of Pisa, Italy

MIC1-2 (09:00, invited) Is there still room for research in CT?  
W. Kalender, University Erlangen-Nuernberg, Germany

MIC1-3 (09:45, invited) New frontiers in radiobiology for particle therapy  
C. Bert, GSI, Germany

MIC2 Awards and Plenary 2

Wednesday, Oct. 26 11:00-13:00  VCC, Auditorium 1

Session Chair:  
Juan Jose Vaquero, Universidad Carlos III de Madrid, Spain

MIC2-1 (11:00, invited) Optimal use of imaging in radiation therapy  
A. Brahme, Karolinska Institute, Sweden

MIC2-2 (11:45) Awards  
A. Celler, University of British Columbia, Canada

MIC3 Multi-modality Systems 1

Wednesday, Oct. 26 14:30-16:00  VCC, Auditorium 1

Session Chairs:  
Sibylle I. Ziegler, Nuklearmedizin Klinikum rechts der Isar der TU München, Germany  
Joel S. Karp, University of Pennsylvania, United States

MIC3-1 (14:30) Effect of in-vivo MR-based non-rigid motion correction on lesion detection in simultaneous PET-MR  
J. Ouyang1,2, S. Y. Chun1,2, T. Reese2,3, C. Catana1,2, E. Moussallem1,2, N. Alpert1,2, G. El Fakhri1,2  
1Massachusetts General Hospital, U.S.A; 2Harvard Medical School, U.S.A; 3Athinoula A. Martinos Center for Biomedical Imaging, U.S.A

MIC3-2 (14:45) Attenuation Correction in MR-BrainPET with Segmented T1-Weighted MR Images of the Patients Head - A Comparative Study with CT  
G. Wagenknecht1, E. Rota Kops1, F. Mantlik2, E. Fried1, T. Pilz1, H. Hautzel1, L. Tellmann1, B. Pichler3, H. Herzog2  
1Research Center Juelich, Germany; 2Eberhard Karls University Tuebingen, Germany; 3University Hospital Duesseldorf and Research Center Juelich, Germany

MIC3-3 (15:00) Effect of MR Contrast Agents on Quantitative Accuracy of PET in Combined Whole-Body PET/MR Imaging  
C. Lois1,2, I. Bezrukov2, H. Schmidt1, N. Schwenger1, M. K. Werner2, B. J. Pichler1, J. Kupferschlaeger1, T. Beyer2  
1Universidad de Santiago de Compostela, Spain; 2Eberhard Karls Universitaet Tuebingen, Germany

MIC3-4 (15:15) Development of an Ultra High Resolution Integrated PET/MRI System: iPET/MRI II  
S. Yamamoto, Kobe City College of Technology, Japan; M. Aoki, E. Sugiyama, Neomax Engineering, Japan; H. Watabe, Y. Kanai, E. Shimosegawa, J. Hatazawa, Osaka University, Japan

MIC3-5 (15:30) Evaluation of the Efficacy of an MR-based PET Motion Correction Scheme by Assessing the Improvement in FDG Image-
Derived AIF as Compared to Arterial Blood Sampling in Healthy Volunteers

D. B. Chonde1,2, G. Arabasz1, S. L. Bowen1, A. G. Sorensen1, C. Catana1
1A. A. Martinos Center for Biomedical Imaging, USA; 2Harvard University, USA

MIC3-6 (15:45) Development of ClearPEM-Sonic: a Multimodal Positron Emission Mammograph and Ultrasound Scanner
B. Frisch, CERN, Switzerland
On behalf of the ClearPEM-Sonic collaboration

MIC4 Hadron Therapy 1

Wednesday, Oct. 26 14:30-16:00  VCC, Auditorium 2

Session Chairs: Hartmut F. F.-W. Sadrozinski, Santa Cruz Institute for Particle Physics, Univ. of California Santa Cruz, United States; Marco Silari, CERN, Switzerland

MIC4-1 (14:30) Post-Therapeutical β+-Activity Measurements in Comparison to Simulations Towards In-Vivo Verification of Ion Beam Therapy
D. Unholtz1, F. Sommerer1, J. Bauer1, D. van Straaten2, T. Haberer1, J. Debu1, K. Parodi1
1Heidelberg Ion-Beam Therapy Center, Germany; 2Fraunhofer MEVIS, Institute for Medical Image Computing, Germany

MIC4-2 (14:45) Measurement of the Carbon Ion Fragmentation with the FIRST Experiment at GSI
V. Patera, INFN, Italy
On behalf of the FIRST Collaboration

MIC4-3 (15:00) Ion Radiography: Measuring High Soft Tissue Contrast with an Amorphous Silicon Detector
J. Telsemeyer1,2, L. Huber1, O. Jaekel1,2,3, M. Martisikova1
1German Cancer Research Center (DKFZ), Germany; 2Heidelberg University Hospital, Germany; 3Heidelberg Ion-Beam Therapy Center, Germany

MIC4-4 (15:15) Imaging with Scattered or Secondary Radiation in Hadron Therapy Beams with the 3D Sensitive Voxel Detector
J. Jakubek, C. Granja, Institute of Experimental and Applied Physics of the Czech Technical University, Czech Republic; B. Hartmann, M. Martisikova, O. Jaekel, German Cancer Research Center, Germany; L. Opalka, FBME, Czech Technical University in Prague, Kladno, Czech Republic

MIC4-5 (15:30) In-Beam Imaging Performance of the Small OpenPET Prototype with 10C Beam Irradiation
T. Yamaya1, E. Yoshida1, Y. Nakajima2, S. Sato1, T. Inaniwa1, S. Kinouchi3, M. Sug1, F. Nishikido1, H. Tashima1, N. Inadama1, H. Murayama1
1National Institute of Radiological Sciences, Japan; 2Tokyo Institute of Technology, Japan; 3Chiba University, Japan

MIC4-6 (15:45) Application of the HICAM Camera for Imaging of Prompt Gamma Rays in Measurements of Proton Beam Range
R. Peloso1, P. Busca1, C. Fiorini1, M. Baslavcevich1, T. Frizzi1, D. Price1, J. Smeets2, F. Stichelbaut1, A. Benilov1, F. Roellinghoff1
1Politecnico di Milano, Dipartimento di Elettronica e Informazione, Italy; 2INFN, Sezione di Milano, Italy; XGLab, Italy; 3Ion Beam Applications S.A., Belgium; 4Department of Nuclear Metrology, Universiti Libre de Bruxelles, Belgium

MIC5 Hi-Res and Pre-Clinical Imaging 1

Wednesday, Oct. 26 16:30-18:30  VCC, Auditorium 1

Session Chairs: Robert S. Miyaoka, University of Washington, United States; Stefaan Vandenberghe, Ghent University, Belgium

MIC5-1 (16:30) Natural Feature Pose Measurement for Awake Animal Imaging
J. S. Goddard, Oak Ridge National Laboratory, USA
MIC5-2 (16:45) The Effect of Time Domain Pose Filtering on Accuracy of Small Marker Based Motion Correction in Awake Animal PET
A. Z. Kyme\textsuperscript{1}, J. Maclaren\textsuperscript{2}, S. R. Meikle\textsuperscript{1}, C. Baldock\textsuperscript{1}, R. R. Fulton\textsuperscript{1,3}
\textsuperscript{1}University of Sydney, Australia; \textsuperscript{2}University Medical Center Freiburg, Germany; \textsuperscript{3}Westmead Hospital, Australia

MIC5-3 (17:00) Slit-Slat Collimator Equipped Gamma Camera for Whole-Mouse SPECT-CT Imaging
L. Cao, J. Peter
German Cancer Research Center, Heidelberg, Germany

MIC5-4 (17:15) A Method for Measuring the Sub-Pixel Light Distribution of Scintillation Detectors with Digital SiPMs
P. M. Dueppenbecker\textsuperscript{1}, R. Haagen\textsuperscript{1}, S. Lodomez\textsuperscript{1}, P. K. Marsden\textsuperscript{2}, V. Schulz\textsuperscript{1,3}
\textsuperscript{1}Philips Research Europe, DE; \textsuperscript{2}King’s College London, UK; \textsuperscript{3}RWTH Aachen University, DE

MIC5-5 (17:30) Studies of Electrode Design for a Sub-mm Resolution 3-D Position Sensitive CZT PET Detector
Y. Gu, C. S. Levin, Stanford University, USA

MIC5-6 (17:45) Automatic Self Gating of Small-Animal PET from List-Mode Data
J. L. Herranz\textsuperscript{1}, J. J. Vaquero\textsuperscript{2}, M. Desco\textsuperscript{2,3,4}, L. Cusso\textsuperscript{3,4}, J. M. Udas\textsuperscript{1}
\textsuperscript{1}Universidad Complutense de Madrid, Spain; \textsuperscript{2}Universidad Carlos III de Madrid, Spain; \textsuperscript{3}Hospital General Universitario Gregorio Maran, Spain; \textsuperscript{4}Centro de investigacion biomedica en red en salud mental (CIBERSAM), Spain

MIC5-7 (18:00) In-Vivo Multiple-Probes Tracker Based on Astrophysical Gamma-Ray Detector Technologies
S. Takeda\textsuperscript{1}, H. Odaka\textsuperscript{2}, S.-N. Ishikawa\textsuperscript{2}, S. Watanabe\textsuperscript{2}, T. Takahashi\textsuperscript{2}, Y. Kanayama\textsuperscript{1}, M. Hiromura\textsuperscript{1}, S. Enomoto\textsuperscript{1}
\textsuperscript{1}RIKEN Center for Molecular Imaging Science, Japan; \textsuperscript{2}ISAS/JAXA, Japan

MIC5-8 (18:15) Instrumentation Setup for Simultaneous Measurement of Optical and Positron Labeled Probes in Mice
J. Peter, J. Schmitz, U. Christ, U. Haberkorn
German Cancer Research Center, Germany

MIC6 Simulation, Modeling and Detector Design
Wednesday, Oct. 26  16:30-18:30  VCC, Auditorium 2

Session Chairs: Craig L. Woody, Brookhaven National Lab, United States
Dennis R. Schaart, Delft University of Technology, Netherlands

MIC6-1 (16:30) Combined Effects of Pulse Pile-up and Energy Response in Energy-Resolved, Photon-Counting Computed Tomography
E. Roessl, K. J. Engel, A. Thran, R. Proksa
Philips Research Laboratories, Germany

MIC6-2 (16:45) Investigations on the Origin of the Darkfield Signal in X-Ray Talbot Interferometry

MIC6-3 (17:00) A Reaction-Diffusion Simulation Model of \textsuperscript{18}F-FDG PET Imaging for the Quantitative Interpretation of Cancerous Metabolism
Q. Wang, Z. Liu, S. I. Ziegler, K. Shi
Technische Universitaet Muenchen, Germany

MIC6-4 (17:15) Development and Validation of a Simulation Model for the Biograph mMR Whole-Body PET/MR Scanner
G. Delso, R. Kraus, X. Cheng, A. Martinez-Moeller, S. G. Nekolla, S. I. Ziegler, U/Juenchen, Germany

MIC6-5 (17:30) Simulations of the 4DMPET SiPM-Based PET Module
F. Pennazio\textsuperscript{1,2}, J. Barrio\textsuperscript{1}, G. Bisogni\textsuperscript{1,2}, P. Cerello\textsuperscript{2}, A. del Guerra\textsuperscript{1,2}, C. Lacasta\textsuperscript{1}, G. Gabriela Llosa\textsuperscript{1}, G. De Luca\textsuperscript{1}, G. Magazzu\textsuperscript{1}, C. Peroni\textsuperscript{1,2}, R. Wheadon\textsuperscript{1}
\textsuperscript{1}Università degli Studi di Torino, Italy; \textsuperscript{2}Istituto Nazionale di Fisica Nucleare, Italy; \textsuperscript{3}Istituto de Fisica Corpuscular (IFIC-CSIC/UV), Spain; \textsuperscript{4}Universita degli Studi di Pisa, Italy
MIC6-6 (17:45) Challenges of Image Generation for Tight Ring, Long Bore PET Scanners
K. Wangerin, H. Qian, R. Manjeshwar
GE Global Research, USA

MIC6-7 (18:00) Design and Initial Performance of PETbox4, a High Sensitivity Preclinical Imaging Tomograph
Z. Gu1, R. Taschereau1, N. T. Vu2, H. Wang1, D. L. Prout1, R. W. Silverman1, D. B. Stout1, M. E. Phelps1, A. F. Chatziioannou1
1UCLA, USA; 2Sofie Biosciences Inc., USA

MIC6-8 (18:15) Investigation of Timing Algorithms in a Parallel Signal Processing environment using data from multiple SSPM pixels for each event
C. J. Bircher, X. Sun, Y. Shao
University of Texas MD Anderson Cancer Center, USA
**Wednesday - RTSD Oral Presentations**

**R09 Imaging**

Wednesday, Oct. 26 08:30-09:55 VCC, Auditorium 3 A & B

Session Chair: Giuseppe Bertuccio, Politecnico di Milano, Italy

**R09-1 (08:30, invited)** High-Resolution CdTe Detectors and Application to Gamma-Ray Imaging  
T. Takahashi, ISAS/JAXA, Japan

F. Carrel1, S. Colas2, G. Ferrand1, E. Gaillard-Lecanu1, M. Gmar1, D. Hameau1, S. Jahan1, F. Laine1, A.-S. Lalleman1, C. Mahe1, S. Normand1, N. Saurel1, V. Schoepfl1  
1CEA, LIST, FRANCE; 2CEA, DAM VALDUC, FRANCE; 4CEA, DAM, DIF, FRANCE; 5EDF R&D, STEP, FRANCE; 6CEA, DTC/SDTC/LSTD, FRANCE

**R09-3 (09:10)** 8-Channel X-Ray Imaging with Medipix3  
S. Procz1, J. Luebke2, M. Pichotka1, E. Hamann3, A. Fauler1, A. Zwerger1, M. Mix2, M. Fiederle1  
1Universitaet Freiburg, Germany; 2Uniklinikum Freiburg, Germany; 3KIT, Germany

J. S. Iwanczyk1, E. Nygard2, J. C. Wessel2, N. Malakhov2, G. Wawrzyniak2, N. E. Hartsough1, J. E. Berry1  
1DxRay Inc., USA; 2Interon AS., Norway

**R09-5 (09:40)** The investigation of polycrystalline photoconductors for digital mammography and fluoroscopy  
K. Oh1, J. Shin1, Y. Lee1, K. Jang1, S. Kang2, G. Park1, S. Nam1  
1Inje University, Republic of Korea; 2International University, Republic of Korea

**R10 Applications of CdTe / CdZnTe Pixel Detectors**

Wednesday, Oct. 26 11:00-12:10 VCC, Auditorium 3 A & B

Session Chair: Michael Fiederle, Freiburger Materialforschungszentrum, Germany

**R10-1 (11:00, invited)** New Development on Polaris Gamma-Ray Imaging Spectrometer Systems  
The University of Michigan, USA

**R10-2 (11:20, invited)** Spectroscopic CT Imaging Using Medipix3  
A. P. H. Butler, University of Otago, New Zealand

**R10-3 (11:40)** X-Ray Beam Studies of Charge Sharing in Small Pixel, Spectroscopic, CdZnTe Detectors  
C. Allwork1, D. Kitou12, S. Chaudhuri1, P. J. Sellin12, P. Seller2, M. C. Veale1, N. Tartoni1  
1University of Surrey, United Kingdom; 2Science & Technologies Facilities Council, United Kingdom

**R10-4 (11:55)** Photo-Current Transients and High-Flux Polarization in CdZnTe Radiation Detectors  
M. Prokesch, H. Li, D. Bale  
Detection & Imaging Systems, a division of Endicott Interconnect Technologies, Inc., USA
<table>
<thead>
<tr>
<th>Session</th>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>R12-1</td>
<td>16:00</td>
<td>RTSD Scientist Award Presentation</td>
<td>R. B. R. James, Brookhaven National Laboratory, United States; E. Dieguez, Universidad Autonome de Madrid, Spain; M. Fiederle, Freiburger Materialforschungszentrum, Germany</td>
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<td>R12-2</td>
<td>16:05</td>
<td>Crossing the Chasm</td>
<td>C. Szles</td>
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<tr>
<td>R12-3</td>
<td>16:35</td>
<td>Efforts to Grow Uniform and Large-Volume CdZnTe and CdMnTe Detectors</td>
<td>K. H. Kim¹, A. E. Bolotnikov¹, G. S. Carmada¹, R. Tappero¹, Y. Cui¹, G. Yang¹, A. Hossain¹, R. Gul¹, J. Franc³, A. Marchini³, A. Zappettini³, R. B. James¹</td>
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<td></td>
<td>¹Brookhaven National Laboratory, USA; ²Charles University, Czech Republic; ³IMEM-CNR, Italy</td>
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<tr>
<td>R12-4</td>
<td>16:55</td>
<td>A Pixellated Cd(Zn)Te Spectroscopic Detector for X-Ray Applications below 200keV</td>
<td>M. D. Wilson¹, S. Bell¹, R. J. Cernik², C. Christodoulou², C. K. Egan², S. Jacques², S. Pani³, C. Reid³, J. W. Scruffham³, P. Seller³, P. J. Sellin³, R. D. Speller³, M. C. Veale¹</td>
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<td>¹STFC, UK; ²University of Manchester, UK; ³University College London, UK; ⁴University of Surrey, UK; ⁵Royal Surrey County Hospital NHS Foundation Trust, UK</td>
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<td>R12-5</td>
<td>17:10</td>
<td>Electric Field Distribution in CdTe and CZT Detectors under X-Ray Irradiation</td>
<td>A. Cola, A. Valletta, I. Farella, CNR, Italy</td>
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<tr>
<td>R12-6</td>
<td>17:25</td>
<td>Event Classification in 3D Position Sensitive Pixellated CdZnTe Detectors</td>
<td>W. Kaye, F. Zhang, Y. A. Boucher, W. Wang, J. C. Kim, Z. He University of Michigan, USA</td>
</tr>
<tr>
<td>R12-7</td>
<td>17:40</td>
<td>Crystal Growth and Characterization of CdZnTe for X-Ray and Gamma-Ray Detector Applications</td>
<td>W. Jie, Northwestern Polytechnical University, China</td>
</tr>
<tr>
<td>R12-8</td>
<td>17:55</td>
<td>TOF Measurements on Schottky Type CdTe Detectors</td>
<td>K. Suzuki, T. Sawada, K. Imai, Hokkaido Institute of Technology, Japan; S. Seto, Ishikawa National College of Technology, Japan</td>
</tr>
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Wednesday - NSS Poster Presentations

NP5.S Poster Session Detection Components

Wednesday, Oct. 26 11:00-13:00 Sorolla, Gran Recati

Session Chairs: Stefan P. Tavernier, Vrije Universiteit Brussel, Belgium
Jae Yu, Univ. of Texas Arlington, United States

NP5.S-2 Systematic Study of Scintillation Decay Time of 5d-4f Transition of Ce³⁺, Pr³⁺, and Nd³⁺ Activated Materials
T. Yanagida¹, Y. Fujimoto¹, N. Kawaguchi², K. Kamada¹, D. Totsuka¹, Y. Yokota¹, A. Yoshikawa¹
¹Tohoku University, Japan; ²Tokuyama, Japan; ³Nihon Kessho Kagaku, Japan

NP5.S-4 Performance Test of the Nd-Doped Lutetium Aluminum Garnet Single Crystal for X-Ray Imaging Applications
M. Sugiyama¹, Y. Fujimoto¹, T. Yanagida¹, D. Totsuka¹, Y. Yokota¹, A. Yoshikawa¹
¹IMR, Tohoku University, Japan; ²NICHe, Tohoku University, Japan; ³Nihon Kessho Kagaku Co., Ltd., Japan

NP5.S-6 Investigations of Optical and Scintillation Properties of Tm³⁺-Doped YAGCr³⁺
D. Totsuka¹, T. Yanagida¹, M. Sugiyama¹, Y. Fujimoto¹, Y. Yokota¹, A. Yoshikawa¹
¹IMR, Japan; ²Nihon Kessho Kagaku Co., LTD, Japan; ³NICHe, Japan

NP5.S-8 Lu-Free Highly Efficient Scintillator Ce:Gd₅(Ga,Al)₅O₁₂; the Effect of Elaboration Method on Scintillation Properties.
A. Yoshikawa¹, K. Kamada¹, T. Yanagida¹, Y. Fujimoto¹, Y. Futami¹, M. Sugiyama¹, S. Wakahara¹, S. Kurosawa¹, Y. Yokota¹, K. Yubuta¹, T. Shishido¹, M. Kikuchi¹, M. Nikl²
²IMR, Tohoku University, Japan; ³Materials Research Laboratory, Furukawa Co. Ltd., Japan; ⁴NICE, Tohoku University, Japan; ⁵Institute of Physics, AS CR, Japan

NP5.S-10 Scintillation Properties of Ce Doped (Lu,Gd)₃(Ga,Al)₅O₁₂ Single Crystal Grown by the Micro-Pulling-down Method
T. Endo¹, K. Kamada¹, T. Yanagida¹, K. Tsutsumi¹, Y. Usuki¹, M. Nikl³, Y. Fujimoto³, A. Fukabori³, A. Yoshikawa³
¹FURUKAWA CO., LTD., Japan; ²Tohoku University, Japan; ³Institute for Materials Research, Tohoku University, Japan

NP5.S-12 Growth and Scintillation Properties of Pr Doped (Lu,Y)₃(Ga,Al)₅O₁₂ Single Crystals
K. Kamada¹, T. Yanagida¹, T. Endo¹, K. Tsutsumi¹, Y. Usuki¹, M. Nikl³, Y. Fujimoto³, A. Fukabori³, A. Yoshikawa³
¹Furukawa Co., Ltd., Japan; ²Tohoku University, Japan; ³Institute of Physics, Czech Republic

NP5.S-14 Comparative Investigation of Charge Transfer Luminescence of Yb⁺⁺ in Ga₅O₅ Crystals with Several Concentrations using the Streak Camera System Equipped with Pulsed X-ray Source
Y. Fujimoto¹, T. Yanagida¹, A. Yamaji¹, M. Sugiyama¹, S. Wakahara¹, Y. Yokota¹, A. Yoshikawa¹
¹IMR, Tohoku University, Japan; ²NICHe, Tohoku University, Japan

NP5.S-16 Correlation Between Dislocation Density and Scintillation Properties in Pr:LuAG Single Crystals
A. Yamaji¹, T. Yanagida¹, Y. Yokota¹, K. Kamada³, A. Yoshikawa¹²
¹Institute for Materials Research, Tohoku University, Japan; ²New Industry Creation Hatchery Center, Tohoku University, Japan; ³Materials Research Laboratory, Furukawa Company Ltd, Japan

NP5.S-18 Growth and Scintillation Properties of Lu-Free Langasite-Type Crystals.
A. Yoshikawa¹, Y. Futami¹, T. Yanagida¹, Y. Fujimoto¹, S. Kurosawa¹, Y. Yokota¹, M. Sugiyama¹, S. Wakahara¹, M. Kikuchi¹, M. Nikl³
¹IMR, Tohoku University, Japan; ²NICHe, Tohoku University, Japan; ³Institute of Physics, AS CR, Czech Republic
NP5.S-20 Scintillation Properties of Ho:YAP Scintillator Using an APD
S. Kurosawa1, D. Totsuka2, M. Sugiyama1, T. Yanagida1, Y. Yokota1, A. Yoshikawa1
1Tohoku University, Japan; 2Nihon Kessho Kogaku Co., Ltd., Japan

NP5.S-22 The Effect of Europium Concentration on Luminescent and Detection Properties of Large SrI2:Eu2+ Scintillator Single Crystals
E. Tupitsyn1, P. Bhattacharya1, N. Cherpey2, S. Payne3, L. Boatner3, K. Shah1, A. Burger1
1Fisk University, USA; 2Lawrence Livermore National Laboratory, USA; 3Oak Ridge National Laboratory, USA; 4Radiation Monitoring Devices, Inc., USA

NP5.S-24 Study of Radiation Damage in SrI for 85Sr Based Betabatteries
N. M. Rensing, T. C. Tiernan, M. R. Squillante
Radiation Monitoring Devices, Inc., USA

NP5.S-26 Optical, Photoluminescence and Scintillation Properties of Pure and Eu2+ Doped SrI, Single Crystals
J. Chen1,2, S. Wang1
1Shanghai Institute of Ceramics, Chinese Academy of Sciences, China; 2Graduate University of Chinese Academy of Sciences, China

NP5.S-28 Development of Scintillator for Spectroscopy and X-Ray Imaging Applications
L. O. Alaribe1, C. Disch1, A. Fauler1, E. Keller2, A. Cecilia1, T. D. S. Rolo1, R. Engels3, M. Fiederle1
1FMF-Freiburger Materialforschungszentrum, Germany; “Kristallographisches Institut, Germany; 3Institut für Synchrtronstrahlung-ANKA, Germany;
4Forschungszentrum Jülich, Germany

NP5.S-30 Scintillation of LYSO Crystals Co-Doped with Ce, Ca, Sn
M. Korjik, A. Borisevich, V. Mechinski, RINP, Minsk, Belarus; A. Dosovitskiy, G. Dosovitskiy, A. Mikhlin, NeoChem, Russia

NP5.S-32 Impact of Co-Doping on Scintillation Properties of Lu2xGd2(1-x)SiO5:Ce (LGSO, X=0.9)
Y. Kurata, T. Usui, S. Shimuzu, N. Shimura, H. Ishibashi
Hitachi Chemical Co., Ltd. Yamazaki Works(Katsuta), Japan

NP5.S-34 Growth and Scintillation Properties of Bismuth Germanian Silicon Oxide (BGSO) Single Crystals
H. Kim, J. Hua, H. Park, U. Fawad, Kyoungook National University, Korea, Republic of; S. Kim, Cheongju University, Korea, Republic of; J. Cheon, Sorabol College, Korea, Republic of; G. Rooh, Abdul Wali Khan University, Pakistan

NP5.S-36 Preliminary Investigations of New Scintillators for Gamma-Ray Spectroscopy: Cs(Ba,Sr)(Br,I)3
U. Shirwadkar, E. V. van Loef, R. Hawrami, S. Mukhopadhyay, J. Glodo, K. Shah
Radiation Monitoring Devices, Inc., USA

NP5.S-38 Optical and Scintillation Properties of Cs4BaX4:Eu2+ (X = Cl, Br, I)
R. B. Borade, G. A. Bizarri, E. D. Bourret-Courchesne, S. E. Denerzio
Lawrence Berkeley National Laboratory, USA

NP5.S-40 Characterization of Nanocrystalline Gd2O3(Eu) Scintillator-Based CMOS Imaging Sensor for High-Resolution Neutron Imaging
B. K. Cha1, J. Y. Kim2, G. Cho2, T. Kim3, S. W. Lee3, C.-W. Seo1, S. Jeon1, J. Huh1
1KERI(Korea Electrotechnology Research Institute), Korea; 2KAIST, Korea; 3KAERI, Korea

NP5.S-42 Scintillation Properties of Nd4+ Doped KCaF3 in the Vacuum-Ultraviolet Region
N. Kawaguchi1,2,3, T. Yanagida4, Y. Futami5, Y. Fujimoto5, K. Fukuda6, S. Kajimoto5, Y. Fukumura5, Y. Yokota7, A. Yoshikawa8
1Tokyo University, Japan; 2IMR, Tohoku Univ., Japan; 3Tohoku Univ., Japan; 4NICH, Tohoku Univ., Japan

NP5.S-44 Growth and Scintillation Properties of (Zn,Mg)O Single Crystalline Film
A. Yoshikawa1,2, T. Yanagida3, Y. Fujimoto1, S. Kurosawa1, M. Sugiyama1, S. Wakahara1, Y. Yokota1, Y. Futami1, M. Kikuchi1, M. Miyamoto1, H. Sekiwa1, M. Nikl1
1IMR, Tohoku University, Japan; 2NICH, Tohoku University, Japan; 3Mitsubishi Gas Chemical Co., Inc., Japan; 4Institute of Physics ASCR, Czech Republic
Crystal Growth and Characterization of Rare-Earth Doped Na2CaLu2F10
S. Wakahara1, Y. Furuya1, T. Yanagida2, Y. Yokota1, M. Sugiyama1, A. Yoshikawa1,2
1Institute for Materials Research, Japan; 2New Industry Creation Hatchery Center (NICHe), Japan

Comparative Characterization of ZnSe Based Scintillators Applicable for Multienergy X-Ray Equipments
S. M. Galkin, V. D. Ryzhikov, E. F. Voronkin, I. A. Breslavkiy, O. I. Lalaian
Institute for scintillation materials, Ukraine

First-principles studies of Luminescence and Scintillation properties of the Eu doped Ba/Sr/Te/S family of binary compounds
S. T. Chourou, A. Canning, S. Derenzo, IEEE Fellow
Lawrence Berkeley National Laboratory, USA

Evaluation of Ceramic Pr:LuAG Scintillator with Different Pr Content
T. Yanagida1, Y. Fujimoto1, K. Kamada1, H. Yagi1, T. Yanagitani2, Y. Yokota1, A. Yoshikawa1
1Tohoku University, Japan; 2Konoshima Chemical, Japan

Dopant Segregation in Czochralski Grown Rare-Earth-Ion Doped LiCaAlF4: Single Crystal for Thermal Neutron Detection
N. Kawaguchi1,2,3, T. Yanagida4, Y. Futami5, Y. Fujimoto6, A. Yamazaki7, K. Watanabe8, Y. Fukuda9, S. Kajimoto10, Y. Fukumura11, Y. Yokota12, A. Yoshikawa13
1Tokuyama corp., Japan; 2IMR, Tohoku Univ., Japan; 3Tohoku Univ., Japan; 4NICHe, Tohoku Univ., Japan; 5Nagoya Univ., Japan

6LiF-SrxCa1-xF2 Doped with Ce and Eu Eutectic Scintillator for Neutron Detection
T. Yanagida1, K. Fukuda2, Y. Fujimoto3, N. Kawaguchi4, A. Yoshikawa3
1Tohoku University, Japan; 2Tokuyama, Japan; 3Nagoya University, Japan

Crystal Growth of Ce Doped LiYF4: Single Crystal by Cz Method and the Scintillation Properties
Y. Yokota1, A. Yamaji1, T. Yanagida2, Y. Futami2, N. Kawaguchi3, K. Watanabe5, A. Yoshikawa2,3
1Institute of Materials Research, Tohoku University, Japan; 2New Industry Creation Hatchery Center (NICHe), Tohoku University, Japan; 3Tokuyama Corporation, Japan; 4General Physics Institute, Russian Federation

Optical and Scintillation Properties of Pure, Cu-, and Zn-Doped LiAlO2 Single Crystals
Y. Fujimoto1, T. Yanagida2, Y. Yokota1, N. Kawaguchi3, K. Fukuda4, D. Totsuka5, K. Watanabe6, A. Yamazaki7, A. Urilani8, T. Iguchi9, A. Yoshikawa7,1
1IMR, Tohoku University, Japan; 2NICHe, Tohoku University, Japan; 3TOKUYAMA Corp., Japan; 4NIHON KESSHO KOGAKU CO., LTD., Japan; 5Nagoya University, Japan

The Neutron Detection Properties of Li6Re(BO3)3:Ce (Re=Y,Gd,Lu) Crystals
F. Yang, S. K. Pan, D. Z. Ding, H. Y. Li, G. H. Ren
Shanghai Institute of Ceramics, CAS, China

Behavior of Cs2LiYCl6:Ce Scintillator up to 175 C
P. R. Menge, Saint-Gobain Crystals, USA; D. Richaud, Saint-Gobain Crystals, France

Crystal Growth and Scintillation Properties of Cs2LiYCl6:Ce (CLYC) for Gamma Ray and Neutron Detection
Radiation Monitoring Devices, Inc., USA
T. Shimaoka, T. H. Kaneko, Y. Tsubota, M. Higuchi, S. Nishiyama, H. Ishibashi, F. Fujita
Hokkaido University, Japan; Hitachi chemical Ltd., Japan

NP5.S-70 GSO(Ce) Scintillator as a Detector of Thermal Neutrons
L. Iwanowska, L. Swiderski, M. Moszynski, Soltan Institute for Nuclear Studies, Poland; J. Milczarek, Institute of Atomic Energy POLATOM, Poland

C. C. Lawrence, A. Enqvist, M. Ojaruega, V. Flaska, S. D. Clarke, S. A. Pozzi, F. D. Becchetti
University of Michigan, United States

NP5.S-74 Simulation of the Pulse-Height Spectra of the Heterogeneous Scintillation Detectors
I. Kilimchuk, Institute of Magnetism NAS of Ukraine, Ukraine; L. Andryushchenko, V. Tarasov, I. Vlasova, L. Voloshina, Institute for Scintillation Materials NAS of Ukraine, Ukraine

NP5.S-76 Development of Thin and High-Aspect-Ratio Scintillator with Designed Surface Profile
H. Hayakawa, J. Kawarabayashi, H. Tomita, T. Iguchi
Department of Quantum Engineering, Graduate School of Engineering, Nagoya University, Japan

NP5.S-78 A Timing Resolution Model for Scintillating Fibers
P. Zugec
Department of Physics, Faculty of Science, University of Zagreb, Croatia

I. Pinera Hernandez, Y. Abreu Alfonso, A. Diaz Garcia, P. Van Espen, A. Leyva Fabelo, C. M. Cruz Inclan
Center of Technological Applications and Nuclear Development, Cuba; Micro and Trace Analysis Centre, University of Antwerp, Belgium

NP5.S-82 Plastic Scintillator for Alpha-Particles Registration
A. F. Adadurov, P. N. Zhmurin, V. N. Kovalenko, V. N. Lebedev
Institute for Scintillating materials, Ukraine

NP5.S-84 Scintillation Spectrometers Based on Bright Scintillators and Solid-State Photosensors
K. S. Shah, J. Glodo, S. Mukhopadhyay, U. Shirwadkar, P. Dokhale
Radiation Monitoring Devices, Inc., USA

NP5.S-86 Plastic Scintillator Dosimetry in Radiology Applications
C. H. Oliveira, F. Rego, M. C. Abreu, Laboratorio de Instrumentacao e Fisica Experimental de Particulas, Portugal; L. Peralta, Universidade de Lisboa, Portugal

P. Sibczynski, M. Moszynski, T. Szczesniak, W. Czarnacki, L. Swiderski, Soltan Institute for Nuclear Studies, Poland; P. Schotanus, Scionix Holland B.V., The Netherlands

NP5.S-90 Growth of Tungstate and Molybdate Scintillation Crystals for Detection of Rare Events Search
E. N. Galashov, V. N. Shlegel, Y. G. Vasiliev, NIIC SIB RAS, Russia; Y. G. Stenin, V. N. Zhdknov, CML Ltd., Russia; A. E. Dossovitskii, Joint Stock Company NeoChem, Russia; F. A. Danevich, Institute for Nuclear Research, Ukraine

NP5.S-92 Evaluation of Resolution and Nuclide Identification Performance of Large Volume CeBr3 Scintillation Crystals
F. Bronson, L. Hau, C. Herman, P. L. Leblanc, D. Nakasawa, W. Russ, P. Schotanus, B. Young
Canberra Inc., USA; Scionix Inc., Netherlands

NP5.S-94 Performance Comparison of Small GYGAG (Ce) and CsI(Tl) Crystals with PIN Detectors
J. Kindem, R. Conwell, Digirad, USA; N. J. Cherepy, S. A. Payne, Lawrence Livermore Laboratory, CA
NP5.S-96 An Investigation of Lu1.8Gd0.2SiO5:Ce (LGSO) Phoswich Crystal Identification by Digital Methods
M. Bergeron, C. M. Pepin, J. Clerk-Lamalice, C. Thibaudeau, R. Fontaine, R. Lecomte
Universite de Sherbrooke, Canada

NP5.S-98 Assessment of LaBr3 (Ce) Scintillators System for Measuring Nuclear Resonance Fluorescence Excitations near 2 MeV.

NP5.S-100 Scintillation Properties and Imaging Performance of CsI:Tl Scintillator for X-Ray Imaging System
Y. Kim1, J. Kim2, H. Kim3, K. Kim4, Gh. Cho2
1NanoFocusRay, south korea; 2, 3

NP5.S-102 Performance Study of a Planar LaBr3 Detector in the Very Low Gamma Energy (3 to 200-keV) Range
M. L. Lombardi1,2, A. Favalli1, K. D. Iainakiev1
1Los Alamos National Laboratory, USA; 2University of New Mexico, USA

NP5.S-104 Cherenukov Light Readout with a SiPM on Small Tiles
E. Garutti, DESY, Germany; S. Jungmann, University of Heidelberg, Germany

NP5.S-106 Studies for the Mass Production of Scintillator Tiles with Direct SiPM Readout for Imaging Calorimeters
E. Garutti1, J. Ninkovic2,3, S. Pflau4, E. Simon2,3, C. Soldner2,4
1DESY, Germany; 2Max-Planck-Institute for Physics, Germany; 3Semiconductor Laboratory of the Max-Planck-Society, Germany; 4Excellence Cluster ’Universe’, TU Munich, Germany

NP5.S-108 Scintillation Detector Prototype for Thermal Neutrons with Wavelength Shifting Fiber Readout
R. Engels1, U. Clemens1, A. Houben2, G. Kemmerling1, S. Mueskes1, W. Schweika1, J. Schelten1
1Forschungszentrum Juelich GmbH, Germany; 2RWTH Aachen, Germany

NP5.S-110 Development of a Position Sensitive Thermal Neutron Detector for Large Area Coverage in Inelastic Scattering Instruments
E. D. Ellis, J. Hayward, University of Tennessee, USA; Y. Diawara, R. Cooper, L. Clonts, N. Donahue, B. Hannon, J. Richards, T. Visscher, C. Moncalm, Spallation Neutron Source, Oak Ridge National Laboratory, USA

NP5.S-112 Reducing the Number of Segment Detectors in a Current Mode "transXend" Detector for Application in the Third Generation X-Ray Computed Tomography
I. Kanno, R. Imamura, Y. Minami, Kyoto University, Japan; M. Ohtaka, M. Hashimoto, K. Ara, Japan Atomic Energy Agency, Japan; H. Onabe, Raytech Corporation, Japan

NP5.S-114 sCVD Diamond Photo-Detectors in UV Region
L. Periale1, S. Bizzaro2, G. Gervino3, A. Lamarina1, C. Palmisano3, R. Periale1, P. Picchi4
1Ifsi-Inaf, Italy; 2brevetti-bizz, Italy; 3University of Torino, Italy; 4Inf-infn, Italy

NP5.S-116 Test Results of Multi Channel Readout System for High Performance Scintillation Imaging
A. Fabbri1, V. Cencelli1, R. Pani2, P. Bennati2, M. N. Cinti2, R. Pellegrini2, F. Perulla1, G. De Vincentis1, F. de Notaristefani1
1INFN - Universita Roma Tre, Italy; 2INFN - Universita La Sapienza, Italy; 1INFN - Universita La Sapienza, Italy

NP5.S-118 Anomalous Gain Drop Effects in Hamamatsu 3998-01 Photomultiplier
C. Plettner, F. Scherwinski, G. Pausch, A. Birker, Y. Kong, R. Lentering, J. Stein, FLIR Radiation GmbH, Germany

NP5.S-120 Aging and Time Resolution Measurements for the Hamamatsu R7600 Multi-Anode Photomultiplier Tube
M. Maino, M. Calvi, A. Giachero, C. Gotti, C. Matteuzzi, A. Millefanti, G. Pessina
INFN Milano Bicocca, Italy
NP5.S-122 4H-SiC Schottky Photodiodes for Ultraviolet Light Detection
M. Mazzillo, STMicroelectronics, Italy; A. Sciuto, F. Roccaforte, V. Raineri, CNR, Italy

NP5.S-124 Development of Large Aperture Hybrid Avalanche Photo-Detector System
T. Abe, H. Aihara, University of Tokyo, Japan; M. Tanaka, High Energy Accelerator Research Organization, Japan; Y. Kawai, H. Kyushima, M. Suyama, Hamamatsu Photonics K.K., Japan

NP5.S-126 Signal Conditioning Technique for Position Sensitive Photodetectors to Manipulate Pixelated Crystal Identification Capabilities
F. W. Y. Lau, P. D. Reynolds, A. Vandenbroucke, H. Ho, C. S. Levin Stanford University, U.S.A.

NP5.S-128 Epitaxial Approach for Silicon Avalanche Photodiode Performance Improvements
M. McClish, R. Farrell, K. S. Shah Radiation Monitoring Devices, Inc., USA

NP5.S-130 Improvement of Multi-Pixel Photon Counter (MPPC)
T. Nagano, K. Sato, K. Yamamoto Hamamatsu Photonics K.K., Japan

NP5.S-132 Dynamic Range of $C_q$ Integrated SiPM
C. Lee1, H. Kim1, C. Kim2, J. H. Bae2, J. Kim1, D.-U. Kang1, H. Yoo1, M. Cho1, D. H. Lee3, M. Kim1, W. S. Sul1, G. Cho1
1Korea advanced institute of science and technology; Korea; 2National Nano Fab Center, Korea

NP5.S-134 High Performance Geiger Photodiodes in Small Feature Size CMOS Technology

M. N. Cinti1,2, R. Pani1,2, P. Bennati2, R. Pellegrini1,2, R. Scafe1, A. Fabbri1,2, S. Ridolfi1
1”Sapienza” University of Rome, Italy; 2INFN, Italy; 3”Roma Tre” University of Rome, Italy

W.-S. Choong, M. M. Rahman, S. E. Holland Lawrence Berkeley National Laboratory, U.S.A.

NP5.S-140 Pulse Shape and Other Electrical Characteristics of Silicon Photomultipliers
A. Para, P Rubinov, Fermilab, USA; I. Vasilas, University of Cyprus, Cyprus

NP5.S-142 Radiation-Induced Changes in Electrical Properties on Pixelated Photon Detector (PPD)
T. Matsumura, National Defense Academy in Japan, Japan

NP5.S-144 A Front-End ASIC for a Silicon Avalanche Photodiode Linear Array Detector for Synchrotron X-Ray Experiments
S. Kishimoto1, S. Shimazaki1, M. Ikeno1, M. Saito1, T. Taniguchi1, M. Tanaka1
1High Energy Accelerator Research Organization, Japan; 2Okayama University, Japan

NP5.S-146 Increasing the Sensitive Area of Silicon Photomultiplier by Using Light Concentrators
R. de Asmundis1, G. Barbarino1, G. De Rosa2, C. M. Mollo1, S. Russo1, D. Vivolo1
1Istituto Nazionale di Fisica Nucleare, Napoli, Italy; 2Universita’ di Napoli, Italy

F. Corsi, C. Marzocca, G. Matarrese Politecnico Di Bari, Italy
NP5.S-150 2x2 MPPC Arrays in Gamma Spectrometry with CsI(Tl), LSO:Ce(Ca), LaBr3
M. Grodzicka, M. Moszyński, T. Szczęśniak, M. Szawłowski, D. Wolski, Soltan Institute for Nuclear Studies, Poland; J. Baszak, Hamamatsu Photonics Deutschland GmbH, D-82211, Germany

NP5.S-152 Monte Carlo Simulation of Silicon Photomultiplier Output in Response to Scintillation Induced Light
A.K. Jha, M. A. Kupinski, University of Arizona, United States; H. T. van Dam, Delft University of Technology, The Netherlands

NP5.S-154 Timing Methods for Monolithic Scintillator Detectors Based on Digital SiPM Arrays
H. T. van Dam, S. Seifert, G. J. van der Lei, D. R. Schaart, Delft University of Technology, The Netherlands

NP5.S-156 Generalization of the Modeling and Design Consideration of Spiral Si Drift Detectors
Z. Li, Brookhaven National Lab, USA

NP5.S-158 Development of a Thin-Window, Radiation-Hard, N-Type, Hexagonal-Spiral, Silicon Drift Detector for an Extraterrestrial X-Ray Spectrometer
W. Cheng¹, G. A. Carini¹, G. De Geronimo¹, J. A. Gaskin², J. Keister¹, S. Li¹, Z. Li¹, B. D. Ramsey², P. Rehak¹, D. P. Siddons¹, G. Smith¹, E. Verbitskaya²
¹Brookhaven National Lab, USA; ²NASA/MSFC/National Space Science and Technology Center, USA; ³Ioffe Physico-Technical Institute of Russian Academy of Sciences, Russia

NP5.S-159 Monte Carlo Calculation of Silicon Photomultiplier Output in Response to Scintillation Induced Light
A.K. Jha, M. A. Kupinski, University of Arizona, United States; H. T. van Dam, Delft University of Technology, The Netherlands

NP5.S-160 DRSS4 Readout for High Time Resolution of Detectors Based on Silicon Photomultipliers.
A. I. Ronzhin, M. Albrow, S. Los, E. Ramberg, Fermi National Accelerator Laboratory, USA; A. Zatserklyaniy, University of Puerto Rico, USA; H. Kim, University of Chicago, USA; M. Mazzillo, B. Carbone, G. Condorelli, G. Fallica, A. Piana, D. Sanfilippo, G. Valvo, STMicroelectronics, Italy

NP5.S-162 Threshold Equalization Optimization for a Large Area Photon-counting Medipix3-based Detector
E. N. Gimenez¹, J. Lipp¹, N. Tartoni¹
¹Diamond Light Source, United Kingdom; ²Science and Technology Facilities Council, United Kingdom

NP5.S-164 Performance Study of Monolithic Pixel Detectors Fabricated with FD-SOI Technology
T. Miyoshi, Y. Arai, R. Ichimiya, Y. Ikemoto, High Energy Accelerator Research Organization (KEK), Japan; A. Takeda, the Graduate University for Advanced Studies (SOKENDAI), Japan

NP5.S-166 Detection of Soft X-Rays Using Hybrid Semiconductor Pixel Detector Timepix Operated as a High Sensitive Dark-Current Free CCD-like Camera
F. Krejci, M. Kroupa, J. Jakubek, IEAP, Czech Republic; P. Bruza, FBME, Czech Republic

NP5.S-168 Camera Head of the DSSC X-Ray Imager
K. Hansen, H. Klaer, Deutsches Elektronen-Synchrotron DESY, Germany; D. Muentefering, Max-Planck-Institut fuer extraterrestrische Physik MPE, Germany

NP5.S-170 Improving and Characterising the Threshold Equalisation Process for Multi-Chip Medipix3 Cameras in Single Pixel Mode
M. E. Walsh¹, J. L. Mohr², R. M. Doesburg³, R. Ballabriga¹, A. P. H. Butler¹, P. Butler²
¹University of Otago, New Zealand; ²University of Canterbury, New Zealand; ³Organisation Européene pour la Recherche Nucléaire (CERN), Switzerland


NP5.S-174 Energy Calibration of Pixel Detector Working in Time-over-Threshold Mode Using Test Pulses
D. Turecek, J. Jakubek, IEAP CTU, Czech Republic
NP5.S-176 Low Material Budget Silicon Avalanche Detectors
V. Saveliev, N. D'Ascenzo
National Research Nuclear University, Russia

NP5.S-178 Development of Radiation Sensor Based on Pt/ZnO Schottky Diode
S. Narita, Y. Nishibori, H. Naito, Iwate University, Japan; H. Endo, T. Chiba, Iwate Industrial Research Institute, Japan; Y. Sakemi, M. Itoh, H. Yoshida, Tohoku University, Japan

E. P. Kisteney, Brookhaven National Laboratory, USA
On behalf of the PHENIX Collaboration

NP5.S-182 An Investigation of Single-Crystal PbTe for Nuclear Radiation Detector Applications
G. Kim, M. D. Hammig, University of Michigan, USA

NP5.S-184 Simulation and Test of a New Microdosimeter Based upon Single Crystal Diamond
E. P. Kistenev, Brookhaven National Laboratory, USA
On behalf of the PHENIX Collaboration

NP5.S-186 Growth and Characterization of Li Ternary Compounds for Solid-State Neutron Detection
B. W. Montag, K. R. Arpin, S. Browning, H. McDonald, M. Reichenberger, D. S. McGregor
Kansas State University - S.M.A.R.T Laboratory, USA

NP5.S-188 Recent Developments on HPGe and Si(Li) Detectors for X- and Gamma-Ray Spectroscopy and Imaging
Canberra France, France

NP5.S-190 Investigation of CdZnTe Pixelated Detector Performance for Photon Counting, Spectral X-Ray Medical Imaging Applications
M. E. Myronakis, M. Zvelebil, D. G. Darambar
Institute of Cancer Research, UK

NP5.S-192 EBIC Characterization of Thin-Film on ASIC Particle Detectors
A. Franco, Y. Riesen, N. Wyrsh, M. Despeisse, C. Ballif
Ecole Polytechnique Federale de Lausanne (EPFL), Switzerland

NP5.S-194 Mapping of the Response Function of DePFET-Based Pixel Sensors at Different Levels of Charge Injection
A. Castoldi1,2, C. Guazzoni1,2, P. Lechner1, D. Mezza1,2, G. Montemurro1,2, L. Carraresi1,2, F. Taccetti1
1Politecnico di Milano, Italy; 2INFN, Italy; 3PNSensor GmbH, Germany; 4Universita' degli Studi di Firenze, Italy

NP5.S-195 The Anode Reset Mechanism of the eROSITA X-Ray pnCCD
J. Elbs1,2
1MPI Halbleiterlabor, Germany; 2Max-Planck Institut fuer extraterrestrische Physik, Germany

NP5.S-196 Multiscale Modeling of Radiation Damage and Annealing in Si Samples Implanted with 57-Mn Radioactive Ions
Y. Abrun1, C. M. Cruz1, P. Van Espen2, I. Piner1, A. Leyva1, A. E. Cabal1
1Center of Technological Applications and Nuclear Development (CEADEN), Cuba; 2University of Antwerp, Belgium

NP5.S-197 Effects of Gap Width on High-Purity Germanium Double-Sided Strip Detector Performance
D. L. Campbell1, L. C. Johnson1, E. Hull2, T. E. Peterson1
1Vanderbilt University, USA; 2PHDs Co, USA

NP5.S-198 A New Algorithm for Electron Track Trajectory Reconstruction for Compton Imaging
B. C. Plimley1, A. Coffer1, D. Chivers1, K. Vetter1,2
1UC Berkeley, USA; 2Lawrence Berkeley National Laboratory, USA
NP5.S-199 The Low-Mass Drift Chamber System of the MEG Experiment
M. Hildebrandt, Paul Scherrer Institut, Switzerland
On behalf of the MEG Collaboration

NP5.S-200 Test of Spatial Resolution and Trigger Efficiency of a Combined Thin Gap and Fast Drift Tube Chambers for High-Luminosity LHC Upgrades
G. Bella1, Y. Benhammou1, B. Bitter2, J. Dubbert3, E. Duchovni1, E. Etrion1, A. Klier3, H. Kroha2, N. Lupu4, G. Mikenberg3, D. Milstein1, Y. Munwes1, O. Sasaki1, P. Schwegler2, M. Shoa2, V. Smakhtin3
1Raymond and Beverly school of Physics and Astronomy, Tel Aviv University, Israel; 2Max-Plank-Institut fur Physik, Germany; 3Weizmann Institute of Science, Israel; 4Technion Israel Institute of Technology, Israel; 5KEK, High Energy Accelerator Research Organization, Japan

NP5.S-201 A Microstrip Ion Chamber for Hard X-Ray Imaging at Synchrotron Light Sources
O. Ruebsamen1, W. Leitenberger2, U. Pietsch1, H. W. Schenk1, A. H. Walenta1
1University of Siegen, Germany; 2University of Potsdam, Germany

NP5.S-202 Properties of Swarm Parameters in Pure Isobutane
J. B. Lima1, T. C. Vivaldini1, A. Mangiarotti2, J. A. C. Goncalves1,3, S. Botelho3, P. Fonte2, C. C. Bueno1,3
1IPEN-CNEN/SP, Brazil; 2LIP-Coimbra, Portugal; 3PUC-SP, Brazil

NP5.S-203 A Low-Mass Multi-Sampling Ionization Chamber for Fission Studies
B. Voss, C. Kaya, J. Kunkel
GSI Helmbolzcentrum fuer Schwerionenforschung GmbH, Germany

NP5.S-204 Optimization of Proportional Counters for High Count Rates
K. Chung, K. D. Ianakiev, M. Illiev, H. Nguyen, Los Alamos Nat. Lab., USA

NP5.S-205 Time Resolution of Small Size RPC Prototypes for Relativistic Ions
C. Paradela1, Y. Ayyad1, J. Benlliure1, E. Casarejos2, I. Duran1, N. Montes1, J. R. Pereira1
1Universidad de Santiago de Compostela, Spain; 2Universidad de Vigo, Spain

NP5.S-206 Long Term Validation of the Optimal Filters Configuration for the Resistive Plate Chambers Gas System at the Large Hadron Collider Experiments
R. Guida1, M. Capeans1, F. Hahn1, S. Haider1, B. Mandelli1,2
1CERN, Switzerland; 2University of Pavia, Italy

NP5.S-207 Pattern Recognition with Silicon Photomultipliers for Neutrinoless Double Beta Decay with a Xenon TPC (NEXT)
M. Ball, Instituto di Fisica Corpuscolar (IFIC), Spain
On behalf of the NEXT Collaboration

NP5.S-208 Stability and Calibration of the Analog RPC Readout in ARGO-YBJ
S. Mastroianni, INFN, Italy, On behalf of the ARGO-YBJ Collaboration

NP5.S-209 The Fission TPC Project
M. Heffner, Lawrence Livermore National Laboratory, USA
On behalf of the NIFFTE Collaboration

NP5.S-210 Prototype Development of a Gem-Tpc for the Super-FRS of the FAIR Facility
F. Garcia1, M. Pitka2, R. Janik3, P. Strmen3, J. Heino1, R. Lauhakangas1, R. Turpeinen1, E. Tuominen1, B. Sitara1
1Helsinki Institute of Physics and Department of Physcial Sciences, University of Helsinki, Finland; 2Comenius University, Slovakia

NP5.S-211 Energy Resolution at the Statistical Limit from a Negative Ion Time Projection Chamber
P. Sorensen, A. Bernstein, M. Heffner, Lawrence Livermore National Laboratory, USA; J. Renner, Lawrence Berkeley National Laboratory, USA

NP5.S-212 Experimental Determination of the Electroluminescence Yield in GEMs and THGEMs Operating in Gaseous Argon and Xenon
C. M. B. Monteiro1, L. M. P. Fernandes1, J. F. C. A. Veloso1,2, J. M. F. dos Santos1
1CI, University of Coimbra, Portugal; 2I3N, University of Aveiro, Portugal
NP5.S-213 Tracking with Straw Tubes in the PANDA Experiment
G. Boca¹, S. Costanza¹, P. Gianotti¹, M. Idzik¹, S. Jowzaee¹, M. Kajetanowicz¹, A. Kashchuk¹, G. Kercyl¹, K. Kozlov³, L. Lavezzi¹, O. Levitskaya⁵, V. Lucherini², H. Ohm⁶, S. Orfanitski⁶, M. Mertens⁶, E. Pace², K. Pysz², D. Przyborowski³, J. Ritman⁶, A. Rotondi¹, P. Salabura¹, M. Savrie⁸, V. Serydijk¹, J. Smyrski², P. Wintz⁶, P. Montagna¹
¹Pavia University and INFN, Italy; ²INFN, Italy; ³AGH University of Science and Technology, Poland; ⁴Jagiellonian University, Poland; ⁵PNPI, Russia; ⁶Forschungszentrum Jülich, Germany; ⁷Ferrara University and INFN, Italy; ⁸PAN, Poland

NP5.S-214 Experimental Measurement of H3+, H5+, D3+ and D5+ Mobilities in Their Parent Gases
P. N. B. Neves¹, J. Escada², F. I. G. M. Borges², L. M. N. Tavora³, C. A. N. Conde²
¹ATP Group, Portugal; ²LIP Coimbra, Portugal; ³ESTG - Instituto Politecnico de Leiria, Portugal

NP5.S-215 Mobilities and Diffusion Parameters of Xe+ Ions in Xe-Ne Mixtures
J. A. S. Barata¹,², C. A. N. Conde²
¹Universidade da Beira Interior, Portugal; ²Universidade de Coimbra, Portugal

NP5.S-216 Characterizing Discharge Protection and Improving Drift Time Resolution for Gridpix
M. Fransen, N. V. Bakel, H. V. D. Graaf, F. Hartjes, W. Koppert, J. Timmermans, J. Visser, R. Kluft, V. Gromov, F. Zappon, Nikhef, Netherlands; V. Blanco Carballo, J. Schmitz, university of Twente, Netherlands; Y. Bilevych, University of Bonn, Germany

NP5.S-217 New Concept for an Ion-Backflowless HEP TPC based on Electroluminescence (EL)
M. Ball, Technical University Munich, Germany

NP5.S-218 The Electroluminescence Yield and Fluctuations in Xe and in Xe Doped with CH4 or CF4: a Comparative Study Between Planar and Cylindrical Geometries
J. Escada¹, T. H. V. T. Dias¹, P. J. B. M. Rachinhas², F. P. Santos³, F. I. G. M. Borges¹, C. A. N. Conde², A. D. Stauffer³
¹Universidade de Coimbra, Portugal; ²Hospitais da Universidade de Coimbra, Portugal; ³York University, Canada

NP5.S-219 GEM Imaging Detector Based on FET Array Readout
Y. Li¹, Z. Deng¹, X. Zheng¹, G. Gong¹, H. Gong¹, Z. Deng¹, D. He¹, Y. Li¹
¹Tsinghua University, China; ²Nuctech Co. Ltd, China

NP5.S-220 Electroluminescence Properties in Micropattern Gaseous Detectors: a Simulation Study Considering Charging-up Effect
C. A. B. Oliveira¹, P. M. M. Correia¹, R. Veenhof², A. L. Ferreira¹, J. F. C. A. Veloso¹
¹i3N, Portugal; ²CERN, Switzerland

NP5.S-221 Construction and Performance of Large Area Triple-GEM Prototypes for Future Upgrades of the CMS Forward Muon System
M. Maggi, S. Tuppiti, INFN/University Bari, Italy; Y. Ban, J. Cai, H. Teng, Peking University, China; A. Gutierrez, P. E. Karchin, Wayne State University, USA; L. Benussi, S. Bianco, S. Calafranceschi, INFN-IFNI Frascati, Italy; D. Abbaneo, S. Bally, J.-P. Chatelin, A. Conde Garcia, E. David, R. De Oliveira, S. Duarte Pinto, S. Ferry, H. Postema, A. Rodrigues, L. Ropelewski, A. Sharma, CERN, Switzerland; A. Marinov, M. Tergat, N. Zagandis, Ghent University, Belgium; K. Gnanvo, M. Hollmann, Florida Institute of Technology, USA; G. Magazzu, E. Oliveri, A. Scribano, N. Turini, INFN Pisa (Siena), Italy; K. Bunkowski, T. Fruboes, Warsaw University, Poland

NP5.S-222 Monte Carlo Simulation of the Low-Energy Nuclear Quench Factor and Ionization Yield in Liquid Argon
M. Foxe¹,², C. Hagmann¹, I. Jovanovic¹
¹The Pennsylvania State University, USA; ²Lawrence Livermore National Laborator, USA
NP5.S-223 A Novel Ionization Chamber for High Doses at Industrial Gamma Irradiation Facilities.
F. J. Ramirez-Jimenez, Instituto Nacional de Investigaciones Nucleares, Mexico; Y. B. Alcantara-Perez, Instituto Politecnico Nacional, Mexico

NP5.S-224 Commissioning and Operation of the CF4 Recuperation Plant for the Cathode Strip Chambers Detector at the CERN Compact Muon Solenoid Experiment
R. Guida, M. Capeans, F. Hahn, S. Haider, CERN, Switzerland

NP5.S-225 A Common Analysis Station for the Gas Systems of the Compact Muon Solenoid Experiment at the Large Hadron Collider
R. Guida, M. Capeans, F. Hahn, S. Haider, CERN, Switzerland; E. Focardi, University fo Florence, Italy

NP5.S-226 X-Ray Spectroscopy with Photon Counting Imaging Detectors such as Timepix
P. Sievers1,2, T. Schneider1, G. Anton1, T. Michel2
1Physikalisch-Technische Bundesanstalt (PTB), Germany; 2University of Erlangen-Nurenberg, Germany

NP5.S-227 Precision Gas Monitoring of the ATLAS Muon Spectrometer During LHC Running
N. Amram1, R. Ball2, Y. Benhammou1, M. Ben Moshe1, T. Dai3, E. B. Diehl2, E. Erzioni1, C. Ferretti2, J. Gregory2, J. Hindes2, D. S. Levin3, R. Thun2, A. Wilson2, C. Weaverdyck2, Y. Wu2, H. Yang2, B. Zhou2
1Tel Aviv University, Israel; 2University of Michigan, USA
**Wednesday - RTSD Poster Presentations**

**R11 Poster Session II**

Wednesday, Oct. 26 14:30-16:00  Sorolla, Gran Recati

Session Chair:  **Ernesto Dieguez**, Universidad Autonoma de Madrid, Spain

*The posters of this session are identical to RTSD Poster Session I. See list of posters page 143.*
### Thursday - Daily Schedule

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<td>MIC7 PET imaging</td>
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<td>VCC Auditorium 2</td>
<td>Refresher, MIC - Photon and Light Ion Radiation Therapy, MICB Image Reconstruction 1</td>
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<tr>
<td>08:30</td>
<td>VCC Auditorium 2</td>
<td>MIC10 Data Corrections for SPECT</td>
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<td>09:00</td>
<td>VCC Auditorium 3</td>
<td>R13 Applications II, MIC11 Hadron Therapy and Imaging in Radiotherapy</td>
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<tr>
<td>09:30</td>
<td>VCC Auditorium 3</td>
<td>Refresher, MIC - Photon and Light Ion Radiation Therapy, MICB Image Reconstruction 1</td>
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<td>10:00</td>
<td>VCC Auditorium 3</td>
<td>R14 Applications III, R15 TlBr, R16 Alternative Materials II</td>
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<td>11:30</td>
<td>VCC Multipurpose</td>
<td>Exhibitors' Session</td>
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<td>12:00</td>
<td>Meliá Valentia A</td>
<td>N40 Low Noise Highly Integrated Front End Electronics</td>
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<td>12:30</td>
<td>Meliá Valentia A</td>
<td>N43 DAQ Architectures and Hardware Standards</td>
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<td>13:00</td>
<td>Meliá Valentia A</td>
<td>N46 DAQ Architectures and Hardware Standards</td>
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<td>Meliá Valentia A</td>
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<td>14:00</td>
<td>Meliá Valentia B</td>
<td>N41 High Energy Physics and Nuclear Physics Detectors: Vertex and Tracking Detectors III</td>
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<td>14:30</td>
<td>Meliá Valentia B</td>
<td>N44 High Energy Physics and Nuclear Physics Detectors: Calorimeters III</td>
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<td>N47 Scintillators</td>
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<td>Meliá Valentia B</td>
<td>N50 Digitization and Signal Processing</td>
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<td>N51 Nuclear Detectors</td>
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<td>07:30</td>
<td>Morning Registration</td>
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<td>N42 Gamma Ray and Neutron Detection 5</td>
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<td>N45 Photodetectors 3</td>
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<td>N48 Fault Tolerance and Radiation Hardness</td>
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<td>N52 Homeland Security 3</td>
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<td>N49 Simulation and Analysis HEP and Astroparticles</td>
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<td>N53 Simulation Medical Physics and Homeland Security</td>
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<td>Sorolla Pinedo/Faro Almarda/Raco</td>
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<td>13:30</td>
<td>Special Women in Engineering (WIE) Session</td>
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<td>14:00</td>
<td>MIC12.M MIC Posters 2</td>
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<td>15:00</td>
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Thursday - NSS Oral Presentations

N40  Low Noise Highly Integrated Front End Electronics

Thursday, Oct. 27  08:30-10:15  Meliá, Valentia A

Session Chairs:  Maurice Garcia-Sciveres, LBNL, United States
                    Erik H. M. Heijne, CERN, Switzerland

N40-1 (08:30) Front End Electronics for SLHC Semiconductor Trackers in CMOS 90 nm and 130 nm Processes
J. Kaplon, M. Noy, CERN, Switzerland

N40-2 (08:45, invited) Analog Design Criteria for High-Granularity Detector Readout in the 65 Nm CMOS Technology
M. Manghisoni1,2, L. Gaioni1, L. Ratti1,2, G. Traversi1,2, V. Re1,2
1Universita' degli Studi di Bergamo, Italy; 2INFN, Italy; 3Universita' degli Studi di Pavia, Italy

N40-3 (09:00) The Apsel65 Front-End Chip for the Readout of Pixel Sensors in the 65 Nm CMOS Node
L. Gaioni1, M. Manghisoni1,2, L. Ratti1,2, V. Re1,2, G. Traversi1,2
1INFN Pavia, Italy; 2Universita' degli Studi di Bergamo, Italy; 3Universita' degli Studi di Pavia, Italy

N40-4 (09:15) Front-End Electronics for DEPFET Pixel Detectors at Belle II
H. Krueger, Bonn University, Germany, On behalf of the DEPFET Collaboration

N40-5 (09:30) CUBE, a Low-Noise CMOS Preamplifier as Alternative to JFET Front-End for High-Count Rate Spectroscopy
L. Bombelli1,2, C. Fiorini1, T. Frizzi2, R. Nava2, A. Longoni1
1Politecnico di Milano Dip. Elettronica e Informazione, Italy; 2XGLab SRL., Italy

N40-6 (09:45) Low-Noise Low-Mass Front End Electronics for Low-Background Physics Experiments Using Germanium Detectors
Lawrence Berkeley National Laboratory, USA

N40-7 (10:00) Flood Histogram Measurement of a Pixellated Gamma Scintillation Detector Module Using Fully Integrated Readout
V. Mlotok, M. Ritzert, F. Fischer, Heidelberg University, Germany; T. Solf, Philips Research Laboratories, Germany; V. Schulz, RWTH Aachen, Germany

N41  High Energy Physics and Nuclear Physics Detectors: Vertex and Tracking Detectors III

Thursday, Oct. 27  08:30-10:15  VALENTIA B

Session Chairs:  Mara Bruzzi, Dipartimento di Energetica di Firenze, Italy
                    Charles Young, SLAC, United States

N41-1 (08:30) Operational Experience with the ATLAS Pixel Detector at the LHC
C. Troncon, INFN Milano, ITALY - On behalf of the ATLAS Collaboration

N41-2 (08:45) Overview of Silicon Pixel Sensor Development for the ATLAS Insertable B-Layer (IBL)
S. Grinstein, IFAE Barcelona, Spain,
On behalf of the The ATLAS IBL Collaboration

N41-3 (09:00) Evolution of the Charge Sharing Between Adjacent Readout Electrodes in Irradiated Silicon Pixel Sensors
G. Casse, P. P. Allport, A. Affolder, D. Forshaw, I. Tsurin
University of Liverpool, UK

N41-4 (09:15) Radiation-Hard Silicon for HL-LHC Trackers
U. Parzefall, University of Freiburg, Germany
On behalf of the RD50 Collaboration

N41-5 (09:30) Design and Studies of Micro-Strip Stacked Module Prototypes for Tracking and Trigger at the SLHC
G. L. Bruno, Université catholique de Louvain, Belgium
On behalf of the CMS Collaboration
N41-6 (09:45) Performance of the ATLAS Tau Trigger System with 7 TeV pp Collisions at the LHC
M. P. Casado Lechuga, UAB, Spain - On behalf of the ATLAS Collaboration

N41-7 (10:00) Searching for the Neutrinoless Double Beta Decay with CdTe Pixel Detectors: Measurement of the Electron Track Energy Resolution
M. Filipenko, T. Gleixner, J. Durst, M. Boehnel, T. Michel, G. Anton
Erlangen Centre for Astroparticle Physics (ECAP), Germany

N42 Gamma Ray and Neutron Detection 5

Thursday, Oct. 27 08:30-10:15  Meliá, Valentia C

Session Chairs:  Lus Mario Fraile Prieto, UCM, Spain
Nerine Cherepy, Lawrence Livermore National Laboratory, United States

N42-1 (08:30) Thermal Neutron Detection Using Alkali Halide Scintillators with Li-6 and Pulse Shape Discrimination
E. Brubaker, D. Dibble, P. Yang, Sandia National Laboratories, USA

N42-2 (08:45) Photon Counting Detector Based on Structured CsI:Tl Directly Deposited on a Solid-State Photomultiplier (SSPM)
RMD, Inc., USA

N42-3 (09:00) High-Speed Diamond Detectors for Fast-Neutron Analysis of Inertial Confinement Fusion Experiments
S. Friedrich, T. J. Clancy, M. J. Eckart, R. A. Zacharias, Lawrence Livermore Nat. Laboratory, USA; M. J. Shoup, T. Buczek, V. Y. Glebov, T. C. Sangster, Laboratory for Laser Energetics, USA; J. Kilkenny, General Atomics, USA

N42-4 (09:15) Design, Implementation and First Measurements with the Medipix Neutron Camera in CMS
D. Pfeiffer1,2, A. Ball1, A. Bell1, A. Butler2, P. Butler2, R. Hall-Wilton3, J. Hegeman1, S. Lansley1, D. Krofcheck4, S. Mueller2, A. Macpherson1, S. Pospisil5, H. Silverwood2, E. Tsesmelis1, Z. Vykydal5
1CERN, Switzerland; 2University of Canterbury, New Zealand; 3European Spallation Source AB, Sweden; 4University of Auckland, New Zealand; 5Czech Technical University (CTU), Czech Republic

N42-5 (09:30) Large Microcalorimeter Arrays for High-Resolution Gamma-Ray Spectroscopy

N42-6 (09:45) 3D Millimeter Event Localization in Bulk Scintillator Crystals
K. P. Zinck, M. A. Blackston, V. V. Thorwald, Oak Ridge National Lab, USA

N42-7 (10:00) A Low Background Germanium Facility under Heavy Shielding Located at the Surface
T. Neddermann, T. Koettig, O. Schulz, C. Goessling
TU Dortmund, Germany

N43 DAQ Architectures and Hardware Standards 2

Thursday, Oct. 27 11:00-12:45  Meliá, Valentina A

Session Chairs:  Gary Drake, Argonne National Laboratory, United States
Martin L. Purschke, Brookhaven National Lab, United States

N43-1 (11:00) New Developments in Next-Generation Platform Standards for Physics Instrumentation and Controls
R. S. Larsen, R. W. Downing, SLAC National Accelerator Laboratory, USA; Z. Liu, Institute of High Energy Physics, China; A. P. Lowell, Triple Ring Technologies, USA; V. Pavlick, Fermi National Accelerator Laboratory, USA; S. Simrock, ITER, France; R. Somes, Arroyo Technology Consultants, USA
N43-2 (11:15) Development of an ATCA IPMI Controller Mezzanine Board and Its Usage on an ATCA ROD Evaluator Board for the ATLAS LAr Upgrade
L. Hervas, CERN, Switzerland
On behalf of the ATLAS LAr group

N43-3 (11:30) An xTCA Compliant DAQ System Development for PXD Detector at Belle II Experiment
Z. A. Liu, H. Xu, J. Z. Zhao, Q. Wang, D. H. Sun, Inst. of High Energy Physics, Chinese Academy of Sciences, China; W. Kuehn, S. Lange, Justus-Libig-universitats Gießen, Germany

N43-4 (11:45) An Acquisition System for CMOS Imagers with a Genuine 10 Gbps Bandwidth
C. Guerini1,2, J. Marhoud1,2, W. Tromeur1,2, J. Houles1,2, A. Doan1,2, A. Dominjon1,2, T. Cajgfinger1,2, Barbier1,2
1Universite de Lyon, Universite Lyon 1, France; 2CNRS/IN2P3, Institut de Physique Nucleaire de Lyon, France

N43-5 (12:00) Front-End Electronics for the Scalable Readout System of RDS1
S. Martou, H. Muller, CERN, Switzerland; J. Toledo, Universidad Politécnica de Valencia, Spain

N43-6 (12:15) Multi-Threaded Evolution of the Data-Logging System of the ATLAS Experiment at CERN
T. Colombo, W. Vandelli, CERN, Switzerland

N43-7 (12:30) Mdaq-D3, a C++ Distributed Driver Development Framework Used in a Nuclear Physics Experiment
J. Chavas1, F. Chateau2, S. Anvar1
1CEA, France; 2INRIA, France

N44 High Energy Physics and Nuclear Physics Detectors: Calorimeters III
Thursday, Oct. 27  11:00-12:45  Meliá, Valentia B

N44-1 (11:00) Status of the Atlas Liquid Argon Calorimeter and Its Performance after One Year of LHC Operation
L. Hervas, CERN, Switzerland
On behalf of the Atlas Liquid Argon Calorimeter Group

N44-2 (11:15) Study of the Limitations of the Operation of the ATLAS End-Cap Calorimeters at HL-LHC Luminosities
H. Oberlack, CERN, Switzerland
On behalf of the Hilum ATLAS Liquid Argon Endcap Collaboration

N44-3 (11:30) Operational Experience and First Results with a Highly Granular Tungsten Analog Hadron Calorimeter
F. Simon, Max-Planck-Institut fuer Physik, Germany
On behalf of the CALICE Collaboration

N44-4 (11:45) Construction of a Technological Semi-Digital Hadronic Calorimeter Prototype for Future Linear Collider Experiments
J. Puerta-Pelayo, CIEMAT, Spain
On behalf of the CALICE Collaboration

N44-5 (12:00) Performance of the ALICE Zero Degree Calorimeters in Pb-Pb Collisions at LHC
N. De Marco, INFN - sezione di Torino, Italy
On behalf of the ALICE Collaboration

N44-6 (12:15) Scintillators with Silicon Photomultiplier Readout for Timing Measurements in Hadronic Showers
C. Soldner, Max-Planck-Institute for Physics, Germany
On behalf of the CALICE Collaboration
N44-7 (12:30) Particle-Gamma-Separation with the CALIFA Calorimeter
M. Bendel, University of Technology, Munich, Germany
On behalf of the R3B collaboration

N45 Photodetectors 3

Thursday, Oct. 27 11:00-12:15 Meliá, Valentia C

Session Chairs: Hartmut Hillemanns, CERN, Switzerland
Vivek V. Nagarkark, RMD, Inc., United States

N45-1 (11:00) Development of Large Area Photon Counting Detectors Optimized for Cherenkov Light Imaging with High Temporal and sub-mm Spatial Resolution
O. H. W. Siegmund, J. B. McPhate, A. S. Tremsin, S. R. Helinsky,
University of California at Berkeley, USA; H. J. Frisch, University of Chicago, USA; J. W. Elam, A. U. Mane, Argonne National Laboratory, USA;
M. Members of LAPPD Collaboration, LAPPD collaboration, USA

N45-2 (11:15) Performance and Lifetime of Microchannel Plate PMTs
A. Lehmann, University Erlangen-Nuremberg, Germany
On behalf of the PANDA Cherenkov Group

N45-3 (11:30) InAs Avalanche Photodiodes for X-Ray Detection
R. B. Gomes, P. J. Kerr, C. H. Tan, J. P. R. David, J. S. Ng
University of Sheffield, United Kingdom

N45-4 (11:45) Electron Response in Windowed and Windowless Si(Li), SDD and PIN Diode Photodetectors
S. J. Asztalos, C. Cox, W. Hennig, XIA, LLC, USA

N46 DAQ Architectures and Hardware Standards 3

Thursday, Oct. 27 14:30-15:45 Meliá, Valentia A

Session Chairs: Martin L. Purschke, Brookhaven National Lab, United States
Gary Drake, Argonne National Laboratory, United States

N46-1 (14:30) Wireless Data Acquisition System for Large Instrumentation Systems
M. D’Agostino, P. De Lurgio, Z. Djuric, G. Drake, A. Kreps
Argonne National Laboratory, United States

N46-2 (14:45) The IBL BOC Demonstrator
1Heidelberg University, Germany; 2CERN, Switzerland; 3Bologna University, Italy; 4Bergische Universitaet Wuppertal, Germany; 5Universitaet Goettingen, Germany; 6LBNL, USA; 7INFN, Italy

N46-3 (15:00) A Data Acquisition Module with Online Digital Adaptive Processing for Pulse Discrimination in the Angra Neutrino Project
H. P. Lima Jr, A. F. Barbosa, R. G. Gama, Centro Brasileiro de Pesquisas Fisicas, Brazil; L. M. de Andrade Filho, A. S. Cerqueira, M. V. S. Oliveira, Universidade Federal de Juiz de Fora, Brazil; L. F. Gonzalez, Universidade Estadual de Campinas, Brazil

N46-4 (15:15) Data Acquisition System of CANDLES Detector for Double Beta Decay Experiment
S. Umehara, M. Nomachi, Y. Sugaya, G. Ito, M. Saka, K. Seki, S. Ajimura, Osaka University, Japan; Y. Tamagawa, Fuku University, Japan

N46-5 (15:30) Performance and Operational Experience with the Heterogeneous Farm of the ATLAS Trigger and Data-Acquisition System.

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**N47 Scintillators 5**

Thursday, Oct. 27  14:30-15:45  Meliá, Valentia B

Session Chairs: Christophe Dujardin, University Lyon1, France  
Alex Gektin, Institute for Scintillation Materials, Ukraine

**N47-1 (14:30) Quality of the PbWO4 Crystals for the PANDA-EMC**  
T. Eissner, 2. Physikalische Institut, University Giessen, Germany  
On behalf of the PANDA Collaboration

**N47-2 (14:45) Development of Inorganic Scintillating Fibres Made of LYSO:Ce**  
R. W. Novotny, 2nd Physics Institute, University Giessen, Germany  
On behalf of the HP2-WP21 Collaboration

**N47-3 (15:00) Crystal Growth of Eu Doped SrI2 Single Crystals by Modified Micro-Pulling-down Method and the Scintillation Properties**  
Y. Yokota1, T. Yanagida2, D. Totsuka3, N. Kawaguchi4, K. Fukuda4,  
A. Yamaji5, Y. Futami6, A. Yoshikawa4,2  
1Institute of Materials Research, Tohoku University, Japan; 2New Industry Creation Hatchery Center (NICHe), Tohoku University, Japan; 3Nihon Kessho Kogaku Corporation, Japan; 4Tokushima Corporation, Japan

**N47-4 (15:15) Characterization Technique of Sub-Millimeter Scintillating Fiber.**  
D. Lo Presti1, G. V. Russo1, N. Randazzo2, S. Aiello2, E. Leonora2,  
F. Longhitano2, V. Sipala1, D. L. Bonanno3  
1University of Catania - I.N.F.N. Catania, Italy; 2Istituto Nazionale di Fisica Nucleare, Italy; 3Studio ingegneria Bonanno, Italy

**N47-5 (15:30) Phase Separated CsI-NaCl Scintillator with Optical Guiding Function**  
T. Den, T. Saito, R. Horie, Y. Ohashi, N. Yasui  
Canon Inc., Japan

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**N48 Fault Tolerance and Radiation Hardness**

Thursday, Oct. 27  14:30-15:45  Meliá, Valentia C

Session Chairs: Erik H. M. Heijne, CERN, Switzerland  
Christian Bohm, University of Stockholm, Department of physics, Sweden

**N48-1 (14:30) On the Mechanisms of Damage in Lead Tungstate Crystals Exposed to High Hadron Fluences**  
F. Nessi-Tedaldi, G. Dissertori, D. Luckey, P. Pauss, R. Wallny, ETH Zurich, Switzerland;  
R. Spikings, R. Van Der Lelij, University of Geneva, Switzerland

**N48-2 (14:45) Radiation-Hard Asics for Optical Data Transmission in the First Phase of the LHC Upgrade**  
K. K. Gan, The Ohio State University, USA

**N48-3 (15:00) Testing Radiation Tolerance of SerDeses for Serial Links of the SuperB Experiment**  
A. Aloisio, R. Giordano, Universita' degli Studi di Napoli 'Federico II', Italy;  
V. Izzo, INFN Sezione di Napoli, Italy

M. Uslenghi1, M. Fiorini1, C. Fiorini2, L. Bombelli2, S. Facchinetti2,  
A. Marone3, G. Rocco3, C. A. Verini3, S. Mattiuzzo3,4, D. Bisello3,4,  
A. Candelori3, J. Wyss5  
1INAF/IASF-Milano, Italy; 2Politecnico di Milano, Italy; 3INFN sez. Padova, Italy; 4Università di Padova, Italy; 5Università di Cassino, Italy

**N48-5 (15:30) Radiation Tolerant IP Cores for the Control and Readout of Front-End Electronics in High Energy Physics Experiments**  
G. Bianchi1, N. Costantino1,2, L. Fanucci3, J. Incandela1, G. Magazzu1,3,  
C. Tongiani1, S. Saponara2  
1University of California, USA; 2University of Pisa, Italy; 3INFN, Italy
N49  Simulation and Analysis HEP and Astroparticles

Thursday, Oct. 27  14:30-15:45  Meliá, Meeting 1&2&3

Session Chairs:  Gloria Corti, CERN, Switzerland
                 Andreas Mussgiller, DESY, Germany

N49-1  (14:30, invited) Description of Hadron-Induced Showers in Calorimeters Using the Geant4 Simulation Toolkit
A. Dotti, CERN, Switzerland
On behalf of the Geant4 Hadronic Working Group

N49-2  (14:45) A Novel Alignment Procedure and Results for the LHCb Silicon Tracker Detector
F. Dupertuis, Laboratory for High Energy Physics (LPHE), Ecole Federale de Lausanne (EPFL), Switzerland

N49-3  (15:00) Hadronic Shower Reconstruction in an Imaging Calorimeter
M. V. Chadeeva, Institute for Theoretical and Experimental Physics, Russia
On behalf of the CALICE Collaboration

N49-4  (15:15) PANDA Disc DIRC : Simulation and Reconstruction
T. Keri, University of Glasgow, United Kingdom
On behalf of the PANDA Cherenkov Group

N49-5  (15:30) Simulations for Tracking Cosmogenic Activation in Germanium and Copper
E. Aguayo Navarrete, Pacific Northwest National Laboratory, USA
On behalf of the Majorana Collaboration

N50  Digitization and Signal Processing

Thursday, Oct. 27  16:30-18:15  Meliá, Valentia A

Session Chairs:  Alberto Aloisio, University of Naples ‘Federico II’ and INFN, Italy
                 Stefan Ritt, Paul Scherrer Institute, Switzerland

N50-1  (16:30) Domino Ring Samplers for Dual Read-Out Calorimetry
M. Cascella1,2, 1University of Pisa, Italy; 2INFN, Italy
On behalf of the DREAM collaboration

N50-2  (16:45) Production and Commissioning of a Large Prototype Digital Hadron Calorimeter for Future Colliding Beam Experiments
1Argonne National Laboratory, USA; 2Fermi National Accelerator Laboratory, USA; 3Boston University, USA; 4University of Texas - Arlington, USA; 5McGill University, Canada; 6Institute of High Energy Physics, China

N50-3  (17:00) Pulse Pileup Recovery for the Front-End Electronics of the PANDA Electromagnetic Calorimeter
G. Tambave, Kernfysisch Versneller Instituut (KVI), Groningen, Netherlands
On behalf of the on behalf of the PANDA Collaboration

N50-4  (17:15) Requirements and Qualitative Comparison of Fast Waveform Digitizers for Data-Acquisition Systems Designed for Nuclear Nonproliferation Applications
University of Michigan, USA

N50-5  (17:30) A Novel Nuclear Pulse Digitizing Scheme Using Time over Dynamic Threshold
W. Yonggang, Z. Wensong, C. Jun
University of Science and Technology of China, China

N50-6  (17:45) Real-Time Embedded Lossless Compression for Sparse Signal Data Optimized for X-Ray Free-Electron Laser Experiments
A. Amselem1, T. Hatsui2, M. Yamaga1
1JASRI (Japan Synchrotron Radiation Institute), JAPAN; 2RIKEN SPring-8 Center, JAPAN
N50-7 (18:00) Improving Single Slope ADC and an Example Implemented in FPGA with 16.7 GHz Equivalent Counter Clock Frequency
J. Wu, Fermilab, USA; J. Odeghe, South Carolina State University, USA; S. Stackley, Boston University, USA

N51 Nuclear Detectors 2
Thursday, Oct. 27 16:30-18:15  Meliá, Valentia B
Session Chairs: Paul A. Hausladen, Oak Ridge National Laboratory, United States
Marek Flaska, University of Michigan, United States

N51-1 (16:30) Large-Scale Gadolinium-Doped Water Cerenkov Detector for Non-Proliferation
M. Sweany1, A. Bernstein2, N. Bowden2, S. Dazeley3, G. Keefer3, R. Svoboda4, M. Tripathi1
1University of California, Davis, USA; 2Lawrence Livermore National Lab, USA

N51-2 (16:45) R&D of a Fast-Neutron Imaging Detector Based on Bulk-Micromegas TPC
X. Zhang1, D. Attie2, P. Colas2, H. Shen1, W. Wang2, X. Wang1, C. Zhang1, Y. Chen1, L. An1, Y. Zhang1
1Lanzhou University, China; 2CEA/Irfu Saclay, France

N51-3 (17:00) Multianode Photomultiplier Tube Studies for Ring Imaging Cerenkov Applications
R. A. Montgomery1, M. Contalbrigo2, E. N. Cowie1, M. Hock1, T. Keri1, M. Mirazita3, P. Rossi3, B. Seitz1
1University of Glasgow, Scotland; 2INFN Ferrara, Italy; 3INFN Laboratori Nazionali di Frascati, Italy

N51-4 (17:15) Improved Gradiometer Coil for Inductive Detection of Magnetic Monopoles
S. Rescia, Brookhaven National Laboratory, USA

N51-5 (17:30) A Composite Gamma Detector with Increased Sensitivity at Low Energies
S. Friedrich, C. R. Bates, M. T. Burks, Lawrence Livermore National Laboratory, USA; D. P. DiPrete, Savannah River National Laboratory, USA

N51-6 (17:45) Spectrometric Performances of Monocrystalline Artificial Diamond Detectors Operated at High Temperature
M. Angelone, N. Fonnesu, M. Pillon, G. Prestopino, ENEA, Italy; E. Milani, M. Marinelli, C. Verona, G. Verona-Rinati, Universit degli Studi, Italy

N51-7 (18:00) Development of Method for Detection of Alpha Contamination with Using UV-Camera DayCor by OFIL
O. P. Ivanov, V. Stepanov, S. Smirnov, A. Volkovich National Research Centre Kurchatov Institute, Russia

N52 Homeland Security 3
Thursday, Oct. 27 16:30-18:15  Meliá, Valentia C
Session Chairs: Nathan Hilton, Sandia National Lab, United States
Aleksey E. Bolotnikov, Brookhaven National Laboratory, United States

Oak Ridge National Laboratory, USA

N52-2 (16:45) An Integrated Mobile System for Port Security
L. Stevanato1, D. Cester2, D. Fabrici, M. Lunardon1, S. Moretto1, G. Nebbia1, S. Pesente1, G. Viesti1, F. Neri2, S. Petrucci3, S. Selmi3, C. Tintori3
1Università degli studi di padova, Italy; 2INFN, Italy; 3CAEN SPA, Italy
N52-3 (17:00) X-Ray Radiation Detectors of Scintillator-Photodiode Type for Security and Non Destructive Testing
O. D. Opolonin, V. D. Ryzhikov, O. K. Lysetska, S. M. Galkin, Y. F. Voronkin
INSTITUTE for SCINTILLATION MATERIALS National Academy of Sciences of Ukraine, Ukraine

N52-4 (17:15) Advanced Electromagnetic Sensors to Monitor Changes in Materials Properties
A. N. Lasseigne, J. E. Jackson, K. M. Koenig, Generation 2 Materials Technology LLC, USA; J. S. Morrell, Y-12 National Security Complex, USA

N52-5 (17:30) Ultra-High Resolution Alpha Particle Spectrometry Using Superconducting Microcalorimeter Detectors
R. D. Horansky\textsuperscript{1}, J. A. Beall\textsuperscript{1}, V. Kotsubo\textsuperscript{1}, D. Schmidt\textsuperscript{1}, M. K. Bacrania\textsuperscript{2}, M. P. Croce\textsuperscript{3}, E. M. Bond\textsuperscript{4}, D. E. Dry\textsuperscript{5}, W. A. Moody\textsuperscript{6}, M. W. Rabin\textsuperscript{7}, J. N. Ullom\textsuperscript{1}
\textsuperscript{1}National Institute of Standards and Technology, USA; \textsuperscript{2}Los Alamos National Laboratory, USA

N52-6 (17:45) A Compton-Suppressed Phoswich Detector for Radioxenon Measurements
A. T. Farsoni, Oregon State University, USA

N52-7 (18:00) Characterization and Calibration of Large-Volume PVT Detectors Using Tagged Gamma Sources
G. Pausch, K. Roemer, C.-M. Herbach, Y. Kong, R. Lentering, J. Stein
FLIR Radiation GmbH, Germany

N53 Simulation Medical Physics and Homeland Security

Thursday, Oct. 27 16:30-18:15 Meliá, Meeting 1&2&3

Session Chairs: Alexander S. Howard, ETH, Zurich, Switzerland
George Kontaxakis, UPM, Madrid, Spain

N53-1 (16:30) A New Compton Imaging Algorithm for $\gamma$-Ray Tracking HPGe Detectors
M. Doncel, B. Quintana, University of Salamanca, Spain; A. Gadea, IFIC, Spain

N53-2 (16:45) Multiple-Hit Parameter Estimation in Monolithic Detectors
W. C. J. Hunter, R. S. Miyaoaka, T. K. Lewellen, University of Washington, USA; H. H. Barrett, University of Arizona, USA

N53-3 (17:00) GAMOS: an Easy and Flexible Way to Use GEANT4
P. Arce, J. I. Lagares, CIEMAT, Spain; L. Harkness, University of Liverpool, United Kingdom; L. Desorgher, SpaceIT, Switzerland; G. De Lorenzo, IFAP, Spain; Y. Abreu, CEA, Cuba; Z. Wang, PSI, Switzerland

N53-4 (17:15) Avalanche Gain Distribution of X-Ray Avalanche Photodiodes
R. B. Gomes\textsuperscript{1}, C. H. Tan\textsuperscript{1}, J. P. R. David\textsuperscript{1}, J. E. Lees\textsuperscript{1}, J. S. Ng\textsuperscript{1}
\textsuperscript{1}University of Sheffield, United Kingdom; \textsuperscript{2}University of Leicester, UK

N53-5 (17:30) Charged Particle Interactions Library for Geant4
E. Mendoza, F. Sansaloni, P. Arce, D. Cano-Ott, J. I. Lagares
CIEMAT, Spain

N53-6 (17:45) Pulse Height Tally Response Expansion Method for Detector Systems
T. Zipperer, D. Zhang, E. Rahnema, Georgia Institute of Technology, USA

N53-7 (18:00) Delayed Neutron Measurement in High Frequency Mode and Its Application to the Determination of Fissile Content in Spent Fuel Assembly
Korea Atomic Energy Research Institute, South Korea
MIC7 PET Imaging

Thursday, Oct. 27 08:30-10:30 VCC, Auditorium 1

Session Chairs: Cristina Lois, Universidade de Santiago de Compostela, Spain
Bjoern W. Jakoby, Siemens Medical Solutions USA, Inc., United States

MIC7-1 (08:30) Simultaneous Reconstruction of Scatter and Unscattered PET Coincidences Using TOF and Energy Information
M. Conti, I. Hong, C. Michel, Siemens Healthcare, USA

MIC7-2 (08:45) Isotropic Resolution PET Detector “X’tal Cube” Using a Monolithic Scintillator Segmented by Laser Processing
E. Yoshida¹, N. Inadama¹, F. Nishikido¹, H. Tashima¹, S. Yoshioka², T. Moriyå¹, T. Omura¹, M. Watanabe¹, M. Suga¹, H. Murayama¹, T. Yamaya¹
¹National Institute of Radiological Sciences, Japan; ²Chiba University, Japan;
³Hamamatsu Photonics K. K., Japan

MIC7-3 (09:00) Development and Testing of a SSPM based DOI capable prototype PET Detector
C. J. Bircher¹, X. Sun¹, A. Lan¹, T. Ma², Y. Xia², X. Zhu², Y. Shao¹
¹University of Texas MD Anderson Cancer Center, USA; ²Tsinghua University, China

MIC7-4 (09:15) High Voltage Photodetector Calibration for Improved Timing Resolution with Scintillation Detectors for TOF-PET Imaging
Z. S. Davidson, R. I. Wiener, M. F. Newcomer, R. Vanberg, J. S. Karp
University of Pennsylvania, USA

MIC7-5 (09:30) On the Effect of Solid State Photomultiplier Microcell Size on Timing Performance for PET Applications
F. Guerrieri, A. Wagadarikar, S. Dolinsky
GE Global Research, USA

MIC7-6 (09:45) Investigating Performance of Limited Angle Dedicated Breast TOF PET
Y. Chen¹, ², K. Saha¹, S. J. Glick¹
¹Henry M. Jackson Foundation for the Advancement of Military Medicine, USA; ²University of Massachusetts Medical School, USA

MIC7-7 (10:00) Dedicated High Resolution Prostate PET Imager
A. V. Stolin, S. Majewski, P. Martone, R. R. Raylman
West Virginia University, USA

MIC7-8 (10:15) Continuous LYSO-SSPM Array Based PET Detectors for Clinical and Small Volume Imaging Studies
P. Dokhale¹, R. Robertson¹, C. Stapels¹, J. Christian¹, M. Kaul², S. Surti², J. S. Karp², P. Vaska¹, K. Shah¹
¹Radiation Monitoring Devices, Inc., USA; ²University of Pennsylvania, USA; ³Brookhaven National Laboratory, USA

MIC8 Image Reconstruction 1

Thursday, Oct. 27 08:30-10:30 VCC, Auditorium 2

Session Chairs: Dimitris Visvikis, U650 INSERM, France
Paul E. Kinahan, University of Washington, United States

MIC8-1 (08:30) PET Image Reconstruction Using Statistical Shape Prior and Level Set Method
J. Cheng-Liao, J. Qi, University of California, Davis, USA

MIC8-2 (08:45) Evaluation of a Direct 4D Reconstruction Method Using GLLS for Estimating Parametric Maps of Micro-Parameters
MIC8-3 (09:00) Does OSEM Achieves the Lowest Variance?
C. Cloquet, Universit Libre de Bruxelles, Belgium; M. Defrise, Vrije Universiteit Brussel, Belgium

MIC8-4 (09:15) Impact of Erroneous Kinetic Model Formulation in Direct 4D Image Reconstruction
F. A. Kotasidis, J. C. Matthews, G. I. Angelis, P. J. Markiewicz, W. R. Lionheart, The University of manchester, United Kingdom; A. J. Reader, McGill University, Canada

MIC8-5 (09:30) FBP Reconstruction of Sinograms with Gaps Based on the Inversion of a Perturbed Matrix
J. L. Herraiz, J. J. Vaquero, J. M. Udias
1University Complutense de Madrid, Spain; 2Universidad Carlos III de Madrid, Spain

MIC8-6 (09:45) Estimating Effective Model Kernel Widths for PSF Reconstruction in PET
C. C. Watson, Siemens Healthcare, USA

MIC8-7 (10:00) Simultaneous Reconstruction of Activity and Attenuation in Time-of-Flight PET
A. Rezaci, J. Nuysts, K.U.Leuven, Belgium; G. Bal, C. Michel, C. Watson, Siemens Medical Solutions, USA

MIC8-8 (10:15) Reconstruction of Short Time PET Scans Using Bregman Iterations
J. Mueller, C. Brune, A. Sawatzky, T. Koesters, K. P. Schaefer, M. Burger
1Institute for Computational and Applied Mathematics, Germany; 2European Institute of Molecular Imaging, Germany

MIC10 Data Corrections for SPECT
Thursday, Oct. 27 14:30-16:00 VCC, Auditorium 1

Session Chairs: Steven R. Meikle, University of Sydney, Australia
Nils U. Schramm, Research Center Juelich, Germany

MIC10-1 (14:30) Comparison of Local and Global Approaches for Activity Estimation in Micro-SPECT Imaging
1Brigham & Women’s Hospital, USA; 2Harvard Medical School, USA; 3Universitaetsklinikum Essen, Germany

MIC10-2 (14:45) Cone-Beam Calibration with Small Balls: Centroids or Ellipse Centers?
R. Clackdoyle, C. Mennessier
1CNRS and Jean Monnet University, France; 2University of Ottawa, Canada

MIC10-3 (15:00) Combined Respiratory and Rigid Body Motion Compensation in Cardiac Perfusion SPECT Using a Visual Tracking System
P. H. Pretorius, M. A. King, J. M. Mukherjee, J. Dey, A. Konik
University of Massachusetts Medical School, United States

A. Andrevey, A. Celler, A. Sitek
1Harvard Medical School and Brigham and Women’s Hospital, USA; 2University of British Columbia, Canada

MIC10-5 (15:30) Resolution and Noise Properties of 123I MIBG SPECT Images with Collimator-Detector Response Modeling
J. B. Moody, Y. K. Dewara, E. P. Ficaro
1INVIA LLC, USA; 2University of Michigan, USA

MIC10-6 (15:45) Automated Cardiac Pose Computation from Reconstructed Myocardial SPECT Images
S. Dwivedi, Philips Healthcare, Philips Electronics India Limited, India; H. Liang, J. Ye, A. J. Da Silva, A. Wong, A. Gervais, S. Flowers, H. Hines, Philips Healthcare, USA
MIC11 Hadron Therapy and Imaging in Radiotherapy

Thursday, Oct. 27  14:30-16:00   VCC, Auditorium 2

Session Chairs:  
Avraham Dilmanian, Brookhaven National Laboratory, United States  
Martin Grossmann, PSI, Switzerland

MIC11-1 (14:30) Monte Carlo Modeling and in-Vivo Imaging at the Heidelberg Ion Beam Therapy Center  
K. Parodi, J. Bauer, A. Mairani, F. Sommerer, D. Unholtz, T. Haberer, J. Debus  
Heidelberg Ion Beam Therapy Center and Heidelberg University Hospital, Germany

MIC11-2 (14:45) Performance of Upstream Detectors of FIRST Experiment on Therapeutical Carbon Beam of 200–400 MeV/A  
A. Sarti1,2, V. Patera1,2, A. Sciubba1,2, L. Piersanti3, A. Paoloni2  
1INFN - LNF, Italy; 2Università di Roma «La Sapienza», Italy

MIC11-3 (15:00) Investigations on Novel Imaging Techniques for Ion Beam Therapy: Carbon Ion Radiography and Tomography  
I. Rinaldi1,2, S. Brons3, O. Jaekel1,2, R. Panse2, B. Voss3, K. Parodi1  
1German Cancer Research Center, Germany; 2Heidelberg Ion Therapy Center, Germany; 3University Hospital Heidelberg (Dep. Radiation Therapy and Radiation Oncology), Germany; 4GSI Biophysics, Germany

MIC11-4 (15:15) Commissioning Operations and Performances of the Dose Delivery System for CNAO  
S. Giordanengo1, M. Donetti1,2, M. A. Garella1,2, M. Lavagno3, L. Capasso1, R. Cirio3,4, E. Marasso4, F. Marchetto1, C. Peroni1,4, R. Sacchi1,4  
1Istituto Nazionale di Fisica Nucleare, Italy; 2Fondazione CNAO, Italy; 3University of Torino, Italy; 4Università degli studi di Torino, Italy

MIC11-5 (15:30) Dose-Free Monitoring of Radiotherapeutic Treatments with Scattered Photons: Concept and Simulation Study  
M. Cunha1, M. Pinto1, B. Ferreira1, P. Fonte1,3, M. C. Lopes1, P. Crespo1,3  
1LIP - Laboratório de Instrumentação e Física Experimental de Partículas, Portugal; 2Universidade de Aveiro, Portugal; 3ISEC - Instituto Superior de Engenharia de Coimbra, Portugal; 4Instituto Português de Oncologia de Coimbra Francisco Gentil, EPE, Portugal

MIC11-6 (15:45) Feasibility Study and First Results of a Real Time Imaging Dosimeter for External Beam Radiation Therapy  
S. Price, A. A. Silvius, E. W. Izaguirre  
Washington University in Saint Louis, MO
Thursday - RTSD Oral Presentations

R13 Applications II

Thursday, Oct. 27 08:30-09:50 VCC, Auditorium 3 A & B

Session Chair: Ian Radley, Kromek, United Kingdom

R13-1 (08:30, invited) Status and Perspectives of the COBRA Double Beta Experiment Using CZT Detectors
K. T. Zuber, Technische Universität Dresden, Germany

R13-2 (08:50) Combined Medipix Based Imaging System with Si and CdTe Sensor
Z. Vykydal, J. Jakubek, P. Soukup, Institute of Experimental and Applied Physics, Czech Technical University in Prague, Czech Republic; A. Fauler, M. Fiederle, A. Zwerger, Freiburger Materialforschungszentrum, Germany

R13-3 (09:05) Explosive Detection with an X-Ray Backscattering System Based on CdTe Spectrometric Detector
C. Paulus, J. Tabary, F. Mougel, N. Billon-Pierron, E. Mathy, J. Rinkel, L. Verger
CEA-LETI, MINATEC Campus, FRANCE

H. Toyokawa, T. Hirotomo, S. Wu, M. Kawase, Y. Furuikawa, T. Ohata, Japan Synchrotron Radiation Research Institute, Japan; H. Ikeda, G. Sato, S. Watanabe, T. Takahashi, Japan Aerospace Exploration Agency, Japan

Q. Guo1,2, M. Bellicke1, M. Baring1, S. Barthelmy1, R. Binns1, J. Buckley1, R. Coskiv1, P. Dowkontr1, A. Garson1, Y. Haba1, M. Israel1, H. Kunieda1, K. Lee1, H. Matsumoto1, T. Miyazawa1, T. Okajima1, J. Schnittman1, K. Tamura1, J. Tueller1, H. Krawczynski1
1Washington University in Saint Louis, USA; 2State Key Laboratory of Solidification Processing, Northwestern Polytechnical University, China

R14 Applications III

Thursday, Oct. 27 11:00-12:35 VCC, Auditorium 3 A & B

Session Chair: Loick Verger, CEA-LETI, France

R14-1 (11:00, invited) The Development of a Gamma Camera for Security Applications
C. P. Lambropoulos, Technological Educational Institute of Chalkida, Greece
On behalf of the COCAE Collaboration

L. Abbene, G. Gerardi
Dipartimento di Fisica, Universita' di Palermo, Italy

R14-3 (11:35) A Fully Abuttalble Detector for Multi-Energy, High-Flux Photon Counting
M. Clajus, S. Snyder, E. Tumer, T. Tumer, A. Volkovskii
NOVA R&D, Inc., USA

R14-4 (11:50) Amorphous Selenium as a Functional Material in Radiation Detection
O. Rubel1,2, A. Reznik1,2, W. Zhao3, S. Kasap4, J. Rowlands1,2
1Thunder Bay Regional Research Institute, Canada; 2Lakehead University, Canada; 3Health Sciences Center, State University of New York at Stony Brook, U.S.; 4University of Saskatchewan, Canada

R14-5 (12:05) Characterization of Si, CdTe and GaAs Sensor Layers in Medipix Assemblies Using Microfocus X-Ray Sources

Thursday - RTSD Oral Presentations
1University Of Canterbury, New Zealand; 2Canterbury District Health Board, New Zealand; 3European Centre for Nuclear Research (CERN), Switzerland; 4University of Otago Medical School, New Zealand; 5University of Otago, New Zealand

R14-6 (12:20) Low-Temperature Bump Bonding of Timepix Readout Chips and CdTe Sensors at Different Sensor Pitches
H. Heikkinen, A. Gadda, S. Vahanen, J. Salonen, P. Monnoyer, VTT Technical Research Center of Finland, Finland; L. Thustos, G. Blaj, M. Campbell, CERN, Switzerland

R15  TIBr
Thursday, Oct. 27 14:30-16:05 VCC, Auditorium 3 A & B
Session Chair: Andrea Zappettini, IMEM-CNR, Italy

R15-1 (14:30, invited) Single Carrier TIBr Gamma-Ray Spectrometers
K. S. Shah, H. Kim, A. Kargar, G. Ciampi, Y. P. Ogorodnik, L. Cirignano, W. Higgins, Radiation Monitoring Devices, Inc., USA; F. Olschner, Cremat, USA

1Brookhaven National Laboratory, USA; 2RMD, Inc., USA

R15-3 (15:05) Room Temperature Stability of TIBr Gamma Detectors
A. Conway, L. Voss, A. Nelson, P. Beck, R. Nikolic, S. Payne, LLNL, USA; H. Kim, L. Cirignano, K. Shah, RMD, USA

C. L. Thrall, Z. He, H. Kim, L. Cirignano, K. Shah, W. Kaye, F. Zhang
1University of Michigan, USA; 2Radiation Monitoring Devices, Inc., USA

R15-5 (15:35) Optimizing Ionic Resistivity in TIBr Through Doping
S. R. Bishop, M. Kuhn, H. L. Tuller, Massachusetts Institute of Technology, USA; W. Higgins, G. Ciampi, A. Churilov, K. Shah, Radiation Monitoring Devices, Inc., USA

R15-6 (15:50) Thallium Bromochloride Gamma-Ray Spectrometer Development
1Radiation Monitoring Devices Inc., USA; 2Cremat Inc., USA

R16  Alternative Materials II
Thursday, Oct. 27 16:30-18:25 VCC, Auditorium 3 A & B
Session Chair: Robert D. McLaren, Consultant, United States

R16-1 (16:30, invited) Organic Single Crystals as Room Temperature X-Ray Detectors
B. Fraboni, A. Ciavatti, F. Merlo, A. Cavallini, University of Bologna, Italy; L. Basirico, A. Bonfiglio, University of Cagliari, Italy; A. Fralleoni-Morgera, Sincrotrone Trieste S.C.p.A., Italy

R16-2 (16:50) Development of Cadmium Magnesium Telluride (CdxMgxTe) for Room-Temperature X- and Gamma-Ray Detectors
1Brookhaven National Laboratory, USA; 2International Crystal Laboratories, USA

R16-3 (17:05, invited) Defect Correlation Studies on High Resistivity 4H SiC Bulk Crystals and Epitaxial Layers for Radiation Detectors
K. C. Mandal, P. G. Muzykov, R. M. Krishna, T. C. Hayes, T. S. Sudarshan, University of South Carolina, USA
R16-4 (17:25) Potential New Semiconducting Detection Materials Developed from Information-Based Approaches to Materials Discovery
K. F. Ferris, Pacific NW National Laboratory, USA; D. M. Jones, Proximate Technologies, LLC, USA

R16-5 (17:40) Growth of High Quality Boron Phosphide Thin Films
D. Brasfield, Y-12 National Security Complex, USA; C. Feigerle, J. Abbott, University of Tennessee Knoxville, USA

R16-6 (17:55) Neutron Energy Spectrometer Utilizing Arrayed Microstructured Semiconductor Neutron Detectors
B. W. Cooper, S. L. Bellinger, R. G. Fronk, T. J. Sobering, K. Shultis, D. S. McGregor
Kansas State University, United States of America

R16-7 (18:10) Design of a Moderated Multidetector Neutron Spectrometer for Optimal Specificity
M. J. Harrison, Oak Ridge National Laboratory, USA; Q. Cherel, M. Monterial, University of Florida, USA
Thursday - MIC Poster Presentations

MIC9.S  MIC Poster Presentations

Thursday, Oct. 27  11:00-13:00  Sorolla, Gran Recati

Session Chairs:  Paul Vaska, Brookhaven National Laboratory, United States  
Habib Zaidi, Geneva University Hospital, Switzerland  
Ciprian Catana, Massachusetts General Hospital, United States

A. K. Converse, E. O. Ahlers, P. H. Williams, J. W. Engle, T. E. Barnhart,  
R. J. Nickles, O. T. DeJesus, University of Wisconsin-Madison, USA

MIC9.S-4 Comparison of a GATE Monte Carlo Simulation Predictions to the Performance of a High-Resolution LYSO Based Dedicated Animal PET Camera
H. Baghaei, Y. Zhang, H. Li, R. A. Ramirez, S. Liu, C. Wang, S. An, W.-H. Wong, University of Texas, M.D. Anderson Cancer Center, USA

MIC9.S-7 Pulse Shape Discrimination for Continuous Depth of Interaction Encoding PET Detectors: Variation in Decay Time Measurements
E. Roncali, S. R. Cherry, University of California-Davis, USA

MIC9.S-10 A Micro-Channel Plate Photomultiplier Tube Based PET Detector Module
H. Kim, C.-M. Kao, H. Frisch, F. Tang, C.-T. Chen, University of Chicago, U.S

MIC9.S-13 A Development of Waveform Sampling Readout Board for PET using DRS4
H. Kim, C.-M. Kao, C.-T. Chen, University of Chicago, U.S; S. Kim, Notice Inc., Korea

H. T. Sipila1, S.-J. Heselius2, M. K. Kalliokoski3, J. Kemppainen1, H. Minn1,  
T. Tolvanen1, A. Roivainen1  
1Turku University Hospital, Finland; 2Abo Akademi University, Finland;  
3University of Helsinki, Finland

MIC9.S-19 Development of a Compact Prototype MRPC Module for TOF-PET Application
D. A. Watts1,2, G. Borghi1, F. Sauli1, J. Samarati1, M. Bucciantonio1,  
N. Malakhov1  
1TERA Foundation, Italy; 2Universita Autonoma de Barcelona, Spain

MIC9.S-22 The Effect of Count Statistics on the Convergence Value in OSEM Reconstruction in PET and TOF PET
G. Mettivier1,2, M. Conti3, R. Salvati1, P. Russo1  
1INFN and Univ. of Napoli, Italy, Italy; 2Siemens Healthcare Molecular Imaging, Tennessee

M. Conti, L. Eriksson, Siemens Healthcare, USA

MIC9.S-28 Silicon Photomultiplier-Based Detector Array for TOF PET
J. Y. Yeom, V. Spandoudaki, C. S. Levin, Stanford University, USA

MIC9.S-31 Development of a High Resolution Si-PM-Based Gamma Camera System
S. Yamamoto, Kobe City College of Technology, Japan; H. Watabe, Y. Kanai,  
M. Imaiizumi, T. Watabe, E. Shimosegawa, J. Hatazawa, Osaka University, Japan

MIC9.S-34 Imaging Performance of a PET/SPECT Dual Modality Animal System
R. Yao1, J.-F. Beaudoin2, X. Deng1, J. Cadorette2, R. Lecomte2  
1State University of New York at Buffalo, USA; 2Universit de Sherbrooke, Canada
MIC9.S-37 Comparison of FORE and FOREX for a Preclinical PET Scanner with Large Axial Aperture  
B. Feng, M. Chen, Siemens Preclinical Solutions, USA

MIC9.S-40 Performance Characteristics of the SMARTZOOM Collimator  
J. Zeintl, T. D. Rempel, M. Bhattacharya, R. Malmin, A. H. Vija, Siemens Medical Solutions USA, Inc., USA

F. Riggi, University of Catania, Italy; P. La Rocca, Centro Fermi, Italy; P. G. Fallica, B. Carbone, G. Condorelli, M. Mazzillo, A. Piana, D. Sanfilippo, G. Valvo, STMicroelectronics, Italy

MIC9.S-46 Evaluation of High Density Pixilated Crystal Blocks with SiPM Readout as Candidates for PET/MR Detectors in a Small Animal PET Insert  
C. J. Thompson, A. L. Goertzen, E. J. Berg, F. Retire, P. Kozlowski, L. Ryner, G. Stortz, V. Sossi
1McGill University, Canada; 2University of Manitoba, Canada; 3TRIUMF, Canada; 4University of British Columbia, Canada; 5National Research Council, Canada

MIC9.S-49 The electronic system for a TOF PET prostate probe  
1INFN Genova, Italy; 2INFN LNS, Italy; 3Physik, Technische Universitaet Muenchen, Germany; 4INFN Bari, Italy; 5INFN Bologna, Italy; 6INFN Roma1, Italy; 7Istituto Superiore di Sanita’, Italy; 8ENEA, Italy; 9INFN Lecce, Italy; 10Physics, University of Rome La Sapienza, Italy

A. Samartzis, G. P. Fountos, C. M. Michail, A. Zanglis, V. Koukou, N. Martini, E. P. Kounadi, I. S. Kandarakis, G. Nikiforidis, 4EVANGELISMOS General Hospital, Greece; 5Technological Educational Institute, Greece; 6University of Patras, Greece; 7Agios Savvas Hospital, Greece; 8ALEXANDRA University Hospital, Greece

MIC9.S-55 Slit-Slat Collimator Geometrical Calibration for a Dual Modality PET/SPECT Animal Scanner  
X. Deng, J.-F. Beaudoin, J. Cadorette, R. Lecomte, R. Yao
1University at Buffalo, USA; 2Sherbrooke Molecular Imaging Center, Canada; 3Universit de Sherbrooke, Canada

MIC9.S-58 Validation of the Spatially Variant Probability Density Functions for the HRRT  
Y. Jian, R. Yao, T. Mulnix, R. Carson
1Yale University, USA; 2University of Buffalo, USA

MIC9.S-61 Design of a Monolithic Multi-Channel Front-End Readout ASIC for LYSO/SiPM-Based Small-Animal Flat-Panel PET Imaging  
W. Gao, D. Gao, T. Wei, H. Zeng, Y. Duan, S. Lu, L. Shen, W. Xu, Q. Xie, Y. Hu
1Northwestern Polytechnical University, China; 2Huazhong University of Science and Technology, China; 3University of Strasbourg/CNRS/IN2P3, France

MIC9.S-64 Tomographic Performance Characteristics of the IQ.SPECT System  
R. Rajaram, M. Bhattacharya, X. Ding, R. Malmin, T. D. Rempel, A. H. Vija, J. Zeintl, Siemens Medical Solution USA, Inc., USA

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

MIC9.S-70 3D X-Ray Fluorescence Images in Prostate Samples  
1Non-destructive Testing, Corrosion and Welding Laboratory, Department of Metallurgical and Materials, Brazil; 2Nuclear Instrumentation Laboratory, Brazil; 3Physics Institute, Brazil
MIC9.S-73 Fast X-Ray CT Metal Artifacts Reduction Based on Noniterative Sinogram Inpainting
Y. Zhang, Y. Pu, J. Hu, J. Zhou, Sichuan University, China

MIC9.S-76 Optimal Design of a Deblurring Filter in Digital Tomosynthesis for the Application of Dental X-Ray Imaging
Yonsei University, South Korea

N. I. Kalvay1, C. Michail1,2, G. Fountos1, I. Valais1, P. Liaparinos1, I. Seferis1, V. Spyropoulou1, A. Mytadis1, G. Panayiotakis1, I. Kandarakis1
1Technological Educational Institute of Athens Greece, Greece; 2University of Patras, Greece

MIC9.S-82 Substantiative Experiments of Distortion Correction for Novel Si/CdTe Compton Camera
N. Kawachi1, M. Yamaguchi1, Y. Naga1, N. Suzui1, S. Fujiyama1, T. Kamiya1, H. Oda2,3, M. Kokubun2,3, S. Takeda1, S. Ishikawa2,3, S. Watanabe2,3, T. Takahashi2,3, K. Torikai1, H. Shimada1, K. Arakawa3, Y. Suzuki1, T. Nakano1
1Japan Atomic Energy Agency, Japan; 2Japan Aerospace Exploration Agency, Japan; 3University of Tokyo, Japan; 4Graduate Unis. for Advanced Studies, Japan; 5Gunma University, Japan

MIC9.S-85 Simulation of Motion Artifacts in Offset Flat-Panel Cone-Beam CT
E. Hansis, L. Shao, Philips Healthcare, USA

MIC9.S-88 Low Dose CT Technique Using Prior Image Knowledge
S. Abbas, J. Min, J. Lee, S. Cho, KAIST, South Korea

M. G. Urdaneta, P. Y. Stepanov, I. N. Weinberg, Weinberg Medical Physics, United States; S. T. Fricke, Children's National Medical Center, United States; R. Probst, University of Maryland, United States; P. M. Starewicz, Resonance Research Incorporated, United States

MIC9.S-94 Application of an Effective Dual-Energy Imaging Technique in Dental CBCT for Enhancing Anatomical Resolution
U. K. Le1,2, J. E. Oh1,2, H. S. Cho1, S. I. Choi1,2, Y. O. Park1, D. K. Hong1,2, Y. J. Yang1,2, M. S. Lee1,2, D. S. Kim1, H. J. Kim1, Y. S. Koo1, S. H. Lee1, H. M. Cho1, B. S. Kang2
1Yonsei University, South Korea; 2Vatech Co. Ltd., South Korea; 3Konyang University, South Korea

MIC9.S-97 How Heterogeneous is the Liver? a Cluster Analyse of DCE-MRI Time Series
M. Mohajer1,2, V. J. Schmidt3, R. Braren4, P. B. Noel5, K.-H. Englmeier1
1Institute for Biological and Medical Imaging (IBMI), Germany; 2Department of Statistics, Germany; 3Klinikum rechts der Isar, Germany

MIC9.S-100 A High Spatial Resolution X-Ray Camera using a CMOS Sensor and Scintillator Matrix Technology
M. D. Wilson1, M. Anderson2, N. Guerrini1, A. Sahloin2, P. Seller1, O. Svenonious2, R. Turchetta2
1STFC, UK; 2Sci-XT AB, Sweden

University of Erlangen-Nuremberg, Germany

MIC9.S-106 Beam Stop Array Scattered Light Correction for Cone Beam Optical CT Evaluation of Radiochromic Gel Dosimeters
J. Sol, V. Sochor
Czech Metrology Institute, Czech Republic
MIC9.S-109 Low-Dose Thoracic CT Image Processing Using a Novel Artifact Pre-Suppressed Large-Scale Nonlocal Means
Y. Chen
INSERM U642, Laboratory LTSI, University Rennes I, France

MIC9.S-112 Western Blotting Electrophoretic Sequencing: First Images with a Room Temperature CMOS Detector
M. Esposito, J. Newcombe, K. Wells, University of Surrey, U.K.

MIC9.S-115 Simulation of Ultra Low-Dose Scans in Quantum-Counting Clinical CT
T. Weidinger, T. M. Buzug, Universitaet zu Luebeck, Germany; S. Kappler, K. Stierstorfer, Siemens, Germany

S. H. Maramraj, S. D. Smith, S. Rescia, S. Stolf, M. Budassi, T. Cao, B. Ravindranath, D. Schulz, P. Bhadrea, P. Vaska, C. Woody, D. Schlyer
Stony Brook University, USA; Brookhaven National Laboratory, USA

MIC9.S-121 Effect of MR truncation compensation on quantitative PET reconstruction for whole-body PET/MR
J. Tang, R. Haagen, T. Blaffert, S. Renisch, A. Blaeser, A. Salomon, B. Schweizer, Z. Hu
Philips Healthcare, United States; Philips Research, Germany

MIC9.S-124 Studying the Effects of Truncated Mu-Map on Scatter Estimation
Siemens Healthcare, USA; K.U. Leuven, Belgium; Siemens AG, Germany

Tehran University of Medical Sciences, Iran; University of Tehran, Iran; Henry Ford Health System, USA; Geneva University Hospital, Switzerland

Sapienza University of Rome, Italy; INFN, Italy; Roma Tre University of Rome, Italy; LNL-INFN, Italy; University of Padua, Italy; University of Bologna, Italy; ISPESL Monteporzio, Italy

MIC9.S-133 Sparse Crystal Setting and Large Axial FOV for Integrated Whole Body PET/MR
A. Salomon, D. Truhn, R. Botnar, F. Kiessling, V. Schulz
King’s College London, United Kingdom; Philips Research Europe, Germany; RWTH/Aachen University, Germany

MIC9.S-136 SiPM-PET with Short Optical Fiber Bundle for Simultaneous PET-MR Imaging
S. J. Hong, H. G. Kang, G. B. Ko, I. C. Song, J. T. Rhee, J. S. Lee
Eulji University, S. Korea; Seoul National University, College of Medicine, S. Korea; Konkuk University, S. Korea

MIC9.S-139 The Influence of Using Different Tissue Classes on the Accuracy MR-Based Attenuation Correction of PET Data
A. Akbarzadeh, M. R. Ay, A. Ahmadian, N. Riahi Alam, H. Zaidi
Tehran University of Medical Sciences, Iran; Geneva University Hospital, Switzerland

MIC9.S-142 Feasibility of Small Animal Dual Tracer SPECT and PET/SPECT Measurements
J. G. Mannheim, B. J. Pichler, University of Tuebingen, Germany

MIC9.S-145 A High-Resolution PET Insert for Simultaneous PET/MR Imaging
University of California, Davis, USA; Radiation Monitoring Devices Inc, USA
MIC9.5-148 Toward PET/MRI: Measurement of Positron Range in Magnetic Fields and Evaluation of a Simulator
C.-C. Liu, A. Kolb, H. Schmidt, B. J. Pichler
Eberhard-Karls-University Tuebingen, Germany

MIC9.5-151 Development of a Second Generation MRI Compatible PET Insert for Preclinical in Vivo Studies
M. M. Hossain, K. Lankes, H. Wehrl, M. S. Judenhofer, A. Kolb, C. C. Liu, B. J. Pichler
1University of Tuebingen, Germany; 2Bruker Biospin MRI GmbH, Germany

MIC9.5-154 X-Ray Based Attenuation Correction for a Dual-Modality PET/mammography Scanner
P E. Kinahan, K. Kanal, L. R. Macdonald
University of Washington, USA

MIC9.5-157 Time Resolution Performance of an Electro-Optical-Coupled PET Detector for Time-of-Flight PET/MRI
M. F. Bieniosoek, P. D. Olcott, C. S. Levin
Stanford University, USA

MIC9.5-160 A MR Compatible Brain PET Using Tileable GAPD Arrays
1Sogang University, Korea; 2Sungkyunkwan University School of Medicine, Korea; 3Korea Advanced Institute of Science and Technology, Korea

MIC9.5-163 Sinogram Restoration in Computed Tomography with a Non-Quadratic, Edge-Preserving Penalty
K. J. Little, P. J. La Riviere, University of Chicago, USA

MIC9.5-166 A BPF Reconstruction Algorithm for CBCT with a Half-Size Flat Panel Detector
J. Hao, L. Li, L. Zhang, Z. Chen, K. Kang
1Tsinghua University, China; 2Ministry of Education, China

MIC9.5-169 Shared-Memory Alternatives for Parallel Image Reconstruction
F. Torres, F de la Fuente, F. R. Rannou
University of Santiago of Chile, Chile

MIC9.5-172 1D-Image Reconstruction for Magnetic Particle Imaging Using a Hybrid System Function
1University of Luebeck, Germany; 2Philips Technologie GmbH Innovative Technologies, Germany

MIC9.5-173 Sparse-View Image Reconstruction from Gated Cardiac Data
J. Bian, J. Wang, X. Han, E. Y. Sidky, J. Ye, S. Prevrhal, H. Liang, L. Shao, X. Pan
1The University of Chicago, USA; 2Philips Healthcare, USA

MIC9.5-174 Sequential Regularized MLEM Reconstruction Method for Incomplete Sinograms
U. Tuna, A. Pepe, U. Ruotsalainen
Tampere University of Technology, Finland

MIC9.5-181 Ultrafast Multipinhole SPECT Iterative Reconstruction Using High Performance GPU and CUDA
F. Alhassen, S. Kim, H. Kudrolli, G. A. Sayre, J. D. Bowen, B. Singh, V. V. Nagarkar, Y. Seo
1University of California, San Francisco, USA; 2Radiation Monitoring Devices, Inc., USA

MIC9.5-184 Adaptive Normalized Metal Artifact Reduction (ANMAR) in Computed Tomography
E. Meyer, R. Raupach, B. Schmidt, A. H. Mahnken, M. Kachelriess
1Institute of Medical Physics, University of Erlangen-Nuremberg, Germany; 2Siemens Healthcare, Germany; 3Department of Diagnostic and Interventional Radiology, Germany

MIC9.5-187 A Preliminary Study of Image Reconstruction from Low-dose Data in Dedicated Breast CT
J. Bian, X. Han, K. Yang, E. Y. Sidky, J. M. Boone, X. Pan
1The University of Chicago, USA; 2University of California Davis, USA
M. A. Nassiri, J.-F. Carrier, 1560 rue Sherbrooke Est., Canada; P. Despres, 11 Cote du Palais., Canada

Y. M. Levakhina1, B. Kratz2, R. L. Duschka2, F. Vogt2, J. Barkhausen2, T. M. Buzug2
1 University of Luebeck, Germany; 2 University Clinics Schleswig-Holstein, Germany

MIC9.S-196 Fast and Accurate 3D Compton Cone Projections on GPU Using CUDA
J.-Y. Cui, G. Chinn, C. S. Levin, Stanford University, USA

MIC9.S-199 Accelerated Convergence with Image-Block Iterative Reconstruction

MIC9.S-202 Continuous Space-Time Reconstruction in 4D PET
M. D. Fall1,2, E. Barat2, C. Comtat3, T. Dautremer4, T. Montagu5, A. Mohammad-Djafari3
1 Laboratoire des Signaux et Systèmes (L2S), Supélec, France; 2 Laboratoire de Modélisation, Simulation et Systèmes (LM2S), CEA Saclay, France; 3 Service Hospitalier Frédéric Joliot (SHFJ), CEA/DSV/I2BM, France

MIC9.S-205 Information Divergence Constrained Total Variation Minimization for Positron Emission Tomography Image Reconstruction
L. Tian1, J. Ma1,2, Z. Liang3, J. Huang4, W. Chen5
1 Southern Medical University, China; 2 Stony Brook University, USA

MIC9.S-208 Data-Driven Spatially-Varying Point Spread Function for List-Mode PET Reconstruction on GPU
J.-Y. Cui1, G. Pratx1, S. Prevrhal2, B. Zhang2, L. Shao2, C. S. Levin1
1 Stanford University, USA; 2 Philips Healthcare, USA

MIC9.S-211 Redundancy Information Induced Edge-Preserving Prior for Perfusion Computed Tomography Image Reconstruction
H. Zhang1, J. Ma1,2, Z. Liang3, Y. Fan3, J. Huang4, H. Lu5, W. Chen1
1 Southern Medical University, China; 2 Stony Brook University, USA; 3 Fourth Military Medical University, China

MIC9.S-214 A New Representation and Projection Model for Tomography, Based on Separable B-Splines
F. Moméy6,7, L. Denis8, C. Mennessier2, E. Thiebaut1, J.-M. Becker2, L. Desbat3
1 Centre de Recherche Astrophysique de Lyon, France; 2 Laboratoire Hubert Curien, France; 3 Laboratoire TIMC-IMAG, France

P. Martins1, A. Blanco1, M. Couceiro1,2, N. C. Ferreira3,4, R. Ferreira Marques1,3, P. Fonte1,2, L. Mendes3, P. Crespo1,2
1 LIP - Laboratório de Instrumentação e Física Experimental de Partículas, Portugal; 2 ISEC - Instituto Superior de Engenharia de Coimbra, Portugal; 3 IBILL - Institute of Biomedical Research in Light and Image, Portugal; 4 ICNAS - Instituto de Ciências Nucleares Aplicadas à Saúde, Portugal; 5 University of Coimbra, Portugal

MIC9.S-220 Micro-Strip Metal Detectors for Radiation Therapy Instrumentations
O. Kovalchuk, V. Pugatch, A. Chaus, O. Fedorovich, O. Okhimenko, D. Storozhyk, Kiev Institute for Nuclear Research NASU, Ukraine; M. Campbell, L. Liustos, X. Llopart, CERN, Switzerland; S. Pospisil, Institute of Experimental and Applied Physics, Czech Republic; Y. Prezado, M. Renier, ESRF, France

M. G. Bickell, A. Buffler, I. Govender
University of Cape Town, South Africa
MIC9.5-226 Accelerated Monte Carlo Based Dual Isotope SPECT Reconstruction
M. I. Karamat1, T. H. Farncombe1,2
1McMaster University, Canada; 2Hamilton Health Sciences, Canada

MIC9.5-229 ART with Split Bregman Denoising: a Reconstruction Method for Fluorescence Diffuse Optical Tomography
J. Chamorro1, J. F. Abascal2, J. Aguirre1, S. Arridge1, T. Correia1, J. Ripoll1, M. Desco1, J. J. Vaquer1
1Departamento de Universidad Carlos III de Madrid, Spain; 2Hospital General Universitario Gregorio Maran, Spain; 3University College London, UK; 4FORTH, Greece

MIC9.5-232 A Modified Spatial Resolution Formula for DOI PET
Y. Xia, T. Ma, Y. Liu, Tsinghua University, China; Y. Shao, University of Texas, M. D. Anderson Cancer Center, U. S. A

MIC9.5-235 Optimization of a Novel Cerenkov Detector for Radiotherapy Applications Using GEANT 4 and FLUKA
S. Lo Meo1, T. Rovelli2, C. Fiorino3, M. Cattaneo3, R. Calandrino3, F. Boschi1, A. Sbarbati1, F. Campanella1, M. Mattozzi1, A. S. Panebianco1, A. E. Spinelli3
1National Institution for Insurance against Accidents at Work, Italy; 2University of Bologna and INFN, Italy; 3San Raffaele Scientific Institute, Italy; 4University of Verona, Italy

MIC9.5-238 Ensuring Convergence in Total-Variation-Based Reconstruction for Accurate Microcalcification Imaging in Breast X-Ray CT
J. H. Joergensen, Technical University of Denmark, Denmark; E. Y. Sidky, X. Pan, University of Chicago, United States

MIC9.5-241 Iterative Reconstruction of Whole Accelerator Phase Spaces for Intraoperative Radiation Therapy (IORT) from Measured Dose Data
E. Herranz1, J. L. Herranz1, J. Cal-gonzalez1, P. M. G. Corzo1, P. Guerra1, J. M. Udatos1
1Universidad Complutense de Madrid, Spain; 2Universidad Politecnica de Madrid, Spain

MIC9.5-244 Iterative Reconstruction for Axial Field of View Extension in Radiotherapy Cone-Beam CT
E. Pearson, X. Han, X. Pan, C. Pelizzari
University of Chicago, USA

MIC9.5-247 Radiation Internal Dosimetry in Radioimmunotherapy (RIT) Using 131I-Rituximab
Y. S. Lee1,2, J. S. Kim1, K. M. Kim1, W. H. Lee1, H. J. Kang1, I. H. Lim1, H.-J. Kim1, S. M. Lim1
1Korea Institute of Radiological & Medical Sciences, Korea; 2Yonsei University, Korea; 3Korea Cancer Center Hospital, Korea

MIC9.5-250 GPU Based Calculation of a SPECT Projection Operator for Content Adaptive Mesh Model
F. Massanes Baig, J. G. Brankov
Illinois Institute of Technology, USA

MIC9.5-253 Optical Scattering Length of LYSO Scintillator Crystals
C. O. Steinbach, F. Ujhelyi, E. Lorincz
Budapest University of Technology and Economics, Hungary

MIC9.5-256 Attenuation Map Estimation Without Transmission Scanning Using Measured Scatter Data
S. C. Cade1,2, S. Arridge1, M. J. Evans1, B. F. Hutton1
1University College London, UK; 2Royal United Hospital, UK

MIC9.5-259 Rapid Construction of Pinhole SPECT Imaging System Matrices by Gaussian Interpolation Method Combined with Geometric Parameter Estimations
M.-W. Lee, Y.-C. Chen
National Central University, Taiwan (R.O.C.)

MIC9.5-262 Compressed Sensing Algorithm for Sparse-View Pinhole SPECT
P. A. Wolf1, E. Y. Sidky2, T. G. Schmidti
1Marquette University, USA; 2University of Chicago, USA
MIC9.S-265 GPU-Based Fast Projection-Backprojection Algorithm for 3-D PET Image Reconstruction
I. J. Ahn, K. Y. Jeong, W. H. Nam, J. H. Kim, J. B. Ra
KAIST, Republic of Korea

U. Heil1,2, D. Gross1,2, R. Schulze1, U. Schwanckel1, E. Schoemer3
1Dept. of Design, Computer Science and Media, Hochschule RheinMain, University of Applied Sciences, Germany; 2Johannes Gutenberg University, Germany; 3University Medical Center of the Johannes Gutenberg University, Germany

MIC9.S-271 Optimizing the Magnification Factor in the Developmental Micro-CT System Based on Fourier Metrics of Imaging Performances
S. Jang, H. Youn, M. K. Cho, H. K. Kim
Pusan National University, Republic of Korea

MIC9.S-274 Cluster-Based Priors for MAP PET Image Reconstruction
L. Lu1, J. Tang2, N. Karakatsanis3, W. Chen4, A. Rahimim3
1Southern Medical University, China; 2Philips Healthcare, USA; 3Johns Hopkins University, USA

MIC9.S-277 An Investigation on Computed Tomography Image Reconstruction with Compressed Sensing by L1 Norm Prior Image Constraints
Y. Liu, J. Ma, Y. Fan, Z. Liang, Stony Brook University, USA

MIC9.S-280 Using Monte-Carlo Simulations to Implement Corrections for I-124 as a Non-Pure Positron Emitter in Small Animal and Human PET Imaging
S. Sauerzapf1,2, L. Thomas2, M. Behe1, W. Weber1, U. Pietrzyk2,3, A. Zakhnini1, M. Mix1
1University Hospital of Freiburg, Germany; 2University of Wuppertal, Germany; 3Research Center Juelich, Germany; 4Helmholtz Center Dresden Rosendorf, Germany

MIC9.S-283 Depth-of-Interaction Estimates in a Microcolumnar Scintillator Structure from Optical Transport Monte Carlo MANTIS Simulations
C. Sze1,2, D. Sharma1, H. Bhandari1, V. Nagarkar1, A. Badano1
1FDA/CDRH/OSEL (Division of Imaging and Applied Math), US; 2RMD, US

MIC9.S-286 Effects of Scan Duration, Analysis Method, and SUV Measurement Error on Assessing Change in Response to Therapy
R. L. Harrison, B. F. Elston, R. Doot, T. K. Lewellen, D. A. Mankoff, P. E. Kinahan, University of Washington, USA

MIC9.S-289 Characterization of scattered radiation profile in volumetric 64 slice CT scanner: Monte Carlo study using GATE
A. Najafi Darmian1,2, M. R. Ay1, M. Pouladian2, A. Shirazi1,2, H. Ghadir1, A. Akbarzadeh1, P. Ghafarian1, H. Zaidi4
1azad university science and research branch, Iran; 2Tehran University of Medical Sciences, Iran; 3Shahid Beheshti University of Medical Sciences, Iran; 4Geneva University Hospital, Switzerland

MIC9.S-292 Channelized Hotelling Observers for Signal Detection in Stack-Mode Reading of Volumetric Images on Medical Displays with Slow Response Time
L. Platisa1, C. Marchessoux2, T. Kimpe2, E. Vansteenkiste1, A. Badano3, W. Philips1
1Ghent University, Belgium; 2Barco N.V., Belgium; 3FDA, US

MIC9.S-295 Implementing Geant4 on GPU for Medical Applications
H. Perez-Ponce1, Z. El Bitar2, Y. Bourrier1, D. Vintache3, A. Bonissent4, C. Morel1, D. Brasse1, D. Visvikis1, J. Bert3
1Aix-Marseille Universite, France; 2Institut Pluridisciplinaire Hubert Curien, France; 3CHU Morvan, France

Y. Calderon1, G. De Lorenzo1, P. Arce2, M. Chmeissani2, E. Mikhailova2, G. Arino1, Y. Ozsahin1, D. Uzun1, J. G. Macias-Montero1, C. Puigdengoles1, R. Martinez2, E. Cabruja2
1Instituto de Fisica de Altas energias (IFAE), Spain; 2CIEMAT, Spain; 3Centro Nacional de Microelectronica (CNM), Spain
Simulation of Pseudo-Clinical Conditions and Image Quality Evaluation of PET Scanner Based on Pixelated CdTe Detector
E. Mikhaylova1, G. De Lorenzo1, P. Arce3, M. Canadas2, M. Chmeissani1, G. Arino1, Y. Calderon1, Y. Ozsahin1, D. Uzun1, J. Gabriel1, C. Puigdengoles1, R. Martinez1, E. Cabruna3
1Institut de Física d'Altes Energies (IFAE), Spain; 2CIEMAT, Spain; 3Centro Nacional de Microelectrónica, Spain

Adaptive Panoramic Tomography (APT) for the Formation of Multi-Focal Image Layers with Enhanced Image Sharpness
D. S. Kim1, H. S. Cho1, J. E. Oh1,2, D. K. Hong1,2, S. I. Choi1,2, Y. O. Park1, Y. S. Koo1,2, U. K. Je1,2, Y. J. Yang1,2, M. S. Lee1, H. J. Kim1, S. H. Lee1, H. M. Cho1
1Yonsei University, South Korea; 2Vatech Co. Ltd., South Korea

Comparison of Single Shot DES and Conventional Methods Detector System Performance
E. Kim1,2, K. S. Joo2, B. J. Moon1, J. H. Ahn1, J. S. Kim1, H. S. Kim1, J. K. Yoon1
1DRTECH Corp., Korea; 2Myong-ji University, Korea

GPGPU-Based Optical Propagation Simulator of a Laser Processed Crystal Block for the “X’tal” Cube PET Detector
Y. Ogata1, T. Moriya2, N. Inadama3, F. Nishikido3, E. Yoshida3, H. Murayama1, T. Yamaya3, H. Haneishi3
1Chiba University, Japan; 2Hamamatsu Photonics k.K., Japan; 3National Institute of Radiological Sciences, Japan

A Simulation Study of the Effect of Phase-Shift on Dual Gated Myocardial Perfusion ECT
T.-S. Lee, M.-J. Park, B. M. W. Tsui
Johns Hopkins University, USA

A General Framework to Study Positron Range Distributions
J. Cal-Gonzalez1, J. L. Herraiz1, S. Espana1, P. M. G. Corzo1, J. M. Udias1
1Universidad Complutense Madrid, Spain; 2Ghent University Hospital, Belgium

Characterizing the Parallax Error in Multi-Pinhole Micro-SPECT Reconstruction
B. Vandeghinste1, J. De Beenhouwer1, R. Van Holen1, S. Vandenberghhe1, S. Staelens1,2
1Ghent University - IBBT, Belgium; 2University of Antwerp, Belgium

Evaluating Collimation Schemes for Nuclear Breast Imaging with High-Purity Germanium Detectors
D. L. Campbell, T. E. Peterson, Vanderbilt University, USA

Performance Evaluation of Large-Area CMOS Active-Pixel Detectors for Mammography
S. Yun1, S. Kam1, C. H. Lim1, J. C. Han1, O. Joe1, J.-M. Kim2, T. G. Achterkitchen1, H. K. Kim1
1Pusan National University, South Korea; 2Korea University, South Korea; 3DALSA Corporation, USA

Mass-Spring Systems Model of Compressed Breasts for Deformable Registration to Mammography
H. R. Park1, H. Youn1, J. H. Kim2, H. K. Kim1
1Pusan National University, Republic of Korea; 2Seoul National University, Republic of Korea

Ultra-Fast Hybrid CPU-GPU Monte Carlo Simulation for Scatter Correction in 3D PETs
K. S. Kim, J. C. Ye
Korea Advanced Institute of Science and Technology (KAIST), South Korea

Efficient Simulation of Non-Pure Positron Emitter in GATE Embedded with SimSET Multiple Photon History Generator
H.-H. Lin1, K.-S. Chuang1,2, Y.-C. Ni3, M.-L. Jan1
1National Tsing-Hua University, Taiwan; 2Institute of Nuclear Engineering and Nuclear Science, National Tsing-Hua University, Taiwan; 3Institute of Nuclear Energy Research, Atomic Energy Council, Taiwan
Y. S. Lee1,2, J. S. Kim1, K. M. Kim1, H.-J. Kim1, S. M. Lim1
1Korea Institute of Radiological & Medical Sciences, Korea; 2Yonsei University, Korea

Y. J. Jung1,2, J. G. Kim1, K. M. Kim1, J. S. Kim1, S. K. Woo1, J. A. Park1, Y. S. Lee1,2, W. Lee1, J. W. Yu1,2, K. Lee1
1Korea Institute of Radiologic And Medical Science, KIRAMS, Korea; 2Korea University, Korea; 3Yonsei University, Korea

MIC9.S-343 Using Myocardium-to-Background Ratio to Determine the Optimal Starting Angle for Non-360° Upright Cardiac SPECT Acquisition
H. Babla1, C. Bai, R. L. Conwell, R. N. Old
Digirad Corporation, USA

MIC9.S-346 An Investigation on Image Reconstruction of Coronary Arteries from Few-View Data
X. Han1, J. Bian1, D. R. Eaker2, E. Y. Sidky3, E. L. Rittman3, X. Pan1
1The University of Chicago, USA; 2Mayo Clinic College of Medicine, USA

MIC12.M-1 Quantitative Reconstruction of Small Animal Multiplexed Multi-Pinhole SPECT with Scatter and Attenuation Correction
J. Strydhorst1,2, R. G. Wells1,2
1University of Ottawa Heart Institute, Canada; 2Carleton University, Canada

MIC12.M-3 Validation of a GEANT4 simulation model for pinhole SPECT including calibration parameters
P. Aguiar1,2, F. Pino3,4, D. Ros1,2, Z. Bitar6
1Fundacion IDICHUS, Complexo Hospitalario Universitario de Santiago de Compostela, Spain; 2Universidade de Santiago de Compostela, Spain; 3Universitat de Barcelona, Spain; 4Servei de Fisica Mèdia i Protecció Radiològica, Spain; 5Ciber en Bioingeniería, Biomateriales y Nanomedicina, Spain; 6Institut Pluridisciplinaire Hubert Curien, France

MIC12.M-5 SiPM Side Detectors for Performance Enhancements of an EMCCD-Based Gamma Camera
S. Salvadori1, M. A. N. Korevaar1,2, J. W. T. Heemskerk1,2, R. Kreuger1, J. Huizenga1, S. Seifert1, D. R. Schaart1, F. J. Beekman1,2,3
1TUDelft, The Netherlands; 2UMC, The Netherlands; 3MILabs, The Netherlands

MIC12.M-7 Imaging Characterization of a Multi-Energy CT with Quasi-Monochromatic X-Ray Source
P. L. Rossi1, R. Calandrino1, A. Spinelli1, S. Cappelli1,3, G. Baldazzi1,3
1University of Bologna, Italy; 2IRCSS San Raffaele, Italy; 3INFN - National Institute for Nuclear Physics, Italy

MIC12.M-9 Design and Sampling Completeness Evaluation of Scanning Orbits in Multi-pinhole Small Animal SPECT Imaging
T. Dai1, T. Ma1, Q. Wei1, S. Wang1, H. Liu1, J. Cui1, Y. Liu1
1Tsinghua University, PR.China; 2Ministry of Education, PR.China

MIC12.M-11 Image Reconstruction Strategy for an Axial PET
E. Brard1, D. Brasse1,2
1Université de Strasbourg, IPHC, FRANCE; 2CNRS, UMR7178, FRANCE

MIC12.M-13 Radiation Dose-Based Comparison of PET and SPECT for Preclinical Bone Imaging
L. C. Johnson, R. W. Johnson, J. A. Sterling, M. G. Stabin, T. E. Peterson
Vanderbilt University, USA
MIC12.M-15 High-Purity Germanium Detector for Small Animal SPECT
L. C. Johnson, D. L. Campbell, T. E. Peterson
Vanderbilt University, USA

MIC12.M-17 A Versatile Laboratory Platform for Studying X-Ray 3D Breast Imaging

Yonsei university, South Korea

MIC12.M-21 A Depth-Encoding PET Detector Inserting Glass Plate Between Crystal Layers
J. Kang1,2, Y. Choi1, J. H. Jung1, W. Hu1,2, B.-T. Kim2
1Sogang University, Korea; 2Sungkyunkwan University School of Medicine, Korea

MIC12.M-23 Full 4π emission collection and reconstruction for small animal PET imaging
Y. Zhang, H. Baghaei, H. Li, S. Liu, R. Ramirez, S. An, C. Wang, W.-H. Wong
University of Texas MD Anderson Cancer Center, USA

MIC12.M-25 Promising Results on PSF Correction Applied in the Reconstruction Process of a Small Animal PET Image
A. Oroto1, C. Correcher2, A. Gonzalez3, A. Soriano1, M. Carles1, L. Moliner1, M. Seimetz3, J. M. Seimetz2, F. Sanchez3, J. M. Benloch1
1BS (CSIC - UPV - CIEMAT), Spain; 2ONCOVISION, Spain; 3IFIC (CSIC - UV), Spain

J. Seidel1,2, W. Xi1,2, J. W. Kakareka3, T. J. Pohida4, E. M. Jagoda4, M. V. Green1,2, P. L. Choyke2
1SAIC-Frederick, Inc. (Contractor), USA; 2Molecular Imaging Program, NCI, NIH, USA; 3SAIC-Frederick, Inc. (Fellow), USA; 4Signal Processing and Instrumentation Section, CIT, NIH, USA

MIC12.M-29 Dual-Gated Cardiac SPECT Imaging in Mice
C. Wu1,2, B. Vastenhouw2,3,4, J. R. de Jong1, R. A. J. O. Dierckx1, F. J. Beekman2,3,4
1University Medical Center Groningen, The Netherlands; 2University Medical Center Utrecht, The Netherlands; 3MILabs B.V., The Netherlands; 4Delft University of Technology, The Netherlands

MIC12.M-31 Single-Ended Readout of Scintillation Crystal Elements Enables Photon Interaction Depth for High Resolution PET
F. Taghibakhsh, C. S. Levin, Stanford University, USA

MIC12.M-33 Quality Control Measurement on NanoPET/CT
A. Racz, K. Nagy, G. Jakab, G. Nemeth
Mediso Medical Equipment Developing and Service Ltd., Hungary

MIC12.M-35 Design of a High Resolution Phoswich PET Detector
Q. Wei1,2, S. Wang, T. Ma, L. Lu, T. Dai, Y. Liu
Tsinghua University, China

MIC12.M-37 X-Ray Edge Subtraction Imaging of Gold Nanoparticle Concentrations for Biological Imaging
K. Pepper1, C. Ozkan2, C. Christodoulou2, D. Dreossi2, A. Castoldi2, C. Guazzoni3, A. Gibson2, G. J. Royle1
1University College London, UK; 2Politecnico di Milano and INFN-Sezione di Milano, Italy; 3Elettra Synchrotron Light Source, Italy

MIC12.M-39 Calibration of PET scanners with a new traceable point-like Ge68/Ga68 source
H. Hasegawa1, K. Oda1, Y. Wada3, Y. Sato1, H. Murayama2, T. Yamada1, M. Matsumoto3, M. Igarashi1, J. Iryo1, H. Kamitaka1
1Allied Health Sciences, Kitasato University, Japan; 2Tokyo Metropolitan Institute of Gerontology (TMIG), Japan; 3RIKEN Center for Molecular Imaging Science, Japan; 4National Institute of Advanced Industrial Science and Technology (AIST), Japan; 5National Institute for Radiological Sciences (NIRS), Japan; 6Japan Radioisotope Association (JRIA), Japan
MIC12.M-41 Atlas-Guided Automated Analysis of Small-Animal PET Studies
D. F. Gutierrez, H. Zaidi
PET Instrumentation & Neuroimaging Laboratory, Switzerland

MIC12.M-43 Assessment of the Effect of 3D Resolution Recovery During SPECT Image Reconstruction on Quantification of Small Liver Tumors: a Simulation Study
F. Kalantari, H. Rajabi, Tarbiat Modares University, Iran; M. Saghari, Tehran University of Medical Sciences, Iran

MIC12.M-45 Experimental Measurement of Human Head Motion for Clinical Dental CBCT System Design
L. Li, D. Wu, P. Liu, L. Liang, Z. Chen
Department of Engineering Physics, Tsinghua University, China

MIC12.M-47 Respiratory Gating for a Stationary Dedicated Cardiac SPECT System
C. Liu¹, C. Chan³, M. Harris², J. Biondi³, L. Volokh³, A. Sinusas³
¹Yale University, USA; ²Ivy Biomedical Systems, USA; ³GE Healthcare, Israel

MIC12.M-49 Quantitative Analysis Framework for SPECT•CT Tc-99m Bone Scintigraphy
M. Cachovan¹, A. H. Vija¹, J. Horngerger¹, T. Kuwert¹
¹Pattern Recognition Lab, University of Erlangen-Nuremberg, Germany; ²Siemens Medical Solutions USA Inc., USA; ³Clinic of Nuclear Medicine, University of Erlangen-Nuremberg, Germany

MIC12.M-51 A Bootstrap Method for Identifying Image Regions Affected by Intra-Scan Body Movement During a PET/CT Scan
S.-C. Huang, K.-P. Wong, H. Ye, M. Dahlbom, M. Wardak, W. Shao
UCLA David Geffen School of Medicine, U.S.A.

MIC12.M-53 Estimation of Kinetic Parameters and Tissue Heterogeneity from Patient Motion Corrupted PET Projections
J. Forma, J. Niemi, U. Ruotsalainen
Tampere University of Technology, Finland

P. L. Rossi¹, L. Andreani¹, S. Cappelli¹,², M. Zuffa³, G. Baldazzi¹,²
¹University of Bologna, Italy; ²INFN, Italy

MIC12.M-57 ROI Based Perfusion Estimation in Peripherals Using C-Arms: a Simulation Study
M. Giordano¹,², E.-J. Vonken², M. Bertram¹, W. Mali², M. Viergever², C. Neukirchen¹
¹Philips Research Laboratories Aachen, Germany; ²University Medical Center Utrecht, Netherlands

MIC12.M-59 Quantitative Capabilities of Current Commercial SPECT-CT Systems
C. Bernard, D. Nguyen, A. Seret
University of Liege, Belgium

MIC12.M-61 Beam Hardening Correction Using a Conical Water-Equivalent Phantom for Preclinical Micro-CT
J. Deng, S. Yan, M. Chen, Siemens Molecular Imaging, USA

MIC12.M-63 Quantitative Computed Microtomography for Evaluation of Radiotherapy Effects on Bone Microstructure
L. P. Nogueira¹, R. C. Barroso¹, C. J. G. Pinheiro¹, D. Braz¹, C. E. Almeida¹, C. B. Andrade²
¹Federal University of Rio de Janeiro, Brazil; ²State University of Rio de Janeiro, Brazil

MIC12.M-65 Respiratory Motion Estimation in Nuclear Medicine Imaging Using a Kernel Model-Based Particle Filter Framework
A. A. Abd. Rahni¹, E. Lewis¹, M. Guy², K. Wells³
¹University of Surrey, United Kingdom; ²Southampton University Hospital Trust, United Kingdom
**MIC12.M-67** Deadtime and Pile-up Correction Method Based on the Singles to Coincidences Ratio for PET

E. Vicente, J. L. Herranz, S. Espana, E. Herranz, M. Desco, J. J. Vaquero, J. M. Udias

1Universidad Complutense Madrid, Spain; 2Consejo Superior de Investigaciones Científicas (CSIC), Spain; 3Ghent Univ. Hospital, Belgium; 4Hospital General Universitario Gregorio Maranon, Spain; 5Universidad Carlos III de Madrid, Spain

**MIC12.M-69** Metal Artifact Reduction in CT-Based Attenuation Correction of PET Using Sobolev Sinogram Restoration

A. Mehranian, M. R. Ay, A. Rahmim, H. Zaidi

1Tehran University of Medical Sciences, Iran; 2Johns Hopkins University, USA; 3Geneva University Hospital, Switzerland

**MIC12.M-71** Evaluation of CT-Based Attenuation Correction for Small-Animal SPECT in Rats


1University Medical Center Groningen, The Netherlands; 2University Medical Center Utrecht, The Netherlands; 3MILabs B.V., The Netherlands; 4Delft University of Technology, The Netherlands; 5Radboud University Nijmegen Medical Centre, The Netherlands

**MIC12.M-73** Distortion Correction, Geometric Calibration, and Volume Reconstruction for an Isocentric C-Arm X-Ray System

R. Clackdoyle, B. Spencer, C. Mennessier, A.-C. Conneau, T. Xu

1CNRS and Jean Monnet University, France; 2University of Ottawa, Canada; 3Ecole Supérieure de Chimie Physique Electronique de Lyon, France

**MIC12.M-75** Development of Correction Methods for CdTe Detector with Edge-on Configuration for Gamma Camera


1Hitachi Consumer Electronics Co., Ltd., Japan; 2Hitachi, Ltd., Japan

**MIC12.M-77** Region Adaptive PET Gating Using Internal Motion Estimation


1Korea Institute of Radiological and Medical Science, Korea; 2Yonsei University, Korea

**MIC12.M-79** Geometric Calibration of Cone-Beam CT with a Flat-Panel Detector

D. Wu, L. Li, L. Zhang, Y. Xing, Z. Chen, Y. Xiao

Department of Engineering Physics, Tsinghua University, China

**MIC12.M-81** Deformable Image Registration by Regarding Respiratory Motion as 1D Wave Propagation in an Elastic Medium

R. K. Barnett, S. Meikle, R. Fulton

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

**MIC12.M-83** Robust Motion Correction for Respiratory Gated PET/CT Using Weighted Averaging

K. Thielemans, Hammersmith Imanet, GE Healthcare, UK; G. Gopalakrishnan, A. Roy, S. V. S. Thiruvenikadam, GE Global Research, India; S. D. Wollenweber, GE Healthcare, USA; R. M. Manjeshwar, GE Global Research, USA

**MIC12.M-85** Quantification Limits of Iterative PET Reconstruction Algorithms and Improved Estimation of Kinetic Constants

E. Herranz, J. L. Herranz, E. Vicente, S. Espana, M. Desco, J. J. Vaquero, J. M. Udias

1Universidad Complutense de Madrid, SPAIN; 2Consejo Superior de Investigaciones Científicas (CSIC), Spain; 3Ghent University Hospital, Belgium; 4Hospital Universitario Gregorio Maranon, Spain; 5Universidad Carlos III, Spain

**MIC12.M-87** Methods for Motion Correction Evaluation Using FDG Human Brain Scans on a High Resolution PET Scanner

S. H. Keller, M. Sibomana, O. V. Olesen, C. Svarer, S. Holm, F. Andersen, L. Hoejgaard

1Copenhagen University Hospital, Rigshospitalet, Denmark; 2Technical University of Denmark, Denmark; 3Siemens Healthcare, Denmark

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MIC12.M-89 Iterative Non-Rigid Image Registration Based on Moebius Transformations
G. V. Gerganov, K. K. Mitev, Sofia University, Bulgaria

MIC12.M-91 Experimental evaluation of simultaneous emission and transmission imaging using TOF information
P. Mollet, V. Keereman, S. Vandenberghhe
Ghent University IBBT IBiTech, Belgium

MIC12.M-93 Analysis of Lung Motion Due to Respiration and Its Application to PET Images
M. Kanai, H. Haneishi, Chiba University, Japan; Y. Tamai, A. Sakohira, K. Suga, St. Hill Hospital, Japan

MIC12.M-95 Intrinsic Respiratory Gating in PET Using External Markers
F. Buether, I. Ernst, M. Dawood, K. P. Schaefers
University of Muenster, Germany

MIC12.M-97 Ordered Subsets Acceleration of Iterative Algorithm for Variance Reduction on Compressed Sinogram Random Coincidences
V. Y. Panin, Siemens Healthcare, USA

MIC12.M-99 Development of an MPPC Detector for PET
Hamamatsu Photonics K.K., Japan

MIC12.M-101 Temperature Compensation Schemes for APD Detectors in PET
N. Zhang, M. Schmand, Siemens Molecular Imaging, USA

MIC12.M-103 Thin Substrate Powder Scintillator Screens for Use in Digital X-Ray Medical Imaging Applications
L.G. Valais1, G. P. Fountos1, C. M. Michail2, I. Seferis3, N. I. Kalyvas1, A. K. Myrafidis1, I. S. Kandarakis1, G. S. Panayiotakis2
1Technological Educational Institute (TEI) of Athens, Greece; 2University of Patras, Greece; 3Pammakaristos General Hospital, Greece

Yonsei University, Korea

Yonsei University, South Korea

MIC12.M-109 Operating Characteristics of Screen-Printed HgI2 Photoconductors for X-Ray Imaging
O. Lee1, H. Youn1, J. Park2, S. Kim2, S. Kim2, H. K. Kim1
1Pusan National University, Republic of Korea; 2Samsung Advanced Institute of Technology, Republic of Korea

MIC12.M-111 A High Resolution TOF-DOI Detector Block Using PQS Configuration
S. Ling, S. An, H. Li, C. Wang, R. A. Ramirez, Y. Zhang, H. Baghaei, W.-H. Wong
The University of Texas, M. D. Anderson Cancer Center, U.S.

T. Tsuda, J. Ohi, H. Tonami, K. Kitamura
Shimadzu Corporation, Japan

MIC12.M-115 Effect of Gamma Radiation on Possible Ionising Radiation Detectors and Dosimeters Based on Quantum Dots
D. E. Leslie, P. R. Hobson, D. R. Smith
Brunel University, UK

MIC12.M-117 A New Gamma Camera with a Gas Electron Multiplier
T. Koike, International University of Health and Welfare, Japan; S. Uno, T. Uchida, M. Sekimoto, T. Murakami, High Energy Accelerator Research Organization (KEK), Japan; M. Shoji, The Graduate University for Advanced Studies, Japan; F. Nagashima, Tohoku Gakuin University, Japan; K. Yamamoto, E. Nakano, Osaka City University, Japan
MIC12.M-119 Metal Micro-Detectors for the Mini-Beam Radiation Therapy
A. Chaus, V. Pugatch, O. Kovalchuk, Kiev Institute for Nuclear Research, Ukraine; M. Campbell, X. Llopart, CERN, Switzerland; S. Pospisil, Institute of Experimental and Applied Physics, Czech Republic; Y. Prezado, ESRF, France

MIC12.M-121 A Gaseous Based Drift Detector with GEM Readout for Tracking Positrons for PET
B. Azmoun1, T. Cao2, G. DeStefanis1, S. Stoll1, P. Vaska1, C. Woody1
1Brookhaven National Lab, USA; 2Stony Brook University, USA; 3Wagner College, USA

MIC12.M-123 Reflectivity Spectra for Commonly Used Reflectors
M. Janecek, Lawrence Berkeley National Laboratory, USA

MIC12.M-125 Novel High-Multiplexing Solid State DOI Detectors with a Direct Coupling Configuration
A. Kolb1, E. Lorenz1, N. Zhang1, D. Renker1, M. Schmand1, B. J. Pichler1
1University of Tuebingen, Germany; 2Max Planck Institute, Germany; 3Siemens Medical Solutions, USA; 4Technische Universitaet Muenchen, Germany

MIC12.M-127 A Pulse Restoration Circuit Minimizing Performance Degradation of PET Detector Caused by Using Long Cable
K. B. Kim1, Y. Choi1, J. Kang1, J. H. Jung1, W. Hu1
1Sogang University, Korea; 2Sungkyunkwan University School of Medicine, Korea

MIC12.M-129 Sensitivity Encoded Silicon Photomultipliers (SeSPs): a Novel Detector Design for Uniform Crystal Identification
V. Schulz2,3, P. Dueppenbecker4, C. W. Lerche5, C. Piemonte6
2Philips Research Europe – Aachen, Germany; 3RWTH-University, Germany; 4Foundation Bruno Kessler Trento, Italy

MIC12.M-133 Ultra High Resolution SPECT with CdTe for Small Animal Imaging Applications: Monte Carlo Simulation Study Using Voxelized Phantom
Yonsei University, South Korea

MIC12.M-135 Neutron Time-of-Flight Spectroscopy for Depth-Resolved Quantification through NSECT.
G. A. Agasthya, J. Shah, B. P. Harrawood, A. J. Kapadia, Duke University, USA

MIC12.M-137 Design and Initial Performance Evaluation of a Novel PET Detector Module Based on Compact SiPM Arrays
T. Xu1,2, Q. Fan1,2, T. Ma1,2, S. Wang1,2, Z. Deng1,2, L. Lu1,2, Y. Liu1,2
1Tsinghua University, China; 2Key Laboratory of Particle & Radiation Imaging, China

MIC12.M-139 Potential Advantages of Tapered Detector in PET
J. Zhu1,2, Q. Xie1,2, M. Niu1,2, Y. Li1,2, D. Xi1,2, P. Xiao1,2
1Huazhong University of Science and Technology, China; 2Wuhan National Laboratory for Optoelectronics, China

MIC12.M-141 Energy and Time Characterization of SiPM Detector Blocks
S. Safari Sanjani, F. Taghibakhsh, C. S. Levin
Stanford University, USA

MIC12.M-143 A Fuzzy Logic C-Means Clustering Algorithm to Enhance a Microcalcifications Cluster in Digital Mammograms
R. Magro, D. Cascio, L. Vivona, F. Fucia, G. Raso
University, Italy

MIC12.M-145 Radon Transform Technique for Linear Structures Detection: Application to Vessel Detection in Fluorescein Angiography Fundus Images
M. Tavakoli1,2, A. Mehdizadeh1, R. Pourreza1,4, H. R. Pourreza1,4, T. Banace1,2, M. H. Bahreini1,2
1Research assistant in Eye Image Analysis Research Group, Mashhad University of Medical Science, Iran; 2Mashhad University of Medical Sciences, Iran; 3Shiraz University of Medical Sciences, Iran; 4Ferdowsi University of Mashhad, Iran
MIC12.M-147 Automated Optic Nerve Head Detection in Fluorescein Angiography Fundus Images
M. Tavakoli1,2,3, M. H. Bahreini Tossi1,4, R. Pourreza1,4, T. Banaei1,4; H. R. Pourreza1,4
1Research assistant in Eye Image Analysis Research Group, Mashhad University of Medical Science, Iran; 2Shiraz University of Medical science, Iran; 3Mashhad University of Medical Sciences, Iran; 4Ferdowsi University of Mashhad, Iran

MIC12.M-149 An Image Processing Approach to Compensate for the Bladder Wall Motion and Deformation in MR Cystography
Q. Lin1,2, Z. Liang3, H. Li4, S. Jambawalikar5, Q. Wang, B. Phillips6, W. Walz7, M. Zawain8, D. Harrington8, X. He9
1Stony Brook University, USA; 2Sichuan University, China; 3University of North Carolina at Chapel Hill, USA

MIC12.M-151 Mosaics of Polynomial Transformations as a Patient-Specific Registration to Reduce Breathing Motion Artefacts
J. H. Jones7, E. Lewis8, A. Abd Rahni8, M. Guy9, M. Ezhil9, K. Wells10
1University of Surrey, UK; 2Southampton General Hospital, UK; 3The Royal Surrey County Hospital NHS Trust, UK

T. Ichihara, T. Natsume, Fujita Health University School of Health Science, Japan; K. Kitagawa, M. Ishida, H. Sakuma, Mie University Hospital, Japan

MIC12.M-155 Development of the Theory for Generating Regional Cardiac Perfusion Image During Coronary Angiography in the Coronary Angiography Lab
T. Ichihara1, T. Sakaguchi2, J. C. Trost3, O. Yousuf4, J. A. C. Lima4, J. Yao4, R. T. George1
1Fujita Health University School of Health Science, Japan; 2Toshiba Medical Systems Corporation, Japan; 3Johns Hopkins University School of Medicine, USA; 4Toshiba Medical Research Institute, USA

T. Ichihara1, T. Natsume1, K. Kitagawa2, T. Michibata1, Y. Ikeda3, M. Ishida2, H. Sakuma2
1Fujita Health University School of Health Science, Japan; 2Mie University Hospital, Japan; 3Toshiba Medical Systems Corporation, Japan

MIC12.M-159 Bayesian Analysis of Emission Tomography Data
A. Sitek
Brigham and Women’s Hospital and Harvard Medical School, USA

MIC12.M-161 3000 Non-Rigid Medical Image Registrations Overnight on a Single PC
A. Gruslys, S. J. Sawiak, R. E. Ansorge
University of Cambridge, United Kingdom

MIC12.M-163 Sokoloff and Patlak Methods for CMRGlu Quantification with Aortic Image-Derived Input Function: a Feasibility Study
E. Vanzi, V. Bertl, I. Freddi, C. Polito, G. Comis, A. Passeri, A. Pupi
University of Florence, Italy

MIC12.M-165 Evaluation Performance of Local Adaptive Binarization Algorithms for Trabecular Bone on Simulated μCT
E. Sales1, W. Gomez2, W. C. A. Pereira1
1Federal University of Rio de Janeiro, Brazil; 2CINVESTAV-IPN, Mexico

MIC12.M-167 Mass-Preserving Motion Correction of PET: Displacement Field Vs. Spline Transformation
E. Gigengack1,2, L. Ruthotto3, M. Burger4, C. H. Wolters5, X. Jiang5, K. P. Schaafers1
1European Institute for Molecular Imaging (EIMI), Germany; 2Institute for Computer Science, Germany; 3Institute of Mathematics and Image Computing (MCI), Germany; 4Institute for Computational and Applied Mathematics, Germany; 5Institute for Biomagnetism and Biosignalanalysis, Germany

MIC12.M-169 Lung CT Image Classification Using Locality-Constrained Linear Coding
M. Yi1, T. Nizhnyaya1, V. Megalooikonomou1, X. Wang2, L. Latecki1,
X. Dai, J. Tian, Z. Chen
Institute of Automation, Chinese Academy of Sciences (CAS), China

1Tohoku University Graduate School of Medicine, Japan; 2School of Medicine, King's College London, St. Thomas' Hospital, UK; 3Faculty of Medicine, Imperial College London, UK; 4National Institute for Longevity Sciences, Japan; 5be Neurodis Foutndation (Fondation Neurodis), France; 6Osaka University Graduate School of Medicine, Japan

MIC12.M-175 A Computational Approach for the Visualization of Hematopoietic Bone Marrow in Living Humans
A. M. Massone, G. Sambuceti, M. Brignone, S. Morbelli, F. Fiz, C. Marini, M. Massollo, F. Frassoni, M. Podesa, C. Campi, M. Piana
1CNR - SPIN, Italy; 2University of Genova, Italy; 3Azienda Ospedaliera Universitaria San Martino, Italy; 4CNR - IBSM, Italy; 5University of Helsinki, Finland

MIC12.M-177 Locally Adaptive Filtering for Edge Preserving Noise Reduction on Images with low SNR in PET
J. Langner, F. Hofheinz, B. Beuthien-Baumann, J. van den Hoff
1Institute of Radiopharmacy, Helmholtz-Zentrum Dresden-Rossendorf, Germany; 2University Hospital, Technische University Dresden, Germany

MIC12.M-179 Image Visualization Object Model
S. Adler, SAIC-Frederick, USA

C.-B. Wu, T.-J. Lin, K.-P. Lin, C.-H. Chen
1Chung Yuan Christian University, Taiwan; 2Changhua Christian Hospital, Taiwan; 3Taipei Medical University, Taiwan

P. H. Lim, U. Bacci, O. Araş, L. Bai
1The University of Nottingham, UK; 2National Institute of Health, USA; 3University of Maryland, USA

MIC12.M-185 Automated Multimodal Breast Image Registration
C. Curtis, R. Frayne, E. Fear, University of Calgary, Canada

MIC12.M-187 Sparse Clustering with Resampling for Subject Classification in PET Amyloid Imaging Studies
W. Bi, G. C. Tseng, L. A. Weisfield, J. C. Price, University of Pittsburgh, USA

MIC12.M-189 Initial Investigation of Single-Scan FDG+FLT PET Tumor Imaging Techniques
D. J. Kadrmas, University of Utah, USA

MIC12.M-191 Tilt Correction Using Hough Transform in CT Projection Data
W. Seong, J. Y. Kang, J. H. Kim, J. W. Park
Chungnam National University, South Korea

MIC12.M-193 Automatic Cerebral Aneurysm Detection in Multimodal Angiographic Images
C. M. Hentschke, O. Beuing, R. Nickl, K. D. Toennies
1University of Magdeburg, Germany; 2University Hospital of Magdeburg, Germany

M. A. Zuluaga, A. Pacureanu, P. Dong, M. Orkisz, F. Peyrin
1CREATIS, CNRS UMR 5220; INSERM U1044; Universite de Lyon; INSA Lyon, France; 2ESRF, France
MIC12.M-197 3D Breast Registration for PET-CT and MR Based on Surface Matching
H. Lee, K. Lee, E. Min, Korea University, Korea; I. Joo, H. Moon, Sejong University, Korea; K.-M. Kim, Korea Institute of Radiological & Medical Sciences, Korea

MIC12.M-199 PET Sinogram Denoising by Block-Matching and 3D Filtering
S. Peltonen, U. Tuna, U. Ruotsalainen Tampere University of Technology, Finland

MIC12.M-201 Attenuation Correction Using Level Set Method for Application Specific PET scanners
Y. Yamakawa, K. Kitamura, Shimadzu Corporation, Japan

MIC12.M-203 Representation of the Arterial Input Function using a Markov Chain Whole-Body Circulation Model
J. Huang, F. O’Sullivan, J. N. O’Sullivan, University College Cork, Ireland; D. A. Mankoff, University of Washington and Seattle Cancer Care Alliance, US

MIC12.M-205 Leader-Follower Clustering Algorithm for Automatic Segmentation of Cardiac PET Studies
J. M. Mateos-Perez1,2, J. J. Vaquero1, C. Garcia-Villalba1, L. Cusso1,2, M. Desco1,2,3
1Hospital, General Universitario Gregorio Maranon, Spain; 2CIBERSAM, Spain; 3Universidad Carlos III, Spain

MIC12.M-207 Efficient Colon Wall Flattening by Improved Conformal Mapping Methodologies for Computed Tomography Colonography
R. Shi, H. Zhu, X. Gu, Z. Liang Stony Brook University, United States

MIC12.M-209 A Study on Quality Level Reproducibility for the Usability of Irreversible Compression in Radiological Imaging
A. Signoroni1, C. Tonoli1, I. Castiglioni1,2,3
1University of Brescia, Italy; 2H.S. Raffiotele Scientific Institute, Italy; 3IBFM-CNR, Italy

E. Dura, J. Domingo, G. Ayala, University of Valencia, Spain; L. Marti-Bonmati, Hospital Universitario y Politecnico La Fe, Spain

MIC12.M-213 A Precise Calculation of Bladder Wall Thickness for Detection of Bladder Abnormalities via MR Cystography
Y. Zhao1, H. Zhu1, C. Duan1, X. Gu1, Z. Liang1
1Stony Brook University, USA; 2Tsinghua University, China

H. Yamauchi, S. Goto, S. Kondo, Y. Tsuji, Y. Hyodo, Y. Azuma Okayama University, Japan

T. Dima, J. Domingo, E. Dura Universitat de Valencia, Spain

MIC12.M-219 Development of a Toolkit to Analyze Lower Limb Radiographic Imaging with Knee Osteoarthritis Based on Functional Biomechanical Parameters
F. D. A. Lemos1, G. Hoff1, F. C. Karam3, M. A. Vaz1
1Universidade Federal do Rio Grande do Sul, Brazil; 2Pontificia Universidade Catolica do Rio grande do Sul, Brazil; 3Hospital So Lucas da Pontificia Universidade Catolica do Rio Grande do Sul, Brazil

MIC12.M-221 A Depth-of-Interaction PET Detector Using Mutual Gain-Equalized Silicon Photomultipliers
W. Xi, A. G. Weisenberger, H. Dong, B. Kross, S. Lee, J. E. McKisson, J. McKisson, C. Zorn
Thomas Jefferson National Accelerator Facility, USA
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- **VCC Auditorium 1**
  - 08:00: MIC13 Multi-Modality Systems 2
  - 08:30: MIC16 Student Competition

- **VCC Auditorium 2**
  - 08:00: Refresher: MIC An Introduction to Modern CT
  - 08:30: MIC14 Image Processing and Parametric Imaging
  - 09:00: MIC17 Data Corrections for PET

- **VCC Auditorium 3 A&B**
  - 08:00: R17 GdTe II
  - 08:30: R18 Characterization III
  - 09:00: R19 CZT III
  - 09:30: R20 CZT IV

- **VCC Room 1&2**

- **VCC Room 3&4**

- **VCC Multipurpose 1&2**

- **Meliá Valentia A**

- **Meliá Valentia B**

- **Meliá Valentia C**

- **Workshop on 3He Alternatives for Neutron Detection**
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**Friday - Daily Schedule 225**

- **Fri Oct 26**
- **Meliá Meeting 1&2&3**
- **Meliá Room A&B**
- **Sorolla Gran Recati**
- **Sorolla Arenas-Perellonet**
- **Sorolla Pinelló/Faro Almada/Raco**
- **VCC Multipurpose 2**

**MIC Dinner (starts at 20:00)**
**MIC13 Multi-Modality Systems 2**

**Friday, Oct. 28 08:30-10:30  VCC, Auditorium 1**

Session Chairs: **George K. Loudos**, Department of Medical Instruments Technology, Technological Educational Institute of Athens, Greece  
**Craig S. Levin**, Stanford University School of Medicine, United States

**MIC13-1** (08:30) An MRI-Compatible PET Insert for Whole Body Studies in Rodents at High Functional and Anatomical Resolution

P. Vaska1,2, M. L. Purschke1, J. Fried1, S. S. Junnarkar1, E. Gualtieri3, J. S. Karp1, S. Stoll1, S. H. Maramraju1, B. Ravindranath3, M. Budassi2, T. Cao1, J.-F. Pratte4, P. O’Connor1, D. J. Schlyer1, C. L. Woody1  
1Brookhaven National Laboratory, U.S.A.; 2Stony Brook University, U.S.A.; 3University of Pennsylvania, U.S.A.; 4University of Sherbrooke, Canada

**MIC13-2** (08:45) Clinical Evaluation of a Prototype Simultaneous PET-MRI Breast Imaging System

1Stony Brook University, USA; 2Taipei Medical University Hospital, Taiwan; 3Brookhaven National Laboratory, USA; 4Aurora Imaging Technology, Inc., USA

**MIC13-3** (09:00) Towards X-Ray Differential Phase Contrast Mammography: a Native Breast Tissue Study

Z. Wang1, T. Thuering1, C. David1, E. Roessl2, M. Trippel1, R. A. Kubik-Huch1, G. Singer1, M. K. Kohl1, N. Hauser4, M. Stampanoni1,5  
1Paul Scherrer Institut, Switzerland; 2Philips Technologie GmbH, Germany; 3Kantonsspital Baden, Switzerland; 4Interdisciplinary Breast Center Baden, Kantonsspital Baden, Switzerland; 5University and ETH Zurich, Switzerland

**MIC13-4** (09:15) Dosimetric Characterization of an X-Ray Luminescence Optical Tomography Scanner Prototype

A. Martinez-Davalos1,2, C. Li1, M. Rodriguez-Villafuerte1,2, S. R. Cherry1  
1University of California, Davis, United States; 2Instituto de Fisica, UNAM, Mexico

**MIC13-5** (09:30) Design of a Realistic PET-CT-MRI Phantom

V. Keereman1, P. Mollet1, Y. Fierens2, S. Espana1, S. Vandenberghe1  
1Ghent University-IBBT-IBiTech, Belgium; 2UZ Brussel, Belgium

**MIC13-6** (09:45) High Performance SPECT System for Simultaneous SPECT-MR Imaging of Small Animals

B. M. W. Tsui, J. Xu, A. Rittenbach, S. Chen, A.-M. El-Sharkawy, W. A. Edelstein, Johns Hopkins University, United States; X. Guo, A. Liu, J. W. Hugg, Gamma Medica, Inc., United States

**MIC13-7** (10:00) Feasibility Study for a PET Detector Integrated with a RF Coil for PET-MRI

E. Nishikido1, A. Tachibana1, T. Obata1, S. Yoshioka2, N. Inadama1, E. Yoshiida1, H. Tashima1, M. Suga1, H. Murayama1, T. Yamaya1  
1National Institute of Radiological Sciences, Japan; 2Chiba University, Japan

**MIC13-8** (10:15) Dynamic Region-of-Interest Cone-Beam CT for Image-Guided Postmastectomy Radiotherapy

E. Pearson, H. Al-Hallaq, X. Pan, C. Pelizzari, University of Chicago, USA

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**MIC14 Image Processing and Parametric Imaging**

**Friday, Oct. 28 08:30-10:30  VCC, Auditorium 2**

Session Chairs: **Richard E. Carson**, Yale University, United States  
**Manuel Desco**, Universidad Carlos III de Madrid, Spain

**MIC14-1** (08:30) A Study on CT Sinogram Statistical Distribution by Information Divergence Theory

J. Ma1,2, Z. Liang1, Y. Fan1, Y. Liu1, J. Huang2, H. Lu1, W. Chen2  
1Stony Brook University, USA; 2Southern Medical University, China; 3Military Medical University, China
MIC14-2 (08:45) Clough-Tocher Interpolation of Virtual Sinogram in a Delaunay Triangulated Grid for Metal Artifact Reduction of PET/CT Images
M. Abdoli, J. R. de Jong, J. Pruim, R. A. J. O. Dierckx, University Medical Center Groningen, The Netherlands; H. Zaidi, Geneva University Hospital, Switzerland

MIC14-3 (09:00) Lung Tumor Delineation in PET-CT Images Based on a New Segmentation Energy
C. Ballangan1,2, X. Wang1, D. Feng1,3
1Sydney University, Australia; 2Petra Christian University, Indonesia; 3Hong Kong Polytechnic University, Hong Kong

MIC14-4 (09:15) Mass-Preserving Motion Correction of Dual Gated Cardiac PET
F. Gigengack1,2, L. Ruthotto1, M. Burger1, C. H. Wolters1, X. Jiang2, K. P. Schaefer1
1European Institute for Molecular Imaging (EIMI), Germany; 2Institute for Computer Science, Germany; 3Institute of Mathematics and Image Computing (MIC), Germany; 4Institute for Computational and Applied Mathematics, Germany; 5Institute for Biomagnetism and Biosignalanalysis, Germany

MIC14-5 (09:30) Influence of the Partial Volume Effect Correction Method on the Performance of OSEM Reconstruction Based Dynamic PET
S. L. Bowen1, L. G. Byars2, C. J. Michel2, A. G. Sorensen1, C. Catana1
1Massachusetts General Hospital, USA; 2Siemens Medical Solutions, USA

MIC14-6 (09:45) Fourier Domain Closed-Form Formulas for Estimation of Kinetic Parameters in Multi-Compartment Models
G. L. Zeng, D. J. Kadrmas, University of Utah, USA; G. T. Gullberg, Lawrence Berkeley National Laboratory, USA

MIC14-7 (10:00) Simultaneous Water Activation and Glucose Metabolic Rate Imaging with PET.
J. Verhaeghe, A. J. Reader
McGill University, Montreal Neurological Institute, Canada

MIC14-8 (10:15) Compressed sensing for the multiplexing of signals from large area PET detector modules
P. D. Olcott, G. Chinn, C. S. Levin
Stanford University, USA

MIC16-1 (14:30) Validation Study of VP-PET Insert for Enhancing Breast Cancer PET Imaging While Preserving Full Field of View Capacity
A. J. Mathews, S. Komarov, H. Wu, J. A. O’Sullivan, Y.-C. Tai
Washington University in St Louis, USA

MIC16-2 (14:45) LabPET II, an APD-Based PET Detector Module with Counting CT Imaging Capability
M. Bergeron1, C. Thibaudeau1, J. Cadorette1, C. M. Pepin1, M.-A. Tetrault1, M. Davies1, H. Dautet1, P. Deschamps2, R. Fontaine1, R. Lecomte1
1Universite de Sherbrooke, Canada; 2Excellitas Technologies, Canada

MIC16-3 (15:00) A System Calibration and Fast Iterative Reconstruction Method for Next-Generation, SPECT Imagers
B. W. Miller1, R. Van Holen2, H. H. Barrett2, L. R. Furen1
1University of Arizona, USA; 2Ghent University, Belgium

MIC16-4 (15:15) Novel SLAM-Based Markerless Motion Tracking of Conscious Unrestrained Rodents in PET
A. Z. Kyrne1, S. R. Meikle1, C. Baldock1, R. R. Fulton1,2
1University of Sydney, Australia; 2Westmead Hospital, Australia
**MIC16-5 (15:30) Investigation of 4D PET Attenuation Correction Using Ultra-Short Echo Time MR**

C. Buerger, A. Aitken, C. Tsoumpas, A. P. King, V. Schulz, P. Marsden, T. Schaefter

1King’s College London, United Kingdom; 2King’s College Hospital, United Kingdom; 3Philips Research, Germany

**MIC16-6 (15:45) A Nonlocal Averaging Technique for Kinetic Parameter Estimation from Dynamic PET Data**

J. Dutta, G. El Fakhri, R. M. Leahy, Q. Li

1University of Southern California, USA; 2Massachusetts General Hospital, USA

**MIC17 Data Corrections for PET**

Friday, Oct. 28 14:30-16:00 VCC, Auditorium 2

Session Chairs: Charles C. Watson, Siemens Medical Solutions Molecular Imaging, United States
Nicola Belcari, Department of Physics, University of Pisa, Italy

**MIC17-1 (14:30) Design and Development of Phantoms Capable of Continuous Motion During Simultaneous PET-MR Acquisitions**

G. M. Soultanidis, J. E. Mackewn, C. Tsoumpas, C. Buerger, P. Halsted, T. Schaefter, V. Schulz, P. K. Marsden

1King’s College London, United Kingdom; 2Philips Research, Germany

**MIC17-2 (14:45) Digital Anthropomorphic Phantoms of Non-Rigid Human Respiratory and Voluntary Body Motions: A Tool-Set for Investigating Motion Correction in 3D Reconstruction.**

A. Konik, C. M. Connolly, K. L. Johnson, P. K. R. Dasari, P. Segars, P. H. Pretorius, M. A. King

1Umass Medical School, United States; 2Duke University Medical School, United States

**MIC17-3 (15:00) Statistical Evaluation of PET Motion Correction Methods Using MR Derived Motion Fields.**

I. Polycarpou, C. Tsoumpas, P. K. Marsden

King’s College London, United Kingdom

**MIC17-4 (15:15) Motion Correction in PET-MRI: a Human Torso Phantom Study**


1University of Muenster, Germany; 2University of Nuernberg-Erlangen, Germany

**MIC17-5 (15:30) Real-Time Respiratory Motion Correction for Simultaneous PET-MR Using an MR-Derived Motion Model**

A. P. King, C. Tsoumpas, C. Buerger, V. Schulz, P. Marsden, T. Schaefter

1King’s College London, United Kingdom; 2Philips Research, Germany

**MIC17-6 (15:45) Evaluation of Image Based Spatially Variant and Count Rate Dependent Point Spread Functions on the HRRT PET Scanner**


1The University of Manchester, United Kingdom; 2McGill University, Canada
Friday - RTSD Oral Presentations

R17 CdTe II
Friday, Oct. 28 08:30-10:05 VCC, Auditorium 3 A & B

Session Chair: Paul Siffert, Eurorad, Strasbourg, France

R17-1 (08:30, invited) Energy Discriminated X-Ray CT with High Count Rate CdTe X-Ray Spectrometer
T. Aoki1,2, A. Koike1,2, H. Mori1, T. Okunoyama1,2, H. Mimura1, T. Yamakawa1
1Shizuoka University, Japan; 2ANSeC Inc., Japan

R17-2 (08:50) Characterization of X- and Gamma Ray CdTe Radiation Detectors
A. Raulo, M. Sowinska, G. Hennard, EURORAD, France; E. Perillo, G. Patenoster, L. Campajola, University Federico II, Italy

R17-3 (09:05) Characterisation of CdTe for a Prototype Hybrid Pixel Detector Front End
D. A. Prokopovich1, M. Ruat2,3, M. I. Reinhard1
1Australian Nuclear Science and Technology Organisation, Australia; 2Monash University, Australia; 3European Synchrotron Radiation Facility, France

R17-4 (09:20) Investigation of the X-Ray Response of CdTe Pixelated Detectors Using the TIMEPIX Photon-Counting Readout Chip
M. Ruat, C. Ponchut, ESRF, France

R17-5 (09:35) Effects of Dislocation Walls on the Performance of CdTe/CdBased X-Ray Detector
C. Buis1, E. Gros d’aillon1, G. Marrackhi1, A. Brambilla1, L. Verger1
1CEA/LETI/MINATEC Campus, France; 2Université de Saint-Etienne, Jean Monnet, F-42000, France

R17-6 (09:50) Characterization of Metal Contacts for CdTe and (CdZn)Te Detectors
E. Belas, R. Grill, S. Uxa, P. Praus, J. Bok, J. Franc, P. Hoschl, Institute of Physics, Charles University, Czech Republic; R. B. James, Brookhaven Nat.Lab., USA

R18 Characterization III
Friday, Oct. 28 11:00-12:45 VCC, Auditorium 3 A & B

Session Chair: Jan S. Iwanczyk, DxRay, Inc., United States

R18-1 (11:00) GaAs P-I-N Diode for Room Temperature Soft X-Ray Photon Counting
J. S. Ng1, R. Gomes1, N. Babazadeh1, J. Lees2, J. David1, C. H. Tan1
1University of Sheffield, UK; 2University of Leicester, UK

R18-2 (11:15) Experimental Evidence for the Presence of Cd Vacancies and a-Centers in CZT Detectors
R. Gul1, A. E. Bolotnikov1, P. M. Fochuk2, J. Franc3, K. H. Kim1, Y. Cui1, G. S. Camarda1, A. Hassain1, G. Yang1, R. B. James1
1Brookhaven National Laboratory, USA; 2Chernivtsi National University, Ukraine; 3Charles University, Czech Republic

R18-3 (11:30) The Influence of Edge Effects on the Detection Properties of Detector-Grade Cadmium Telluride
M. Bosma1, S. Vaehaenen1, J. Visser1
1Nikhef - National Institute for Subatomic Physics, The Netherlands; 2VTT, Finland

R18-4 (11:45) Dynamical Properties of Electron and Hole Generated in CdTe Radiation Detector Probed by Optical Pulses
T. Ito, Y. Suzuki, A. Koike, H. Mori, Y. Neo, H. Mimura, T. Aoki
Shizuoka University, Japan

R18-5 (12:00) CdTe Linear Pixel X-Ray Detector with Enhanced Spectrometric Performance for High Flux X-Ray Imaging
A. Brambilla1, P. Ouvrier-Buffet1, J. Rinkel1, G. Gonon1, C. Boudou2, L. Verger1
1CEA-LETI/MINATEC Campus, FRANCE; 2MULTIX SA, FRANCE
R18-6  (12:15) Towards Realization of CdMnTe (CMT) X-Ray Detectors
R. Rafiei, D. Boardman, D. A. Prokopovich, A. Sarbutt, M. I. Reinhard
Australian Nuclear Science and Technology Organization, Australia

R18-7  (12:30) Resistivity and Mu-Tau Imager for Automatic Characterization of Semiconductor Materials
M. Sowinska, H. Simon, A. Raulo, EURORAD, France; A. Mycielski,
D. Kochanowska, M. Witkowska-Baran, IPPAN, Poland; R. B. James,
Brookhaven National Laboratory, USA

R19  CZT III

Friday, Oct. 28  14:30-16:00  VCC, Auditorium 3 A & B

Session Chair: Giuseppe S. Camarda, Brookhaven National Lab, United States

R19-1  (14:30) Characterisation of Single Crystal CdZnTe Material Grown by the Modified Vertical Bridgman Method and Its Application in Hard X-Ray Imaging Applications
M. C. Veale1, S. Bell1,2, P. Seller1, M. D. Wilson1, P. J. Sellin2, Y. Xu3, W. Jie3
1STFC Rutherford Appleton Laboratory, UK; 2University of Surrey, UK;
3Northwestern Polytechnical University, China

R19-2  (14:45) Unique Deep Level in Spectroscopic CdZnTe: Compensation, Trapping, and Polarization
V. Babenskova, Institute of Semiconductor Physics, Ukraine; J. Franc, Charles University in Prague, Czech Republic; E. Dieguez, Universidad Autonoma de Madrid, Spain; M. V. Sochinsky, Consorzio CREO, Italy; R. B. James,
Brookhaven National Laboratory, USA

R19-3  (15:00) Post-Growth Annealing Investigation of CdZnTe Crystals for X-Ray and Gamma-Ray Detection Applications
G. Yang1, A. E. Bolotnikov1, P. M. Fochuk2, K. H. Kim1, Y. Cui1,
G. S. Camarda1, A. Hussain1, R. Gul1, R. B. James1
1Brookhaven National Laboratory, USA; 2Chernivtsi National University, Ukraine

R19-4  (15:15) Polarization Study of CdZnTe under High X-Ray Flux Using the TOF Technique
O. Tousignant, J. E. Greenspan, Anrad Corporation, Canada; D. Dolazza,
B. U. Karbeyaz, Analogic Corporation, USA

R19-5  (15:30) Low Cost, Thick CZT Spectroscopic Detectors by Sensor-Pack Construction of Multiple Tile Pieces
T. Zhang, Y. Du, J. E. Tkaczuk, GE Global Research Center, USA; H. Chen,
G. Bindley, Redlen Technologies, Canada

R19-6  (15:45) Achieving High Position Resolution Using CZT Drift Strip Detectors
I. Kuvvetli, DTU Space National Space Institute, Technical University of Denmark, Denmark; G. Benassi, L. Marchini, N. Zambelli, A. Zappettini,
IMEM-CNR, Italy; E. Caroli, J. B. Stephen, N. Auricchio, INAF/IASF, Italy

R20  CZT IV

Friday, Oct. 28  16:30-17:30  VCC, Auditorium 3 A & B

Session Chair: Michael Fiederle, Freiberger Materialforschungszentrum, Germany

R20-1  (16:30) CdZnTe Electro-Optic Response to Nuclear Reactor Pulsing
K. A. Nelson1, K. R. Arpin1, J. A. Geuther1, J. L. Neihart1, T. A. Riedel1,
R. A. Rojeski3, D. S. McGregor
1Kansas State University, USA; 2Cymer, Inc., USA

R20-2  (16:45) Electroless Plating of Au, Pt, or Ru Thin Film Layers on CdZnTe
Q. Zheng1, F. Dierre1, V. Corregidor2, J. Crocco1, H. Bensalah1, J. L. Plaza1,
E. Alves1, E. Dieguez1
1Universidad Autonoma de Madrid, Spain; 2Unidade de Fisica e Aceleradores, Portugal
R20-3 (17:00) Defect Analysis on MTPVT Grown CdZnTe Crystals by PICTS
V. Perumal\textsuperscript{1,2}, A. Lohstroh\textsuperscript{1}, P. J. Sellin\textsuperscript{1}, M. Ayoub\textsuperscript{2}, A. Pym\textsuperscript{2}, T. Wright\textsuperscript{2}
\textsuperscript{1}University of Surrey, UK; \textsuperscript{2}Kromek Ltd, UK

R20-4 (17:15) Deep Trap Analysis in CdZnTe:In by Thermally Simulated Current and Thermoelectric Effect Spectroscopy
L. Xu, W. Jie, T. Feng, R. Nan, G. Zha, Y. Xu, T. Wang
Northwestern Polytechnical University, China
MIC15.S-2 Tracking Coincidence Events in PET Even When Count Rates Are Extremely High: the Lost-Event Tally Packet Concept
W. F. Jones, J. E. Breeding, J. H. Reed, W. Luk, A. Moor, M. E. Casey
Siemens Medical Solutions, USA

MIC15.S-5 Analyzing the Effect of Timing Accuracy on NECR Performance for Dedicated Breast PET
K. Saha¹, Y. Chen¹,², S. J. Glick¹
¹University of Massachusetts Medical School, USA; ²Henry M Jackson Foundation for the Advancement of Military Medicine, USA

MIC15.S-8 Investigation of Respiratory Motion Correction With and Without Motion Correction of Attenuation Map in Cardiac SPECT/CT
J. Dev¹, W. P. Segars², P. H. Pretorius¹, M. A. King¹
¹University of Massachusetts Medical School, MA; ²Duke University, NC

MIC15.S-11 Variations on the NEMA NU4-2008 Testing Procedures and Effect on the Performance Measurement Results
E. Elhami, J. Boulding, University of Winnipeg, Canada; A. L. Goertzen, University of Manitoba, Canada

MIC15.S-14 Extending QuickSilverTM Electronics for PET Insert Integration
D. Hu, S. B. Siegel, Siemens Medical Solutions USA, Inc., USA; H. Wu, J. Wen, B. Ravindranath, Y.-C. Tai, Washington University in St. Louis, USA

MIC15.S-17 Dual-Headed SPECT for Awake Animal Brain Imaging

MIC15.S-20 Evaluation of a Resistor Network Charge Division Multiplexing Circuit for a 16 Pixel SiPM Array
A. L. Goertzen¹, M. M. McClarty¹,², C. J. Thompson³, F. Retiere⁴, P. Kozlowski¹, L. Ryner¹, G. Stortz¹, V. Sossi¹
¹University of Manitoba, Canada; ²University of Winnipeg, Canada; ³McGill University, Canada; ⁴TRIUMF, Canada; ⁵University of British Columbia, Canada; ⁶National Research Council Canada, Canada

MIC15.S-23 A Low Cost High Performance Planar Detector for Positron Emission Tomography
F. Retiere¹, A. L. Goertzen⁵, P. Kozlowski⁵, M. McClarty³, L. Ryner⁴, V. Sossi³, G. Stortz¹, C. J. Thompson⁴
¹TRIUMF, Canada; ²University of Manitoba, Canada; ³University of British Columbia, Canada; ⁴National Research Council, Canada; ⁵McGill University, Canada

MIC15.S-26 Study of Readout for Groups of Position Sensitive Avalanche Photodiodes Used in a 1 mm³ Resolution Clinical PET System
P. D. Reynolds, F. W. Y. Lau, A. Vandenbrouke, C. S. Levin
Stanford University, USA

MIC15.S-29 Design and Initial Performance Evaluation of DbPET2, an Intermediate Generation Breast PET Prototype
A. Ferrero¹, F. Godinez¹, A. J. Chaudhari¹, Q. Peng¹, C. Vu², W.-S. Choong³, W. W. Moses², R. D. Badawi¹
¹University of California, Davis, USA; ²Lawrence Berkeley Nat. Lab., USA

MIC15.S-32 Optimal Design of Fan Beam Collimation for Pixelated Breast Imaging Systems
R. M. Capote, P. M. Almeida
Institute of Biophysics and Biomedical Engineering, Portugal
MIC15.5-35 Development of High-Sensitivity CdTe SPECT System with 4-Pixel Matched Collimator and Its Clinical Applicability
Y. Morimoto1, A. Suzuki1, T. Ishitsu1, Y. Ueno1, K. Kobashi2, N. Kubo2, T. Shiga3, Y. Kuge2, N. Tamaki3
1 Central Research Laboratory, Hitachi Ltd., Japan; 2 Central Institute of Isotope Science, Hokkaido University, Japan; 3 Graduate School of Medicine, Hokkaido University, Japan

MIC15.5-38 Resolution Improvement by Interpolation of Charge Sharing Event Position in 350μm Pitch Pixelated CdZnTe Detectors
Y. Yin1, X. Chen1, H. Wu2, S. Komarov2, K. Lee2, Q. Guo1, H. Krawczynski1, Y.-C. Tai2
1 School of Nuclear Science and Technology, Lanzhou University, China; 2 Mallinckrodt Institute of Radiology, Washington University in St. Louis, USA; 3 Department of Physics, Washington University in St. Louis, USA

MIC15.5-41 Comparison of Analog Signal Multiplexing Methods for SiPM Based Position Sensitive PET Block Detectors
H. S. Yoon, J. S. Lee
Seoul National University College of Medicine, Korea

MIC15.5-44 Development of Compact ToT Based LuAG-APD PET
K. Shimazoe, Y. Wang, H. Takahashi, The University of Tokyo, Japan; K. Kamada, Furukawa Co., Ltd., Japan; M. Yoshino, K. Kataoka, Waseda University, Japan; T. Yanagida, A. Yoshikawa, K. Kugamai, Tohoku University, Japan

MIC15.5-47 Validation of a voxel-based statistical analysis method for FP-CIT PET in a Parkinsons disease rat model
A. R. Yu1, J. S. Kim1, J. S. Moon1, K. M. Kim1, J. G. Kim1, J. A. Park1, S. K. Woo1, H. J. Kim2, S. M. Lim1
1 Korea Institute of Radiological & Medical Sciences, Korea; 2 Yonsei University, Korea; 3 CHA University, Korea

MIC15.5-50 MPPC Arrays in PET Detectors with LSO and BGO Scintillators
T. Szczeniak, M. Moszynski, M. Grodzicka, M. Szawłowski, D. Wolski, Soltan Institute for Nuclear Studies, Poland; J. Baszak, Hamamatsu Photonics Deutschland GmbH, Germany

MIC15.5-53 The Electronics Hardware Aspects of a Prototype of an Experimental SPECT System
G. Panjkovic, M. Dimmock, Monash University, Australia

MIC15.5-56 Study of TOF-PET Capability with LFS and MPPC
M. Yamazaki, T. Takeshita, Shinshu University, Japan

MIC15.5-59 ClearPEM Scanners: Performance Results and Studies in Preclinical Environment
C. Ortigao1, P. Almeida2, F. Botelho2,3, R. Bugalho1, S. Carvalho1, C. S. Ferreira1,2, N. C. Ferreira1, M. V. Martins1, N. Matela1, J. A. Neves1, A. Rodrigues1, A. S. Rodrigues1, J. C. Silva1, R. Silva1, J. Varela1
1 LIP, Portugal; 2 IBEB, Portugal; 3 IBILI/FMUC, Portugal; 4 ICNAS, Portugal

MIC15.5-62 Investigation of Pseudo 3D Imaging Method for Small Objects Using a Stationary Gamma Camera
J. K. Bae1, S. J. Lee2, M. C. Ko1, Y. K. Kim1,2, K. S. Lee1, J. H. Joung1,2
1 Korea University, Korea; 2 NuCare Medical Systems, Korea

MIC15.5-65 Evaluation of APD and SiPM Matrices as Sensors for Monolithic PET Detector Blocks
P. Garcia de Acilu Laa, P. Rato Mendes, I. Sarasola, L. Romero, C. Willmott CIEMAT, Spain

MIC15.5-68 Preclinical Studies Using a Prototype High-Resolution PET System with Depth of Interaction
M. Safavi-Naeini1, D. R. Franklin1, M. Lerch1, M. Petasecca1, G. Moorhead1, R. Kirkham1, P. Dunn1, G. O’keefe1, G. Deijeronimo1, A. B. Rosenfeld1
1 University of Wollongong, Australia; 2 University of Technology Sydney, Australia; 3 CSIRO, Australia; 4 Austin Hospital, Australia; 5 BNL, USA

MIC15.5-71 Long Term Quantitative Stability of the MR Compatible BrainPET Insert
C. Weirich, A. Daun, J. Scheins, L. Tellmann, H. Herzog, N. J. Shah Institute of Neuroscience and Medicine, Forschungszentrum Juelich, Germany
MIC15.S-74 Position Decoding Using Gaussian Mixture Model for a Monolithic Scintillator-Based PET Detector
S. Bae1, K. Lee1, S. Ro2, C. Seo3, J. Joung1,4
1Korea University, Korea; 2Kongju National University, Korea; 3Korea Electro-technology Research Institute, Korea; 4NuCare Medical Systems, Inc., Korea

MIC15.S-77 Design of DOI PET Detector Modules Using Phoswich and SiPMs
J. J. Vaquero1, J. J. Sanchez2, E. Lage3, J. M. Udas3, P. Guerra4, M. Desco1,2
1Universidad Carlos III de Madrid, Spain, Spain; 2Hospital General Universitario Gregorio Maranon, Spain; 3Universidad Complutense de Madrid, Spain; 4Universidad Politecnica de Madrid, Spain

MIC15.S-80 Monolithic LaBr3:Ce Crystals on Silicon Photomultiplier Arrays: Towards the Optimum Time-of-Flight PET Detector
S. Seifert1, H. T. van Dam2, R. Vinke2, P. Dendooven2, H. Loehner2, F. J. Beekman1, D. R. Schaart1
1Delft University of Technology, The Netherlands; 2University of Groningen, The Netherlands

MIC15.S-83 First Performance Measurements of Monolithic Scintillators Coupled to Digital SiPM Arrays for TOF-PET
G. J. van der Lei, H. T. van Dam, S. Seifert, D. R. Schaart
Delft University of Technology, Netherlands

MIC15.S-86 Time Resolution Measurements of Minidetectors for a PET-TOF Prostate Probe
L. Cosentina1, R. Perrino2, F. Cusanno3, R. De Leo4, P. Finocchiaro1, M. Foresta5, A. Gabrielli6, F. Garibaldi6, F. Giorgi7, F. Giuliani7, M. Gricia1, F. Loddo1, M. Lucentini1, F. Meddi8, P. Musico8, E. Monno9, A. Pappalardo8, A. Ranieri1, C. Tamma1, M. Turisini10
1INFN LNS, Italy; 2INFN Lecce, Italy; 3Technische Universitaet Muenchen, Germany; 4INFN Bari, Italy; 5INFN Bologna, Italy; 6INFN Roma1, Italy; 7Istituto Superiore di Sanita’, Italy; 8INFN Genova, Italy; 9ENEA, Italy; 10University of Rome La Sapienza, Italy

MIC15.S-89 A Novel Shaped Pinhole Geometry for Optimal Detector Usage Without Multiplexing and Without Additional Shielding (the Lofthole)
K. Deprez, R. Van Holen, S. Vandenberghe
University of Ghent, Belgium

MIC15.S-92 A Pair Production Upgrade for a Compton Imager for in-Vivo Dosimetry at Therapeutic Proton and Ion Beams
C. Golnik1, U. Dersch1, F. Fiedler2, T. Kormoll1, H. Rohling1, W. Enghardt1
1Technical University Dresden, Oncoray - Radiation Research in Oncology, Germany; 2Helmhotzzentrum Dresden-Rossendorf, Institute for Radiation Physics, Germany

MIC15.S-95 Generation and Evaluation of the Simultaneous Cardiac and Respiratory Gated Rb-82 PET Simulation
M. J. Park, S. Chen, T. S. Lee, G. S. K. Fung, M. A. Lodge, B. M. W. Tsui
Johns Hopkins University, USA

MIC15.S-98 Characterization of the VATA241 Front-End ASIC for the BrainPET Scanner
I. Sarasola, R. Cuordi, J. Navarrete, P. Garcia de Acuila, P. Rato Mendes, L. Romero, C. Willmott
CIEMAT (Centro de Investigaciones Energeticas Medioambientales y Tecnologicas), Spain

MIC15.S-101 Acquisition Strategies of a Dual Head Rotating 4-Segment Slant-Hole (R4SSH) SPECT System for Improved Myocardial Perfusion SPECT Imaging
A. J. Rittenbach, J. Xu, B. M. W. Tsui, Johns Hopkins University, USA

MIC15.S-104 Timing Resolution of Improved LGSO Crystal for TOF PET Imaging
C. L. Kim, D. L. McDaniel, GE Healthcare, USA

MIC15.S-107 Evaluation of a PET Prototype Using LYSO:Ce Monolithic Detector Blocks
CIEMAT, Spain
MIC15.5-110 Study of Silicon Photomultipliers for Time-of-Flight Applications
M. Ahmed1,2, P. Avella3, B. Camanzi1, A. Lohstroh1, J. Matheson1
1 University of Oxford, United Kingdom; 2 Rutherford Appleton Laboratory, United Kingdom; 3 University of Surrey, United Kingdom

MIC15.5-113 Waveform-Sampling Electronics/DAQ for TOF PET Scanner
B. Ashmanskas, B. LeGeyt, M. Newcomer, R. Vanberg, R. Wiener, J. S. Karp
University of Pennsylvania, USA

MIC15.5-116 Characterisation of a Position Sensitive 256 Anode Photomultiplier and Related Electronics
G. Baldazzi1,2, C. Labanti3, M. Feroci4,5, F. Navarria1,2, M. Zuffa6, A. Vacchi6, G. Zampa7, W. Bonvicini8, A. Rashevsky9, N. Zampa7, A. Battistella7, M. Bello7, N. Uznow7,8, P. Rossi7,9,10, G. Moschini9,10, M. Marisaldi11, E. Morelli1, R. Campana12, A. Rubini12, E. Del Monte12, L. Pacciani12, Y. Evangelista12, M. Mastropietro13, F. Muleri13, E. Costa13, I. Donnarumma13, F. Lazzarotto13, F. M. Rapisarda14,5,13, P. Soffitta14, C. Fontana14, P. Malcovati15, M. Grassi16, L. Piccoli16, G. Bertuccio16
1 Universita' di Bologna, Italy; 2 INFN Sezione di Bologna, Italy; 3 INAF/IASF-Bologna, Italy; 4 INAF/IASF-Roma, Italy; 5 INFN - Sezione di Roma 2, Italy; 6 INFN - Sezione di Trieste, Italy; 7 INFN - Laboratori Nazionali di Legnaro, Italy; 8 Shumen University, Bulgaria; 9 INFN - Sezione di Pavia, Italy; 10 Universiti di Padova, Italy; 11 ENEA Frascati, Italy; 12 Universita' di Pavia, Italy; 13 Politecnico di Milano, Italy

MIC15.5-119 Development of a Functional Plant PET Imager with Flexible Geometry and Controlled Environment
H. Wu, L. Wang, J. Wen, A. Mathews, S. Komarov, J. A. O'Sullivan, Y.-C. Tai
Washington University in St. Louis, USA

MIC15.5-122 Assessment of DOI Resolution in a Fully Mounted PEM Scanner
N. Mateia1, C. S. Ferreira1,2, M. V. Martins1,2, R. Bugalho1, J. A. Neves1, C. Ortigao2, N. Oliveira1, J. Varela1, P. Almeida1
1 Universidade de Lisboa, Faculdade de Ciencias, Instituto de Biofisica e Engenharia Biomédica, Portugal; 2 LIP - Laboratorio de Instrumentacao e Fisica Experimental de Particulas, Portugal; 3 Instituto Politecnico de Portalegre, Escola Superior de Tecnologia e Gestao, Portugal; 4 Instituto Superior Tecnico, Universidade Técnica de Lisboa, Portugal

MIC15.5-125 Assessing Possible Use of CZT Technology for Application to Brain SPECT
K. Erlandsson1, E. Howell1, N. Roth2, B. E. Hutton1
1 University College London, UK; 2 Spectrum Dynamics, Israel

MIC15.5-128 PET Calibration Method of Nonlinear Position Estimation Algorithms for Continuous NaI(Tl) Crystals
E. Venialgo, C. Verrastro, D. Estryk, M. Belzunce, A. Carimatto, E. da Ponte, L. Martinez Garbino, J. Alarcn
CNEA, Argentina

MIC15.5-131 Characterizing the Spatial Resolution Performance of Large Continuous Thick Crystals
M. Kaul1, S. Surti1, P. R. Menge2, J. S. Karp2
1 University of Pennsylvania, USA; 2 St. Gobain Crystals, USA

MIC15.5-134 Study of Silicon Photomultipliers for New Generation of PET
N. D’Ascenzo, V. Saveliev
National Research Nuclear University, Russia

MIC15.5-137 The Digital SiPM: Initial Evaluation of a New Photosensor for Time-of-Flight PET
D. R. Schaart, H. T. van Dam, G. J. van der Lei, S. Seifert
Delft University of Technology, The Netherlands
MIC15.S-140 A Fast Charge to Pulse Width Converter for PET Optimized for Monolithic Scintillator Readout
C. Parl1, H. Larue1, M. Streun1, K. Ziemons2, S. van Waasen
1Forschungszentrum Juelich, Germany; 2FH Aachen, University of Applied Sciences, Germany

MIC15.S-143 Simulations of a Silicon Photomultiplier-Based Gamma Camera for Use in MR/SPECT Imaging
A. Tao1, T. H. Farncombe1-2, D. Khan3
1McMaster University, Canada; 2Hamilton Health Sciences, Canada

MIC15.S-146 Simulation Guided Optimization of Dual Layer Offset Detector Block Design for Use in Small Animal PET
G. Storze1, C. J. Thompson1, X. Zhang1, A. L. Goertzen1, F. Retiere1, P. Kozlowski1, L. Ryner1, V. Sossi1
1University of British Columbia, Canada; 2McGill University, Canada; 3University of Manitoba, Canada; 4TRIUMF, Canada; 5Institute for Biodiagnostics, National Research Council, Canada

MIC15.S-149 Evaluation of the Sensl SPMMatrix for Use as a Detector for PET and Gamma Camera Applications
C.-Y. Liu, A. L. Goertzen, University of manitoba, Canada

MIC15.S-152 Simplified PET Performance Measures for Routine System Evaluation
T. G. Turkington, J. M. Wilson
Duke University Medical Center, USA

MIC15.S-155 Continuous DOI Determination by Gaussian Modelling of Linear and Non Linear Scintillation Light Distributions
R. Pani1,2, S. Nourbaksh1-2, P. Pani1,2, P. Bennati1-2, S. Lo Meo1, M. N. Cinti1-2, R. Pellegrini1-2, B. Cassano1, M. Bettiol1, R. Scafe1-2
1Sapienza University of Rome, Italy; 2INFN, Istituto Nazionale di Fisica Nucleare, Italy; 3Roma Tre University, Italy; 4Bologna University, Italy; 5Sapienza University of Rome, Italy

MIC15.S-158 Imaging Study of a Clinical PET Scanner Design Using an Optimal Crystal Thickness and Scanner Axial FOV
S. Surti, E. Lee, M. E. Werner, J. S. Karp
University of Pennsylvania, USA

MIC15.S-161 New Position Arithmetic for Scintillation Camera Based on Floating Weight System
R. Pani1,2, M. N. Cinti1,2, P. Bennati1,2, R. Pellegrini1,2, R. Scafe1,2, S. Lo Meo1, A. Fabbrì1,2
1Sapienza University of Rome, Italy; 2INFN, Istituto Nazionale di Fisica Nucleare, Italy; 3Roma Tre University, Italy; 4Bologna University, Italy

MIC15.S-164 Proposal of a New PET Positron Detector for Intestinal Cancers
Chiba University, Japan

MIC15.S-167 The Design of Optimal Multipinhole Collimators for a Seamless SPECT Ring Detector
A. J. Rittenbach1, J. Xu1, J. Hugg2, B. M. W. Tsui1
1Johns Hopkins University, USA; 2Gamma Medica, USA

MIC15.S-170 New Fast Photomultiplier Tubes with LYSO for Time-of-Flight PET
M. Ito, J. P. Lee, J. S. Lee
Seoul National University, Korea

J. Schmall1, E. Roncali1, M. McClish2, P. Dokhale2, C. Stapels2, E. Johnson2, J. Christian2, K. Shah1, S. Cherry1
1UC Davis, US; 2RMD Inc., US

MIC15.S-176 Performance Evaluation of High QE PSPMT (H10966A-100) for High Resolution Time-of-Flight PET Application
G. B. Ko, M. Ito, J. S. Lee
Seoul National University, Korea
MIC15.S-179 Progress on the Development of a MR-Compatible SiPM PET Scanner
J. S. Lee, H. S. Yoon, G. B. Ko, S. I. Kwon, M. Ito, C. M. Lee, I. C. Song, D. S. Lee, Seoul National University, Korea; S. J. Hong, Eulji University, Korea

MIC15.S-182 Simulation Study Analyzing DOI Impact on Timing in PET Detectors
S. Cho, D. Henseler, R. Grazioso, M. Schmand
Siemens Molecular Imaging, USA

MIC15.S-185 High Resolution Fast Stereotactic Prostate PET Imager for Prostate Biopsy
S. Majewski1, A. V. Stolkin1, J. Proffitt2, E. Delfino2, P. Martone1
1West Virginia University, USA; 2AiT Instruments, USA

MIC15.S-188 Multibeam Healing for Laser Micromachining of Scintillator Arrays
B. Singh1, R. Akarapu2, A. E. Segall3, V. V. Nagarkar1
1RMD, Inc., USA; 2The Pennsylvania State University, USA

MIC15.S-191 Comparison of External Motion Tracking Systems for PET Listmode Reconstruction
O. V. Olesen1, 2, 3, 4, R. R. Paulsen1, L. Hjøggaard1, B. Roed2, R. Larsen1
1Technical University of Denmark, Copenhagen University Hospital and Siemens Healthcare, Denmark; 2Righospitalet, Copenhagen University Hospital, Denmark; 3Siemens, Denmark; 4Yale University, USA

MIC15.S-194 Cardiac and Brain Phantom Measurements with a Multipinhole SPECT Collimator
J. D. Bowen1, Q. Huang2, G. T. Gullberg3, Y. Seo1
1University of California, San Francisco, United States; 2Shanghai Jiao Tong University, China; 3Lawrence Berkeley National Laboratory, United States

L.-J. Meng, L. Cai, N. Li
University of Illinois at Urbana-Champaign, USA

MIC15.S-200 Effect of Temperature on Performance of Brain PET Using GAPD
Y. Huh1,2, Y. Choi1, J. H. Jung1, K. J. Hong1, J. Kang1,2, W. Hu1,2, S. Kim1, J. W. Jung1, B.-T. Kim2
1Department of Electronic Engineering, Korea; 2School of Medicine, Korea

MIC15.S-203 Conceptual Design of High Spatial-Resolution SPECT System for Human Brain
T. Zeniya1, Y. Hirano1, T. Tominaga2, Y. Hori1, H. Watabe1, T. Sakimoto1, A. Sohlberg1, K. Minato2, J. Hatazawa1, H. Iida1
1National Cerebral and Cardiovascular Center Research Institute, Japan; 2Nara Institute of Science and Technology, Japan; 3Osaka University Graduate School of Medicine, Japan

MIC15.S-206 Fast Multiple Information Retrieval Algorithm for X-Ray Grating-Based Imaging
X. Jiang1,2, Z. Huang1,2, L. Zhang1,2, Z. Wang1
1Tsinghua University, China; 2Ministry of Education, China; 3Swiss Light Source, Paul Scherrer Institute, Switzerland

MIC15.S-209 Reducing Metal Artifacts by Pre-Processing Projection Data in Dental CBCT with a Half-Size Detector
Q. Wang, L. Li, L. Zhang, Z. Chen, Y. Xing, K. Kang
Tsinghua University, China

MIC15.S-212 Measurement and Analysis of Geometric Effects on Partial Iso-centric X-ray Tomosynthesis System
Institute of Nuclear Energy Research, Taiwan ROC

1Tehran University of Medical Sciences, Iran; 2Shahid Beheshti University of Medical Sciences, Iran
**Sparse Sampling MR Image Reconstruction Using Bregman Iteration: A Feasibility Study at Low Tesla MRI System**


1Yonsei University, Rep. of Korea; 2Genpia Corporation, Rep. of Korea

**Evaluation of Velocity Measurements for Keyhole Imaging Combined Phase Contrast MR Angiography**


1Yonsei University, Rep. of Korea; 2Genpia Corporation, Rep. of Korea

**Comparison of K-Edge Versus Standard Absorption Imaging Using the XPAD3 Hybrid Pixel Detector**

F. Cassol Brunner, C. Kronland-Martinet, A. Bonissent, Y. Boursier, C.-C. Clemens, M. Dupont, H. Ouamara, F. Debarbieux, C. Morel

1CPPM, France; 2IBDML, France

**Improving the Temporal Resolution of 3D Phase Contrast MR Angiography Using Keyhole Technique at Low Tesla Open-MRI System**


1Yonsei University, Rep. of Korea; 2Genpia Corporation, Rep. of Korea

**X-Ray Differential Phase Contrast Tomography on a Compact Industrial Micro CT Scanner**

T. Thuering, S. Haemmerle, S. Weiss, M. Stampanoni

1Paul Scherrer Institute, Switzerland; 2SCANCO Medical, Switzerland

**High-Resolution Dynamic Cardiac MRI on Small Animals Using Reconstruction Based on Split Bregman Methodology**


1Hospital General Universitario Gregorio Maranon, Spain; 2UNIVERSIDAD CARLOS III, SPAIN

**Prototype Photon Counting CT System for Carotid Plaque Imaging**

A. M. Alessio, L. MacDonald, University of Washington, USA

**RF Coil Design for Low and High Field MRI: Numerical Methods and Measurements**


1Università di Pisa, Italy; 2Istituto Nazionale di Fisica Nucleare, Italy; 3Fondazione Image, Italy; 4Istituto Scientifico Stella Maris, Italy; 5Università dell’Aquila, Italy

**CT Dose Reduction Using Dynamic Collimation**

D. J. Heuscher, University of Utah, USA

**SNR Comparisons of Absorption and Fluorescence Modes of Edge-Subtraction Imaging**

P. J. La Riviere, D. S. Rigie, The University of Chicago, USA

**Objective Assessment of Low Contrast Detectability for Real CT Phantom and in Simulated Images Using a Model Observer**

J. Hernandez-Giron, J. Geleijnse, A. Calzado, M. Salvado, R. Roemai, W. J. H. Velkamp

1Universitat Rovira i Virgili, Spain; 2Leiden University Medical Center, The Netherlands; 3Universidad Complutense de Madrid, Spain

**Computed Tomography System Using a MHSP in Multi-Slice Operation**


1IBN, Portugal; 2IEETA, Portugal

**Detection of Calcification Using High-Pass Filtered Phase Image in Breast Magnetic Resonance Imaging**

K. Kidu, T. Kajitani, S. Goto, Y. Azuma

1Japanese Red Cross Okayama Hospital, Japan; 2Okayama University, Japan

**Detection of Calcification Using High-Pass Filtered Phase Image in Breast Magnetic Resonance Imaging**

K. Kidu, T. Kajitani, S. Goto, Y. Azuma

1Japanese Red Cross Okayama Hospital, Japan; 2Okayama University, Japan
MIC15.S-257 Regularized Phase Retrieval for X-Ray Differential Phase Contrast Imaging
Paul Scherrer Institute, Switzerland

MIC15.S-260 Comparison of Performance Parameters of Three 64-Slice CT Scanner
L. Ballay1, P. Bojtos2, J. Martos3, J. Kollar4, I. Garási, I. Lajtos1
1Institute of Nuclear Medicine, University of Debrecen, Hungary; 2Institute of Nuclear Techniques, University of Technology and Economics, Hungary; 3National Institute of Neuroscience, Hungary; 4Institute of Radiology, University of Debrecen, Hungary; 5Skanomed Ltd, Hungary

MIC15.S-263 Detectors for Region of Interest Fluoroscopy to Facilitate an Order of Magnitude of Radiation Dose Reduction
J. A. Rowlands, O. Rubel, Thunder Bay Regional Research Institute, Canada; S. O. Kasap, SUNY Stony Brook, USA; W. Zhao, University of Saskatchewan, Canada

MIC15.S-266 Development of a GEM-Based Dose Imaging Detector with Optical Readout for Radiotherapy
A. V. Klyachko, D. F. Nichiporov, Indiana University Cyclotron Operations, USA; K. A. Solberg, Indiana University Integrated Science and Accelerator Technology Hall, USA; V. P. Moskvin, Indiana University School of Medicine, USA

MIC15.S-269 An optimized in-situ TOF-PET Imaging System for Proton Therapy Quality Assurance
D. C. Oskay1, A. K. Biegun1, S. Brandenburg1, P. Cambraria Lopes2, F. Dilben3, D. R. Schaart1, S. Vandenbergh3, P. Dendooven3
1University of Groningen, The Netherlands; 2Delft University of Technology, The Netherlands; 3Ghent University-IBBT-IBiTech, Belgium

MIC15.S-272 Development of a PET dedicated for in-situ proton therapy monitoring
Y. Shao, R. X. Zhu, X. Sun, C. J. Birch, A. K. Lan, The University of Texas M.D. Anderson Cancer Center, USA; X. Zhu, J. Wu, Y. Xia, M. Tianyu, Tsinghua University, China

MIC15.S-275 Simulation Design of a Single-Ring OpenPET for in-Beam PET
S. Kinouchi1,2, T. Yamaya3, H. Tashima3, E. Yoshida3, F. Nishikido3, H. Haneishi1, M. Suga1
1Chiba University, Japan; 2National Institute of Radiological Sciences, Japan

MIC15.S-278 A Prototype Compton Camera for In-Vivo Dosimetry of Ion Beam Cancer Irradiation
T. Kormoll1, F. Fiedler2, C. Golnik1, K. Heidel2, M. Kempe2, S. Schne2, K. Zuber1, W. Enghardt1,2
1Technische Universität Dresden, Germany; 2Helmholtz-Zentrum Dresden Rossendorf, Germany

MIC15.S-281 Fast Data Acquisition in Heavy Ion CT Using Intensifying Screen - EMCCD Camera System
H. Murashii1, S. Abe1, H. Satoh1, H. Harai1, T. Mogaki1, S. Hara1, S. Miyake2, N. Yasuda2, Y. Watanabe1, Y. Koba1
1Kitasato University, Japan; 2Ibaraki Prefectural University of Health Sciences, Japan; 3National Cancer Center East, Japan; 4Yamanashi Gakuin University, Japan; 5Tokai University, Japan; 6Gifu University of Medical Science, Japan; 7National Institute of Radiological Sciences, Japan

MIC15.S-284 Simulation Study of in-Beam PET System for Dose Verification in Carbon Ion Therapy
C.-H. Baek1,2, S. J. An1,2, H.-I. Kim1,2, C. Y. Lee1,2, W.-G. Jung1, Y. H. Chung1,2
1College of Health Science, Yonsei University, Republic of Korea; 2Institute of Health Science, Yonsei University, Republic of Korea; 3Korea Institute of Radiological and Medical Sciences, Republic of Korea

MIC15.S-287 Real-Time Bragg Peak Position Monitoring with a Slit Camera
V. R. Bom, L. Jouleizadeh, F. J. Beekman, Delft Univ. of Technology, Netherlands

MIC15.S-290 Range and Density Variations Monitoring During Proton Therapy Based on Time-of-Flight Detection of Prompt Gamma Radiation
A. K. Biegun1, P. Cambraia Lopes1,2,3, P. Dendooven4, D. Oxley4, K. Parodi4, M. Pinto5, I. Rinaldi5, D. R. Schaart1, E. Seravalli6, F. Verhaegen6, P. Crespo7
1Delft University of Technology, The Netherlands; 2Laboratório de Instrumentação e Física Experimental de Partículas, Portugal; 3Heidelberg Ion Beam Therapy Center, University Clinic of Heidelberg, Germany; 4Kernfysisch Versneller Instituut, University of Groningen, The Netherlands; 5German Cancer Research Center, Germany; 6Maastro Clinic, The Netherlands; 7Coimbra Institute of Engineering, Portugal

MIC15.S-293 95MeV/u 12C Nuclear Fragmentation for Hadrontherapy Purposes: Measurements and Comparisons with Nuclear Models Included in the Geant4 Simulation Toolkit.

M. Labalme1, B. Braunn1,2,3, G. Ban1, J. Colin1, D. Cussol1, J. M. Fontbonne1, F. Haas1, M. Rousseau1, M. Chevallier1, D. Dauvergne1, F. Le Foulher1, C. Ray1, E. Testa1, M. D. Salsac
1LPC Caen, France; 2CEA/Saclay, DSM/Irfu/SPhN, France; 3IPHC, France

MIC15.S-296 Design of a Compton Camera for Hadrontherapy On-line Control Using Geant4

M.-H. Richard1,2, D. Dauvergne1, M. Dahoumane1, N. Freud1, P. Henriquet1, J. M. Letang1, J. Krimmer1, G. Montarou3, C. Ray1, E. Testa1, A. H. Walenta1
1Institute of Nuclear Physics, France; 2Ceratiz, France; 3LPC, France

MIC15.S-299 Evaluation of Timepix as dE/dx-Detector for Hadron Therapy

B. Hartmann1,2, C. Granja3, L. Opalka3, J. Jakubek3, O. Jaekel1,2,4, M. Martisikova1
1German Cancer Research Center (DKFZ), Germany; 2Universitaetsklinikum Heidelberg, Germany; 3Czech Technical University in Prague, Czech Republic; 4Heidelberger Innenstraahl- Traitiezentrum (HIT), Germany

MIC15.S-302 Monte Carlo PET Camera Modelling for Proton Range Evaluation in Proton Therapy

C. Van Nong-Ti1, L. De Marzi1, S. Jan1, L. Lestand3, C. Comtat1, R. Ferrand1, R. Trebosson1
1CEA, France; 2Institut Curie, France; 3IN2P3, France

MIC15.S-305 Tomographic Images by Proton Computed Tomography System for Proton Therapy Applications

V. Sipala1,2, M. Brianzi1, M. Bruzzi1,4, M. Bucciolini1,2, G. A. P. Cirrone5, C. Civinini1, G. Cuttone1, D. Lo Presti1,2, S. Pallotta1, N. Randazzo1, M. Scaringella1,2, C. Stancampiano1, C. Talamonti1,2, M. Tesi1
1INFN Catania, Italy; 2University of Catania, Italy; 3INFN Florence, Italy; 4University of Florence, Italy; 5INFN, Italy

MIC15.S-308 Hodoscope Coincidence Imaging for Hadron Therapy Using a Compton Camera

J. E. Gillam, I. Torres-Espallardo, C. Lacasta, P. Solevi, J. Barrio, G. Lloxa, M. Rafecas, IFIC (CSIC - Universitat de Valencia), Spain

MIC15.S-311 Measurement of Activity Produced by Low Energy Proton Beam in Metals Using off-Line PET Imaging

P. M. G. Corzo1, J. Cal-Gonzalez1, E. Picado3, S. Espana1, J. L. Herrera1, E. Herranz1, E. Vicente1, J. M. Udas1, J. J. Vaquero4, A. Munoz-Martin5, L. M. Fraile1
1Universidad Complutense Madrid, Spain; 2Quént University Hospital, Belgium; 3Consejo Superior de Investigaciones Científicas (CSIC), Spain; 4Universidade Carlos III de Madrid, Spain; 5Universidad Autonoma de Madrid, Spain

MIC15.S-314 Image Reconstruction for Compton Camera Applied to 3D Prompt Gamma Imaging During Ion Beam Therapy

X. Lojacono1,2, M.-H. Richard1,2, D. Dauvergne1, E. Testa1, C. Ray1, N. Freud1, J.-M. Letang1, V. Maxim1, R. Prost1
1Université de Lyon, CNRS, Inserm, INSA-Lyon, CREATIS, France; 2Université de Lyon, CNRS/IN2P3, France

MIC15.S-317 Measurement of Charged and Neutral Particles Production from an 80 MeV/A Hadron Therapy Carbon Beam Fragmentation

A. Sarti1,2, V. Patera1,2, A. Sciubba1,2, A. Paoloni1, L. Piersanti2, R. Faccini2,3, F. Ferroni2,3, C. Vanoa2, F. Bellini2,3, A. Di Domenico2,3, S. Fiore2,3, P. Gauzzi2,3, G. Cuttone2,3, C. Agodi2, F. Romano2, G. Cirrone3
1INFN - LNF, Italy; 2Universita’ di Roma, Italy; 3INFN - Roma1, Italy; 4INFN - LNS, Italy
MIC15.S-320 Proton Therapy Dose Verification Using Compton Imaging
L. Mihailescu1, K. Vetter1, L. Supic1, J. Miller2, D. Bond2, M. Bandstra2,
I.-Y. Lee1, M. Descovic3, S. Gros3, R. Donahue1
1Lawrence Berkeley National Laboratory, USA; 2UC Berkeley, USA; 3UC San
Francisco, USA

MIC15.S-323 Simulation Study of Resistive-Plate-Chamber Based PET for
Hadrontherapy Monitoring
I. Torres-Espallardo, J. E. Gillam, P. Solevi, J. Cabello, M. Rafecas
IFIC (Universidad de Valencia / CSIC), Spain

MIC15.S-326 A Dose Determination Procedure by PET Monitoring in
Proton Therapy
M. Aiello1,2, F. Attanasii1, N. Belcar1, V. Rosso1, A. Del Guerra1,2
1INFN, Italy; 2University of Pisa, Italy

MIC15.S-329 First Coincidence Tests of a Compton Telescope Based on
Continuous LaBr3 Crystals and SiPMs for Dose Monitoring in Hadron
Therapy
J. Barrio1, J. Cabello1, C. Lacasta1, M. Rafecas1,2, G. Llosa1, C. de la Taillée1, L. Raux1
1Instituto de Fisica Corpuscular (Universitat de Valencia/CSIC), Spain;
2Departamento de Fisica Atomica, Molecular y Nuclear, Universitat de Valencia,
Spain; 3Laboratoire de l’Accelerateur Lineaire (LAL), France

MIC15.S-332 Iterative Procedure for the Reduction of Artefacts in
Optoacoustic Reconstructions Due to Acoustic Reflections or Scattering
X. L. Dean-Ben, D. Razansky, V. Ntziachristos
Institute of Biological and Medical Imaging, Germany

MIC15.S-335 Characterization of the Partial Volume Effect in Positron
Emission Mammography (PEM)
W. Luo, X. Lu, Naviscan Inc., USA

MIC18.M MIC Posters 4

Friday, Oct. 28 16:30-18:30 Meliá, Room A&B

Session Chairs: Georges El Fakhri, Harvard Medical School and
Massachusetts General Hospital, United States
Paul K. Marsden, King’s College London, England, United Kingdom
Albert Cot, Universitat de Barcelona, Spain

MIC18.M-2 Methods for Increasing the Sensitivity of Simultaneous
Multi-Isotope Positron Emission Tomography
E. Gonzalez, P. D. Olcott, M. Bieniosek, C. S. Levin
Stanford University, USA

MIC18.M-4 Development of a Digital Baseline Restorer for High-
Resolution PET Detectors
J. Ohi, M. Satoh, M. Furuta, K. Kitamura
SHIMADZU Corporation, Japan

MIC18.M-6 Partial Volume Effect and a Partial Volume Correction for the
NanoPET/CT™ Pre-Clinical PET/CT Scanner
I. Szanda1, L. Livieratos1,2, G. Patay3, C. Tsoumpas1, K. Sunassee1,
G. E. Mullen1, G. Nemeth3, P. Major3, P. K. Marsden1
1King’s College London, United Kingdom; 2Guys and St Thomas Hospitals,
United Kingdom; 3Mediso Ltd., Hungary

MIC18.M-8 Maximum Likelihood Based Positioning and Energy
Correction for Pixelated Solid State PET Detectors
C. W. Lerche1, T. Solf1, P. Dueppenbecker1, P. K. Marsden1, V. Schulz1
1Philips Research Europe, Germany; 2Kings College, UK

MIC18.M-10 The Design and Initial Calibration of an Optical 3D
Acquisition System for Head Motion Tracking
P. J. Noonan1, W. A. Hallett2, T. Cootes1, R. Hinz1
1University of Manchester, UK; 2GlaxoSmithKline, UK
MIC18.M-12 Improvement in Spatial Resolution of Dual-Ended Readout of 100 mm Long LYSO Crystals Through Use of Systematic Crystal Surface Roughing
F. ur-Rehman¹, Y.-C. Tai², A. L. Goertzen¹
¹University of Manitoba, Canada; ²Washington University in St. Louis, USA

S. M. Kumari Maini, R. D. Speller,
University College London, United Kingdom

MIC18.M-16 Selection of Point Source Configuration for Multi-Pinhole SPECT Calibration

MIC18.M-18 A 55μmx55μm Charge-Integration Digital Pixel Sensor for Digital Direct Mammography in 0.18μm CMOS Technology
R. Figueras, L. Teres, F. Serra-Graells
IMB-CNM(CSIC), Spain

MIC18.M-20 Development of a PET Prototype with Continuous LYSO Crystals and Monolithic SiPM Matrices
G. Llosa¹, J. Barrio¹, J. Cabello¹, C. Lacasta¹, J. F. Oliver¹, M. Rafecas¹,², C. Solaz¹, P. Barrillon³, C. de la Taille³, S. Bondil-Blin³, C. Piemonte³, M. G. Bisogni³,⁴, A. Del Guerra³,⁴
¹Instituto de Fisica Corpuscular (IFIC-CSIC/UVEG), Spain; ²Universitat de Valencia, Spain; ³Laboratoire de l'Accelerateur Lineaire, France; ⁴FBK-irst, Italy; ⁵University of Pisa, Italy; ⁶INFN, Italy

MIC18.M-22 Development of a Gamma Camera Prototype Using Wavelength Shifting Fibers and Silicon Photomultipliers
I. F. Castro, J. F. Veloso, A. J. Soares, L. M. Moutinho, i3n, Portugal

F. Krejci, J. Jakubek, M. Kroupa, IEAP, Czech Republic

MIC18.M-26 Performance of Siemens Inveon Small Animal SPECT Scanner for Different Collimators and Radius of Rotation
Y. Yang, D. J. Rowland, S. S. James, S. R. Cherry
University of California at Davis, USA

A. Vandenhrouck, F. W. Y. Lau, P. D. Reynolds, C. S. Levin
Stanford University, USA

X. Li, A. M. Alessio, T. H. Burnett, T. K. Lewellen, R. S. Miyaoka
University of Washington, USA

MIC18.M-32 A Pre-Clinical PET Scanner with a Novel Detector Layout Optimized for High Resolution and Sensitivity
M. T. Risii¹, E. Bolle¹, M. Boeck¹, J. Bjaalie², J. I. Buskenesi¹, O. Dorholts¹, K. E. Hines¹, O. Rhoenesi¹, A. Skretting³, S. Stapes³
¹Universitetet i Oslo, Norway; ²Department of Anatomy & CMBN, Norway; ³Department of Medical Physics, Rikshospitalet-Radiumhospitalet Medical Centre, Norway

MIC18.M-34 Camera-Based Tracking System for Freely Moving Mice Inside a Small Animal PET Scanner
D. Essig¹, S. Schmid², M. Dawood¹, X. Jiang², K. P. Schaefer¹
¹European Institute for Molecular Imaging, Germany; ²Institute for Computer Science, Germany

MIC18.M-36 Evaluation of Scatter Fraction and Count Rate Performance of Two Small-Animal PET Scanners Using Dedicated Phantoms
R. Prasad, H. Zaidi
Geneva University Hospital, Switzerland

MIC18.M-38 Feasibility Studies of Animal SPECT Imaging with a Stationary Multi-Pinhole Collimator Inserted to Animal PET Detector Ring
J. Wu, T. Ma, T. Dai, H. Liu, S. Wang, Y. Liu, J. Cheng
Tsinghua University, China
MIC18.M-40 Experimental Comparison of Entrance-Surface Versus Exit-Surface Readout of a Monolithic Scintillation Detector
W. C. J. Hunter¹, J. J. Griesmer², X. Li², R. Zahn², L. Shao², R. S. Miyaoka¹, T. K. Lewellen¹
¹University of Washington, USA; ²Philips Healthcare, USA

MIC18.M-42 Preliminary Results on a Simultaneous Beta-and-Coincidence-Gamma Plant Imaging System
J. Wen, H. Wu, L. Sobotka, R. Dirks, J. Schaefer, Y.-C. Tai
Washington University in St. Louis, United States

MIC18.M-44 NEMA NU-04 Based Performance Characteristics of the LabPET-8 Small Animal PET Scanner
R. Prasad, H. Zaidi
Geneva University Hospital, Switzerland

MIC18.M-46 Calibration, Image Reconstruction and Optimization of SiliSPECT Using Experimental Data
S. Shokouhi¹, B. S. McDonald¹, T. E. Peterson¹
¹Vanderbilt University Institute of Imaging Science, USA; ²Pacific Northwest National Laboratory, USA

R. S. Miyaoka, X. Li, W. C. Hunter, P. Muzi, T. K. Lewellen
University of Washington, USA

MIC18.M-50 A Trapezoidal Slat Crystal (TSC) PET Detector
R. S. Miyaoka, X. Li, W. C. Hunter, T. K. Lewellen
University of Washington, USA

G. Chinn¹, C. S. Levin¹,²
¹Stanford School of Medicine, USA; ²Stanford University, USA

MIC18.M-54 Resolution Enhancement in PET Reconstruction Using Collimation
S. D. Metzler, S. Matej, J. S. Karp
University of Pennsylvania, USA

MIC18.M-56 Study on Analytical System Matrix Constructions for a Stationary Multipinhole SPECT System
S.-L. Chang, Y.-J. Tsai, I.-T. Hsiao
Chang Gung University, Taiwan

J. Gal, J. Imrek, G. Kalinka, B. Kiraly, F. Nagy, B. Nyako, J. Molnar, I. Valastyan, Institute of Nuclear Research of the Hungarian Academy of Sciences, Hungary; L. Balkay, S. A. Kis, Institute of Nuclear Medicine at Medical and Health Science Center, University of Debrecen, Hungary

MIC18.M-60 Progress in Development of a High-Resolution Prostate Imaging Probe
N. Clinthorne¹, S. Majewski², A. Stolin³, R. R. Raylman³, J. Carr¹, Z. Chen¹, E. Salomonsson¹, A. Yande¹, S. S. Huh¹, H. Kagan³, S. Smith¹, K. Brzezinski¹, A. Studen³
¹University of Michigan, USA; ²West Virginia University, USA; ³Ohio State University, USA; ²IFIC/CSIC-University of Valencia, Spain; ²Institut Jozef Stefan, Slovenia

MIC18.M-62 Initial Tumor Imaging Results in Rats with a Beta Imaging Probe Based on Silicon Pad Detectors
N. Clinthorne¹, E. Cochran¹, S. S. Huh¹, H. Kagan³, C. Lacasta¹, V. Linhart¹, M. Pier³, M. Mikuz³, S. Smith¹, A. Studen³, P. Weilhammer³
¹University of Michigan, USA; ²Ohio State University, USA; ²IFIC/CSIC-University of Valencia, Spain; ²Institut Jozef Stefan, Slovenia; ³CERN, Switzerland

MIC18.M-64 Time-over-Threshold Based Crystal Identification in Phoswich Detectors
Universite de Sherbrooke, Canada
MIC18.M-66 Application of Factor Analysis on the Genisys Preclinical PET System
F. Daver, M. Dahlbom, C. Schiepers
U.C.L.A. Ahmanson Translational Imaging Center, U.S.A.

MIC18.M-68 Initial Tests of a SPECT Detector Module Prototype Using 8x8 SiPM Array Readout and 50x50 mm2 Monolithic Scintillator.
A. Iglesias1, P. Aguilar2, C. Lois1, B. Couce1
1Universidade de Santiago de Compostela, Spain; 2Fundacion IDICHUS, Complejo Hospitalario Universitario de Santiago de Compostela, Spain

MIC18.M-70 Adaptive Tumor Rim Segmentation and Metabolic Profiling for FDG-PET Based Early Response Assessment in Human Sarcoma
E. Wolsztynski, F. O’Sullivan, J. O’Sullivan, University College Cork, Ireland; E. U. Conrad, J. F. Eary, University of Washington, USA

MIC18.M-72 Sparsity Constrained Sinogram Inpainting for Metal Artifact Reduction in X-Ray Computed Tomography
A. Mehranian1, M. R. Ay1, A. Rahmim1, H. Zaidi3
1Tehran University of Medical Sciences, Iran; 2Johns Hopkins University, USA; 3Geneva University Hospital, Switzerland

MIC18.M-74 Quantitative Analysis of Myocardial Infarct Region in PET and MRI Using Multi Gaussian Mixture Model
Korea Institute of Radiological and Medical Science, Korea

MIC18.M-76 An Adaptive Genetic Algorithm for Misalignment Estimation (AGAME) in Spiral, Sequential and Circular Cone-Beam Micro-CT
S. Sawall, M. Knaup, M. Kachelriess
University of Erlangen-Nürnberg, Germany

MIC18.M-78 Estimation of Strialal Binding Ratio in Parkinson’s Disease: Dual-Head Vs. High-Sensitivity SPECT Systems
M.-A. Park1, S. C. Moore1, S. P. Muller2, S. J. McQuaid1, M. F. Kijewski1
1Brigham and Women’s Hospital & Harvard Medical School, USA; 2Universitätsklinikum, Germany

MIC18.M-80 Automatic Monte-Carlo Based Scatter Correction for X-Ray Cone-Beam CT Using General Purpose Graphic Processing Units (GP-GPU): a Feasibility Study
A. Sistia1, M. Abella1, E. Lage1, M. Desco1, J. J. Vaquero1
1Universidad Carlos III de Madrid, Spain; 2Fundacion para la Investigacion Biomedica del Hospital Gregorio Maranon, Spain

M. Strumia, D. Feltell, N. Evangelou, P. Gowland, C. Tench, L. Bai
University of Nottingham, UK

MIC18.M-84 Absolute Quantification for Small-Animal PET
V. Keereman, R. Van Holen, C. Vanhove, P. Mollet, S. Vandenbergh Ghent University-IBBT-IBiTech, Belgium

MIC18.M-86 Absolute Quantification in Multi-Pinhole Micro-SPECT Using Multiple Isotopes
B. Vanderghinste1, C. Vanhove1, J. De Beenhouwer1,2, R. Van Holen1, S. Vandenbergh1, S. Staels1,2
1University Ghent - IBBT, Belgium; 2University of Antwerp, Belgium

MIC18.M-88 Effects of Attenuation in Single Slow Rotation Dynamic SPECT
T. D. Humphries1, A. M. Celler2, M. R. Trummer3
1Simon Fraser University, Canada; 2University of British Columbia, Canada

MIC18.M-90 A Physics-Based Fast Approach to Scatter Correction for Large Cone Angle Computed Tomographic Systems
Y. Zou, M. D. Silver, B.-S. Chiang, Toshiba medical research institute USA, Inc., USA; S. Oishi, Y. Uebayashi, Y. Noshi, S. Nakanishi, Toshiba Medical Systems Corp., Japan

MIC18.M-92 True 3D Iterative Scatter Correction for Small Bore Long Axial
L. Hong, Z. Burbar, C. Michel, Siemens Medical Solutions, USA
MIC18.M-94 Combined Partial Volume and Cardiac Motion Correction with Nonlinearly Penalized Optical Flow
M. Dawood, F. Buther, K. P. Schaefers
University of Munster, Germany

MIC18.M-96 Evaluation and Optimization of MR-Based Attenuation Correction Methods in Combined Brain PET/ MR
F. Mantlik\textsuperscript{1,2}, M. Hofmann\textsuperscript{1,2,3}, I. Bezrukov\textsuperscript{1,2}, H. Schmidt\textsuperscript{1}, A. Kolb\textsuperscript{1}, T. Beyer\textsuperscript{1}, M. Reimold\textsuperscript{1}, B. Schoelkopf\textsuperscript{1}, B. J. Pichler\textsuperscript{1}
\textsuperscript{1}Dept. of Preclinical Imaging and Radiopharmacy, Germany; \textsuperscript{2}Max Planck Institute for Intelligent Systems, Germany; \textsuperscript{3}University of Oxford, United Kingdom; \textsuperscript{4}Imaging Science Institute, Germany; \textsuperscript{5}University of Tuebingen, Germany

MIC18.M-98 Randoms from Singles Estimation for Long PET Scans
C. W. Stearns, GE Healthcare, USA; A. H. Lonn, GE Healthcare, UK

MIC18.M-100 Derivation of Input Function in Mice from Dynamic FDG-PET Images: a Comparative Study
O. Sarrhini, J. A. Rousseau, J.-F. Beaudoin, C. Mathieu, M. Bentourkia
Université de Sherbrooke, Canada

MIC18.M-102 Sparse Recovery in Myocardial Blood Flow Quantification via PET
R. Engbers\textsuperscript{1}, M. Benning\textsuperscript{1}, P. Heins\textsuperscript{1}, K. Schaefers\textsuperscript{2}, M. Burger\textsuperscript{1}
\textsuperscript{1}Institute for Computational and Applied Mathematics, Germany; \textsuperscript{2}European Institute for Molecular Imaging, Germany

MIC18.M-104 Incorporating Count-Rate Dependence into Model-Based PET Scatter Estimation
C. W. Stearns, GE Healthcare, USA; R. M. Manjeshwar, GE Global Research, USA

P. Dasari\textsuperscript{1,2}, C. Connolly\textsuperscript{1}, K. Johnson\textsuperscript{1}, J. Dey\textsuperscript{1}, J. M. Mukherjee\textsuperscript{1}, S. Zheng\textsuperscript{1}, M. King\textsuperscript{1}
\textsuperscript{1}Univ of Mass Med School, USA; \textsuperscript{2}Worcester Polytechnic Institute, USA

MIC18.M-108 An Adaptive Generation of a Digital Mask to Improve the Activity Distribution in SPECT Images
S. Shcherbinin, A. Celler
The University of British Columbia, BC

MIC18.M-110 Comparison of Dual-Window Scatter Correction and Effective Attenuation Coefficients for Quantification in Dedicated Breast SPECT
S. Mann\textsuperscript{1,2}, K. Perez\textsuperscript{1,2}, M. Tornai\textsuperscript{1,2}
\textsuperscript{1}Duke University, United States; \textsuperscript{2}Duke University Medical Center, United States

MIC18.M-112 Do Template-Based Partial Volume Effect Corrections Inherently Presume Homogeneous Uptakes?
S. Shcherbinin, A. Celler
The University of British Columbia, Canada

MIC18.M-114 Internal Motion Prediction Using Kernel Density Estimation and General Canonical Correlation Model
M. Alnowami\textsuperscript{1}, E. Lewis\textsuperscript{1}, M. Guy\textsuperscript{2}, K. Wells\textsuperscript{1}
\textsuperscript{1}University of Surrey, UK; \textsuperscript{2}Southampton General Hospital, UK

MIC18.M-116 Atlas- and Pattern Recognition Based Attenuation Correction on Simultaneous Whole-Body PET/MR
I. Bezrukov\textsuperscript{1,2}, H. Schmidt\textsuperscript{1,2}, E. Mantlik\textsuperscript{1,2}, N. Schwenzer\textsuperscript{1}, M. Hofmann\textsuperscript{1,4}, B. Schoelkopf\textsuperscript{1}, B. J. Pichler\textsuperscript{1}
\textsuperscript{1}Dept. of Preclinical Imaging and Radiopharmacy, Eberhard-Karls University, Germany; \textsuperscript{2}Max Planck Institute for Intelligent Systems, Germany; \textsuperscript{3}Eberhard-Karls University, Germany; \textsuperscript{4}Department of Engineering Science, United Kingdom

MIC18.M-118 Activity Estimation in Small Volumes with Non-Uniform Radiotracer Uptake Using a Local Projection-Based Fitting Approach
S. Southekal\textsuperscript{1,2}, S. J. McQuaid\textsuperscript{1,2}, S. C. Moore\textsuperscript{1,2}
\textsuperscript{1}Brigham and Women's Hospital, USA; \textsuperscript{2}Harvard Medical School, USA
MIC18.M-120 Dual-Isotope PET Data Acquisition and Analysis
R. S. Miyaoka1, W. C. Hunter1, A. Andreyev2, T. K. Lewellen1, A. Celler2, P. E. Kinahan1
1University of Washington, USA; 2University of British Columbia, Canada

MIC18.M-122 Investigating the Use of Non-Attenuation Corrected PET Images for the Attenuation Correction of PET Data in PET/MR Systems
T. Chang, J. W. Clark, Rice University, USA; O. Mawlawi, MD Anderson Cancer Center, USA

MIC18.M-124 Partial Volume Compensation for Cardiac PET with Regional Myocardial Wall Thinning
Y. Du, P. E. Bravo, G. S. K. Fung
Johns Hopkins University, USA

MIC18.M-126 Iterative-Based Partial Volume Effects Correction with Wavelet-Based Regularization for Quantitative PET Imaging
A. Reilhac1, W. Lehnert2, L. Jianyu3, S. R. Meikle3, M.-C. Gregoire4
1ANSTO, Australia; 2University of Sydney, Australia

MIC18.M-128 Phased Attenuation Correction and Respiratory Motion Compensation of PET Image by Using a CT Image and Multiple Respiratory-Phase MR Images
W. H. Nam, D. Lee, I. J. Ahn, K. Y. Jeong, J. H. Kim, J. B. Ra
KAIST, Republic of Korea

MIC18.M-130 Low Dose, Non-Tomographic Technique to Estimate Lesion Position and Trace Element Concentration in NSECT.
G. A. Agasthya, J. Shah, B. P. Harrawood, A. J. Kapadia
Duke University, USA

MIC18.M-132 Investigation of Quantitative Errors Due to LOR Rebinning Motion Correction for Freely Moving Small Animals with microPET
M. Akhtar1, A. Kyme1, R. Fulton1,2, S. Meikle1
1The University of Sydney, Australia; 2Westmead Hospital, Australia

MIC18.M-134 Evaluation of Monte Carlo-Based Compensation for Scatter and Crosstalk in Simultaneous In-111/Tc-99m SPECT-CT Imaging of Infection
M. Cerevo1, S. C. Moore1,2
1Brigham and Women's Hospital, USA; 2Harvard Medical School, USA

W. Lehnert1, M.-C. Gregoire1, A. Reilhac2, S. R. Meikle1
1University of Sydney, Australia; 2ANSTO, Australia

MIC18.M-138 Object Size Dependency of Noise Strength and Correlation Patterns for TOF and Non-TOF PET
E. Asma, S. Ahn, R. M. Manjeshwar
General Electric Global Research, USA

MIC18.M-140 A Method of Motion Tracking During CT for Motion Correction
J.-H. Kim1, J. Nuyts2, R. Fulton1,3
1University of Sydney, Australia; 2Katholieke Universiteit Leuven, Belgium; 3Westmead Hospital, Australia

MIC18.M-142 Attenuation Correction in SPECT Without Attenuation Map
K. Kaczperski
The Maria Sklodowska - Curie Memorial Cancer Centre and Institute of Oncology, Poland

MIC18.M-144 Regional Kinetic Summaries of Dynamic PET Time-Course Data: Model the Average or Average the Model?
D. Hawe1, F. Hernandez Fernandez2, J. Huang1, M. Muzi1, F. O’Sullivan1
1University College Cork, Ireland; 2University of Washington, USA

| MIC18.M-150 | Signal Recovery Algorithm for Accelerated Data Acquisition in Water Activation Studies | J. Verhaeghe, A. J. Reader, McGill University, Montreal Neurological Institute, Canada |
| MIC18.M-154 | Assessment of Bootstrap Resampling Accuracy for PET Data | P. J. Markiewicz, A. J. Reader, G. I. Angelis, F. Kotasidis, W. R. Lionheart, J. C. Matthews. 1 University of Manchester, UK; 2McGill University, Canada |
| MIC18.M-156 | Brain Tissues Segmentation for Diagnosis of Alzheimer-Type Dementia | M. Ito, K. Sato, M. Fukumi, I. Namura. 1Institute of Technology and Science, The University of Tokushima, Japan; 2Faculty of Systems Science and Technology, Akita Prefectural University, Japan; 3Akita University Health Center, Japan |
| MIC18.M-162 | Estimation of Myocardial Strain from MRI by Using a Deformable Mesh Model | F. M. Parages, M. N. Wernick, T. S. Denney Jr, J. G. Brankov. 1Illinois Institute of Technology, United States; 2Auburn University, United States |
| MIC18.M-164 | Generalized Inter-Frame and Intra-Frame Motion Correction in Dynamic PET Imaging | H. Mohy-ud-Din, N. Karakatsanis, M. R. Ay, D. F. Wong, A. Rahim. 1The Johns Hopkins University, Baltimore, Maryland, USA, USA; 2Tehran University of Medical Sciences, Iran |
| MIC18.M-166 | Computer-Aided Detection of Splenic Enlargement Using Pattern Analysis in Abdominal CT Images | W. Seong, J. Y. Kang, J. H. Kim, J. W. Park, Chungnam National University, South Korea |
| MIC18.M-168 | Validation and Optimization of a Novel Dynamic Multi-Bed Clinical FDG PET Acquisition Scheme | N. A. Karakatsanis, M. A. Lodge, Y. Zhou, J. Mhlanga, M. Chaudhry, W. P. Segars, R. L. Wahl, A. Rahim. 1Johns Hopkins University, USA; 2Duke University, USA |
| MIC18.M-170 | Formation of Parametric Images with Bayesian Estimation for 11C-Altropane PET Studies | Y.-H. Fang, G. El Fakhri, N. Alpert, Massachusetts General Hospital, USA |
| MIC18.M-172 | Automatic Generation of Myocardial Contour Using Contrast Enhanced Cardiac MRI for Myocardial Perfusion Analysis | T. Natsuno, T. Ichihara, Fujita Health University, Japan; K. Kitagawa, M. Ishida, H. Sakuma, Mie University Hospital, Japan |
| MIC18.M-174 | Model-Independent Plot of Dynamic PET Data Facilitates Data Interpretation and Model Selection | O. L. Munk, Aarhus University Hospital, Denmark |
MIC18.M-178 PET Event-Time Determination by Waveform Analysis  
C.-M. Kao, H. Kim, C.-T. Chen  
The University of Chicago, USA

MIC18.M-180 Variable Preprocessing Applied to Neural Network Position Estimators for 2-D PET  
F. Mateo, European Organization for Nuclear Research (CERN), Switzerland; C. W. Lerche, Philips Technology GmbH, Germany; J. D. Martínez, R. Gadea, Instituto de Instrumentación para Imagen Molecular (I3M), Universitat Politècnica de València, Spain

MIC18.M-182 An Operator-Passive Thoracic Impedance Approach for Respiratory Motion Gating in Myocardial Perfusion SPECT  
R. Conwell, C. Bai, J. Kindem, H. Babla, D. Solis, R. De Los Santos, M. Gurley  
Digirad Corporation, USA

MIC18.M-184 PETLINK Stream Buffer: Using an FPGA-Based RAID Controller with Solid-State Drives to Achieve Lossless, High Count-Rate 64-Bit Coincidence Event Acquisition for 3-D PET  
J. E. Breeding, W. F. Jones, J. H. Reed, Siemens Medical Solutions USA, Inc., USA; T. Sangpaitoon, Design Gateway Company Ltd, THAILAND

MIC18.M-186 Development of a 64-Channel Front-End ASIC for Accurate and Robust Crystal Identification of High-Resolution PET Detectors  
T. Furumiya, J. Ohi, K. Kitamura  
Shimadzu Corporation, Japan

MIC18.M-188 Device-Less Gating for PET/CT Using Principal Component Analysis  
K. Thielemans, Hammersmith Imanet, GE Healthcare, UK; S. Rathore, Imperial College, UK; F. Engbrant, P. Razifar, Uppsala ASL, GE Healthcare, Sweden

MIC18.M-190 Position Reconstruction in Detectors Based on Continuous Crystals Coupled to Silicon Photomultiplier Arrays  
J. Cabello1, J. Barrio1, C. Lacasta1, M. Rafecas2, G. Llosa3  
1Instituto de Física Corpuscular (IFIC), Universitat de València/CSIC, Spain; 2Departamento de Física Atomica, Molecular y Nuclear, Universitat de València, Spain

F. Clementel1, S. Vandenberghhe1, J. S. Karp2, S. Surti2  
1Ghent University, Belgium; 2University of Pennsylvania, United States

MIC18.M-194 Singles and Coincidence Processing for a Digital Preclinical PET/MR System Using SiPM Detectors  
B. Goldschmidt1,2, T. Sölö2, A. Salomon1,3, V. Schulz1,3  
1Philips Research Europe, Germany; 2RWTH Aachen University, Germany; 3King's College, UK

MIC18.M-196 Use of the High Speed Domino Ring Sampler (DRS) for Readout of PET Block Detectors  
M. S. Judenhofer, J. Du, Y. Yang, S. R. Cherry  
University of California, Davis, USA

MIC18.M-198 Comparison of ECG Derived Respiratory Motion Signals and Pneumatic Bellows for Respiratory Motion Tracking  
A. Konik1, J. Mitra1, K. L. Johnson1, E. Helfenbein2, L. Shao2, M. A. King1  
1Umais Medical School, United States; 2Philips, United States

MIC18.M-200 Whole Body PET Imaging Using Variable Acquisition Times  
A. Krizsan, J. Czernin, M. Dahlbom  
David Geffen School of Medicine at UCLA, USA

MIC18.M-202 Imaging with an SSPM Array and a High-Speed Multi-Channel Readout ASIC  
M. Janecek1, P. J. McVittie1, J.-P. Waldör2, B. Zheng1, H. von der Lippe1, M. McClish1, P. Dokhale2, C. J. Staples2, J. F. Christian2, K. S. Shah2, W. W. Moses1  
1Lawrence Berkeley National Laboratory, USA; 2Radiation Monitoring Devices, Inc., USA
MIC18.M-204 Computerized Detection of Low SNR Cases in NSECT: an ROC-Based Sensitivity Analysis
G. A. Agasthya, J. Shah, B. P. Harrwood, L. W. Nolte, A. J. Kapadia
Duke University, USA

MIC18.M-206 Development of a Resistive Readout for SiPM Arrays
S. Majewski, A. Stolin, West Virginia University, USA; J. Proffitt, AiT Instruments, USA

MIC18.M-208 Functionality Test of a Readout Circuit for a 1mm³ Resolution Clinical PET System
J. Zhai, A. Vandenbroucke, P. Reynolds, C. Levin
Stanford University, USA

G. S. Mitchell, K. L. Byrne, J. Zhou, J. Qi, S. R. Cherry
UC Davis, USA

MIC18.M-212 Evaluation of a Spline Reconstruction Technique for SPECT: Comparison with FBP and OSEM
G. A. Kastis¹, A. Gaitanis², A. S. Fokas¹,³
¹Academy of Athens, Greece; ²Biomedical Research Foundation of the Academy of Athens (BRFAA), Greece; ³University of Cambridge, UK

F. Taghibakhsh, C. S. Levin, Stanford University, USA
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<thead>
<tr>
<th>Time</th>
<th>VCC Auditorium 1</th>
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Saturday - Daily Schedule

Sat Oct 27

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<tr>
<td>07:30-18:00</td>
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<td>MIC21.5 MIC Posters 5</td>
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MIC19 Image Reconstruction 2

Saturday, Oct. 29 08:30-10:30 VCC, Auditorium 1

Session Chairs: Magdalena Rafecas, Instituto de Fisica Corpuscular (IFIC), Universidad de Valencia - CSIC, Spain
Margaret E. Daube-Witherspoon, University of Pennsylvania, United States

MIC19-1 (08:30) Direct 3D PET Image Reconstruction into MR Image Space
P. Gravel, J. Verhaeghe, A. J. Reader
McGill University, Canada

MIC19-2 (08:45) Iterative Cone-Beam Reconstruction of Continuous Bed Motion Transmission Scans in PET
Z. Burbar, S. Siegel, I. Hong, Siemens Healthcare, USA

MIC19-3 (09:00) Row-Action Image Reconstruction Algorithm Using lp-Norm Distance to a Reference Image
E. A. Rashed, H. Kudo, University of Tsukuba, Japan

MIC19-4 (09:15) Improved Filtering for X-Ray Tomosynthesis Reconstruction
T. Nielsen, S. Hitziger, M. Grass, Philips Research, Germany; A. Iske, University of Hamburg, Germany

MIC19-5 (09:30) Image Representation by Blob and CT Reconstruction from Few Number of Projections
H. Wang, Thales Group XRIS, France; L. Desbat, University Joseph Fourier, France; S. Legoupil, CEA Saclay, France

MIC19-6 (09:45) Initial Experience in Image Reconstruction from Limited-Angle C-Arm CBCT Data
Z. Zhang1, X. Han1, J. Bian1, J. Manak1, E. Sidky1, X. Pan1
1University of Chicago, USA; 2GE Healthcare, France

MIC19-7 (10:00) FDK-Type Reconstruction Algorithms for Reverse Helical Trajectory
Z. Yu, F. Noo, Department of Radiology, University of Utah, USA; F. Dennerlein, G. Lauritsch, Siemens AG, Healthcare Sector, Germany

MIC19-8 (10:15) Motion-Compensated 4D Cone-Beam Computed Tomography
M. Brehm1, T. Berkus2, M. Oelhafen2, P. Kunz2, M. Kachelriess1
1Friedrich-Alexander University, Germany; 2Varian Medical Systems, Switzerland

MIC20 Hi-Res and Pre-Clinical Imaging 2

Saturday, Oct. 29 08:30-10:30 VCC, Auditorium 2

Session Chairs: Arion F. Chatziioannou, UCLA Crump Institute, United States
Maria G. Bisogni, Dipartimento di Fisica “E. Fermi”, Italy

W.-H. G. Wong, H. Li, H. Baghaei, Y. Zhang, R. Ramirez, S. Liu, C. Wang, S. An
The University of Texas M. D. Anderson Cancer Center, USA

MIC20-2 (08:45) A Prototype Small Animal PET Scanner with Spatial Resolution Approaching 0.5 mm
Y. Yang1, J. Bec1, M. S. Judenhofer1, X. Bai1, M. Rodriguez1, Y. Wu1, P.A. Dokhale2, K. S. Shah2, R. Farrell3, J. Qi1, S. R. Cherry1
1University of California at Davis, USA; 2Radiation Monitoring Devices Inc., USA
MIC20-3 (09:00) Initial Performance of the Phase II MiCES Data Acquisition Electronics System
T. K. Lewellen, D. DeWitt, R. S. Miyaoka, S. Hauck
University of Washington, USA

MIC20-4 (09:15) Segmentation of X-Ray Micro-Computed Tomography Using Neural Networks Trained with Statistical Information: Application to Biomedical Images
A. A. M. Meneses1, A. P. Almeida2, J. Soares1, P. Azambuja3, M. S. Gonzalez4, S. C. Cardoso5, D. Braz6, C. E. de Almeida7, R. C. Barros8
1State University of Rio de Janeiro, Brazil; 2Federal University of Rio de Janeiro, Brazil; 3Oswaldo Cruz Foundation, Brazil; 4Fluminense Federal University, Brazil

MIC20-5 (09:30) Performance of MARS-CT Using Medipix3 for Spectral Imaging of Soft-Tissue
J. P. Ronaldson1, R. Zainon1, N. G. Anderson1, A. P. Butler1, P. H. Butler2
1University of Otago, New Zealand; 2University of Canterbury, New Zealand

MIC20-6 (09:45) Multicolor-Color Thin Film Scintillators
D. S. Rigie, P. J. La Rivière
University of Chicago, United States

MIC20-7 (10:00) Timing and Energy Characteristics of LaBr3(Ce) and CeBr3 Scintillators Read by FBK SiPMs
R. I. Wiener1, S. Surti1, C. Piemonte2, J. S. Karp1
1University of Pennsylvania, U.S.A.; 2Fondazione Bruno Kessler, Italy

MIC22  PET and SPECT Imaging
Saturday, Oct. 29 14:30-16:30  VCC, Auditorium 1

MIC22-1 (14:30) Design of a Static Full-Ring Multi-Pinhole Collimator for Brain SPECT
K. Van Audenhaege1, K. Deprez1, R. Van Holen1, J. S. Karp2, S. Metzler2, S. Vandenberghe1
1University of Ghent, Belgium; 2Univ. of Pennsylvania, USA

MIC22-2 (14:45) Multiple Discriminant Analysis of SPECT Data for Alzheimer’s Disease, Frontotemporal Dementia and Asymptomatic Controls
1University of Konstanz, Germany; 2Siemens Molecular Imaging EU, Germany; 3University of Erlangen-Nuremberg, Germany

MIC22-3 (15:00) A Prototype Adaptive SPECT System with Self-Optimized Angular Sampling
L. Cai, N. Li, L. Meng, University of Illinois at Urbana Champaign, USA

MIC22-4 (15:15) System Performance of OPET: a Combined Optical and PET Imaging System
D. L. Prou1, A. Douarghy1, R. W. Silverman1, F. R. Rannou2, A. F. Chatriuioannou1
1Crump Institute for Molecular Imaging, USA; 2Department de Ingenieria Informatica, Chile

MIC22-5 (15:30) The AX-PET Concept: New Developments And Tomographic Imaging
M. Rafecas, Universidad de Valencia / CSIC, Spain
On behalf of the AX-PET collaboration
MIC22-6 (15:45) Monte Carlo Simulation of a TOF-PET Scanner
K. M. Abushab1, J. L. Herraz1, E. Vicente1, S. Espona2, J. J. Vaquero3, J. M. Udas1
1Universidad Complutense de Madrid, Spain; 2Ghent University Hospital, Belgium; 3Universidad Carlos III de Madrid, Spain
MIC22-7 (16:00) Investigation of Continuous Scintillator/SiPM Detector for Local Extremely High Spatial Resolution PET
D. Xi1,2, J. Liu1, Y. Li1,2, J. Zhu1,2, M. Niu1,2, P. Xiao1,2, Q. Xie1,2
1Huazhong University of Science and Technology, China; 2Wuhan National Laboratory for Optoelectronics, China

MIC22-8 (16:15) LaBr3(Ce) and NaI(Tl) Performance Comparison for Single Photon Emission Imaging
R. Pani1,2, P. Bennati3,2, R. Pellegrini1,2, M. N. Cinti1,2, R. Scafe1,2, G. De Vincentiis1,2, E. Di Castro1,2, S. Lo Meo1,2, A. Fabbrini2,3, V. Orsolini Cencelli2,3, F. de Notaristefani1,2
1Sapienza University, Italy; 2Istituto Nazionale Fisica Nucleare - INFN, Italy; 3Roma Tre University, Italy; 4Alma Mater University, Italy

MIC23 Intraoperative, Portable and other Imaging Technologies
Saturday, Oct. 29 14:30-16:30 VCC, Auditorium 2
Session Chairs: Marc Kachelriess, Institute of Medical Physics (IMP), Universität Erlangen-Nürnberg, Germany
Jose M. Benlloch Baviera, I3M (Instituto de Instrumentación para Imagen Molecular), Spain

MIC23-1 (14:30) Impact of Acquisition Geometry and Physical Model on Freehand SPECT Reconstructions
A. Hartl1, T. Lasser1, S. I. Ziegler2, N. Navab1
1Technische Universität München, Germany; 2Klinikum rechts der Isar, Germany

MIC23-2 (14:45) Hand-Held SiPM-Based PET Imagers for Surgical Applications
A. V. Stolin, S. Majewski, R. R. Raylman, P. Martone
West Virginia University, WV

MIC23-3 (15:00) Virtual X-Ray Histology Using Metal Stains and Multi-Energy Synchrotron microCT
P. J. La Riviere1, P. Vargas1, X. Xu1, D. Clark1, X. Xiao1, F. De Carlo1, K. Cheng2
1The University of Chicago, USA; 2Penn State College of Medicine, USA; 3Argonne National Lab, USA

MIC23-4 (15:15) X-Ray Phase Contrast Imaging of Soft Tissue Specimens
C. Kottler1, V. Revol1, R. Kaufmann1, C. Maake1, S. Stuebinger1, B. Von Rechenberg1, P. R. Kircher1, C. Urban1
1CSEM SA, Switzerland; 2University of Zurich, Switzerland

MIC23-5 (15:30) Energy-resolved photon-counting X-ray imaging arrays for clinical k-edge CT
W. C. Barber1, J. C. Wessel2, E. Nygard2, N. Malakhov2, G. Wawrzyniak2, N. E. Hartsough1, T. G. Gandhi1, J. S. Iwanczyk1
1DxRay Inc., USA; 2Interon AS, Norway

MIC23-6 (15:45) A New Molecular Imaging Approach: Space- and Time-Resolved Imaging of Bio-Molecules Using an in-Vacuum Pixel Detector
J. H. Jungmann1, L. MacAleese1,2, J. Visser1, M. J. J. Vrakking1,4, R. M. A. Heeren1
1FOM-Institute AMOLF, The Netherlands; 2LASIM - UMR5579 CNRS & Universit Lyon 1, France; 3National Institute for Subatomic Physics (Nikhef), The Netherlands; 4Max-Born-Institut, Germany

MIC23-7 (16:00) Dose Minimization for Material-Selective CT with Energy-Selective Detectors
N. Maass, S. Sawall, M. Kachelriess
University Erlangen, Germany
MIC23-8 (16:15) First Results of a Prototype Phase-Contrast Small-Animal CT Scanner

P. Bruyndonckx¹, B. Pauwels¹, A. Tapfer², M. Bech³, X. Liu¹, A. Sassov¹, A. Velroyen², J. Kenntner³, J. Mohr³, M. Walter³, J. Schulz³, F. Pfeiffer²

¹SkyScan, Belgium; ²Technische Universität München, Germany; ³Karlsruhe Institute of Technology, Germany; ⁴Microworks, Germany
N. Hudin, Y. Charon, M.-A. Duval, L. Pinot, D. Abi-haidar, R. Siebert, L. Menard
Laboratoire IMNC - University Paris-Diderot, France

MIC21.S-6 Portable Small FOV Lightweight Imaging System Based on Long 1D Detectors
V. Y. Pedash, H. N. Okrushko, V. A. Kolbasin
Institute for Scintillation Materials NAS of Ukraine, Ukraine

MIC21.S-9 Evaluation of an Imaging Gamma Probe Based on R8900U-00-C12 PSPMT
M. Georgiou1,2, S. David3, P. Papadimitroulas4, E. Fysikopoulos4, A. Bregou3, G. Loudos1, P. Georgoulas4
1Medical School, Greece; 2Technological Educational Institution of Athens, Greece; 3Medical School, Greece; 4National Technical University of Athens, Greece

MIC21.S-12 TRECAM, a Gamma Imaging Probe for Sentinel Node and Occult Lesion Localization
E. Netter1, L. Pinot1, A. Bricou2, M.-A. Duval1, B. Janvier1, F. Lefebvre1, L. Menard1, R. Siebert1, Y. Charon1
1IMNC laboratory, France; 2Lariboisire and Verdier Hosp., France

MIC21.S-15 Evaluation of Navigated Beta-Probe Surface Imaging on a Realistic 3D Phantom
D. I. Shakir1, T. Lasser1, A. Drzega2, S. I. Ziegler2, N. Navab1
1Technische Universitaet Muenchen, Germany; 2Klinikum rechts der Isar, Germany

MIC21.S-18 Development of a Mini Gamma Camera for Prostate Imaging
S. Majewski, A. Stolin, West Virginia University, USA; J. Proffitt, AiT Instruments, USA

J. Lilly1, B. Sobott1, G. Jones1, R. Rassool2,3, G. OKeefe2,3
1CRC Biomedical Imaging Development, Australia; 2Centre for PET, Austin Health, Australia; 3School of Physics, University of Melbourne, Australia

MIC21.S-24 HelmetPET: a Wearable Brain Imager
S. Majewski1, J. Proffitt2, J. Brefczynski-Lewis1, A. V. Stolin1, A. G. Weisenberger3, R. Wojcik
1West Virginia University, USA; 2AiT Instruments, USA; 3Thomas Jefferson National Accelerator Facility, USA; 4RayVisions, USA

D. Shi, A. Zamyatin, Z. Yang
Toshiba medical research institute USA, Inc., USA

MIC21.S-30 Modified Median Root Prior Reconstruction of PET/MR Data Acquired Simultaneously with the 3TMR-BrainPET
L. L. Caldeira1,2, J. J. Scheins3, P. Almeida4, J. Seabra2, H. Herzog1
1Institute of Biomedical Engineering and Biophysics, Faculty of Sciences, Portugal; 2Siemens Healthcare Portugal, Portugal; 3Institute of Neuroscience and Medicine, Forschungszentrum Juelich, Germany
MIC21.S-33 Low-Dose or Better Resolution Ultrafast Cardiac SPECT: NCAT Reconstruction Study
J. Dey, University of Massachusetts Medical School, USA

MIC21.S-36 Comparing Different Reconstruction Algorithms for Multiple Pinhole Cardiac SPECT Using NCAT
J. Dey, University of Massachusetts Medical School, USA

MIC21.S-39 Incorporation of a Cascade Gamma Ray Correction into the SRW Iterative Reconstruction for Non-Standard PET Nuclides: Towards a Unified Correction Weighted (UCW) Scheme in the Sensitivity Image
J.-C. Cheng, R. Laforest
Washington University School of Medicine, USA

MIC21.S-42 The Effect of Regularization on Image Quality and Quantification in Motion Compensated PET Image Reconstruction
C. Tsoumpas, I. Polycarpou, C. Buerger, T. Schaeffter, P. K. Marsden
King's College London, United Kingdom

MIC21.S-45 Maximum Likelihood CT Reconstruction from Material-Decomposed Sinograms using Fisher Information
C. O. Schirra, Philips Research North America, USA; E. Roessl, T. Kochler, B. Brendel, A. Thran, R. Proksa, Philips Research Europe, Germany

MIC21.S-48 Comparison of Motion-Compensated Reconstruction with FBP and BPF for Circular X-Ray Tomography: a Simulation Study
D. Schaefer, M. Grass, Philips Research, Germany

MIC21.S-49 Incorporation of a Cascade Gamma Ray Correction into the SRW Iterative Reconstruction for Non-Standard PET Nuclides: Towards a Unified Correction Weighted (UCW) Scheme in the Sensitivity Image
J.-C. Cheng, R. Laforest
Washington University School of Medicine, USA

MIC21.S-51 Interior and Sparse-view Image Reconstruction in emission computed tomography (ECT) Using Anatomical Information
J. Xu, B. M. Tsui, Johns Hopkins University, USA

MIC21.S-54 Iterative Motion-Aware Reconstruction Algorithm for Cardiac Cone Beam CT
H. Schomberg, Philips Research, Germany

MIC21.S-57 FBP and the Interior Problem in 2D Tomography
A. Bilgic, L. Desbat, V. Perrier
Grenoble University, France

MIC21.S-60 Performance Evaluation of Scatter Modeling of the GPU-Based Teratomo 3D PET Reconstruction

MIC21.S-63 Frequency-Combined Extended 3D Reconstruction for Multiple Circular Cone-Beam CT Scans
R. Grimmer1, J. Beak2, N. Pelc3, M. Kachelriess
1University of Erlangen-Nuernberg, Germany; 2Stanford University, USA

MIC21.S-66 Empirical Cupping Correction for CT scanners with Primary Modulation (ECCP)
R. Grimmer1, R. Fahrig2, W. Hinshaw2, H. Gao3, M. Kachelriess
1University of Erlangen-Nuernberg, Germany; 2Stanford University, USA

MIC21.S-69 Comparing Surrogates for TV Regularization
M. Defrise, Vrije Universiteit Brussel, Belgium

MIC21.S-72 PET Motion Correction in LOR Space Using Scanner-Independent, Adaptive Projection Data for Image Reconstruction with PRESTO
Institute of Neuroscience and Medicine INM-4, Germany

MIC21.S-75 A Modeled Point-Spread Function for a Noise-Free System Matrix
R. Taschereau1, F. R. Rannou2, A. F. Chatziioannou2
1University of California Los Angeles, USA; 2Universidad de Santiago de Chile, Chile

MIC21.S-78 PET Image Reconstruction from Finite Linogram Data via Direct Fourier and Logarithmic Barrier Method
Z. Deng1,2, Q. Xie1,2, Z. Duan1,2
1Wuhan National Laboratory for Optoelectronics, China; 2Huazhong University of Science and Technology, China
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<td>M. Defrise, Vrije Universiteit Brussel, Belgium; V. Panin, M. E. Casey, Siemens Medical Solutions, USA</td>
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<td>MIC21.S-120</td>
<td>Parameter Selection of Constrained Total-Variation Minimization for Gap Compensation in PET</td>
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<td>J. Guo¹,², C.-M. Kao¹, Q. Xie¹,², ¹Huazhong University of Science and Technology, China; ²Wuhan National Laboratory for Optoelectronics, China; ³The University of Chicago, USA</td>
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L. Cao1, R. Bugalho2, N. Matela3, M. Martins3, P. Almeida3, J. Peter1, J. Verela2
1German Cancer Research Center, Germany; 2Laboratory of Instrumentation and Experimental Particles Physics, Portugal; 3University of Lisbon, Portugal

MIC21.S-132 The study of an ideal observer for phased array systems in diffusive imaging
D. Kang, M. A. Kupinski, University of Arizona, USA

MIC21.S-135 GEANT4 Simulation of a 3D Compton Imaging Device
M. Lenti, INFN Firenze, Italy; M. Veltre, Università di Urbino and INFN Firenze, Italy

J. E. Ortuno1,2, G. Sportelli1,2, P. Guerra1,2, A. Santos1,2
1Universidad Politecnica de Madrid, Spain; 2Networking Research Center on Biengineering, Biomaterials and Nanomedicine, Spain

MIC21.S-141 Incorporating Patient-Specific Variability in the OncoPET_DB Database
S. Marache-Francisco1,2, R. Prost1, J.-M. Rouet2, C. Lartizien1
1CNRS UMR5220 ; Inserm U1044 ; INSA-Lyon ; Lyon 1 University, France; 2Philips Healthcare, France

MIC21.S-144 Fast GATE Fan Beam SPECT Projector
J. De Beenhouwer, University of Antwerp, Belgium; B. Pieters, R. Van de Walle, Ghent University, Belgium

G. S. K. Fung1, T. Higuchi1, W. P. Segars2, B. M. W. Tsui1
1Johns Hopkins University, USA; 2Duke University, USA

J. Han1, S. Yun1, S. Heo2, T. W. Kim3, O. Joe1, H. K. Kim1
1Pusan National University, Republic of Korea; 2Humanray, Republic of Korea

MIC21.S-153 Normalization of Monte Carlo PET Data Using GATE
A. Pepin, S. Stute, S. Jan, C. Comtat, CEA, France

MIC21.S-156 A Comparison Study on Ray-Driven Approximation in Re-projection and Back-projection for CT Reconstruction
Y. Fan1, H. Lu2, J. Ma3, H. Zhu1, Y. Liu4, Z. Liang5
1Stony Brook University, USA; 2Fourth Military Medical University, China

MIC21.S-159 Human Thorax Phantom for Simulation of Respiratory and Cardiac Motion in PET/MRI: Development and First Measurements
K. P. Schaefers, B. Koenemann, B. Czekalla, K. Bolwin, F. Buether, M. Fieseler, European Institute for Molecular Imaging, University of Muenster, Germany; H. Braun, S. Ziegler, H. H. Quick, Institute of Medical Physics, University of Erlangen, Germany

J. E. Gillam, P. Solevi, J. F. Oliver, M. Rafecas IFIC (CSIC - Universitat de Valencia), Spain

MIC21.S-165 Monte Carlo Characterization of a Novel High Spatial Resolution Small Animal Scanner for Mouse Brain Studies
M. Rodriguez-Villafuerte1,2, Y. Yang1, A. Martinez-Davalos1,2, S. R. Cherry1
1University of California, Davis, USA; 2Instituto de Fisica, UNAM, Mexico

MIC21.S-168 Short-Scan FBP Reconstruction with Filter-Based Redundancy Handling
E. Dennerlein, Siemens AG, Healthcare Sector, Germany

MIC21.S-171 System Response Matrix Denoising in Measurement Space for PET
J. Cabelló1, M. Rafecas1,2
1Instituto de Fisica Corpuscular (IFIC), Universitat de Valencia/CSIC, Spain; 2Dep. de Fisica Atomica, Molecular y Nuclear, Universitat de Valencia, Spain
MIC21.S-174 Efficient Rendering of Regions of Response in List-Mode Reconstruction for PET
G. Sportelli\textsuperscript{1,2}, J. E. Ortuno\textsuperscript{1,2}, A. Santos\textsuperscript{1,2}
\textsuperscript{1}Universidad Politecnica de Madrid, Spain; \textsuperscript{2}Networking Research Center on Bioengineering, Biomaterials and Nanomedicine, Spain

MIC21.S-177 Empirical Multiple Energy Calibration (EMEC) for Material-Selective CT
N. Maass, S. Sawall, M. Kachelriess
University Erlangen, Germany

MIC21.S-180 Optimizing Algorithm Parameters Based on a Model Observer Detection Task for Image Reconstruction in Digital Breast Tomosynthesis
E. Y. Sidky\textsuperscript{1}, Y. Duchin\textsuperscript{1}, I. S. Reiser\textsuperscript{1}, C. Ullberg\textsuperscript{1}, X. Pan\textsuperscript{1}
\textsuperscript{1}University of Chicago, USA; \textsuperscript{2}XCounter AB, Sweden

MIC21.S-183 Generalization of the Image Space Reconstruction Algorithm
A. J. Reader, J. Verhaeghe, McGill University, Canada

MIC21.S-186 Image Fusion for Low-Dose Computed Tomography Reconstruction
J. Ma\textsuperscript{1,2}, J. Huang\textsuperscript{2}, Z. Liang\textsuperscript{1}, Y. Fan\textsuperscript{1}, H. Lu\textsuperscript{1}, H. Zhang\textsuperscript{3}, Q. Feng\textsuperscript{2}, W. Chen\textsuperscript{1}.
\textsuperscript{1}Stony Brook University, USA; \textsuperscript{2}Southern Medical University, China; \textsuperscript{3}Fourth Military Medical University, China

MIC21.S-189 Ultra-Fast Total-Body Mouse Imaging with U-SPECT-II
P. E. B. Vaissi\textsuperscript{e}, M. C. Goorden\textsuperscript{1}, B. Vastenhoud\textsuperscript{1,2}, F. van der Have\textsuperscript{1,2}, F. J. Beekman\textsuperscript{1,2,12}
\textsuperscript{1}TU Delft, The Netherlands; \textsuperscript{2}MI Labs, The Netherlands; \textsuperscript{1}UMC, The Netherlands

MIC21.S-192 Analytical Image Reconstruction Strategies for AX-PET Data
U. Tuna, Tampere University of Technology, Finland
On behalf of the AX-PET collaboration

MIC21.S-195 Adaptive Thresholding for Robust Iterative Image Reconstruction from Limited Views Projection Data
E. A. Rashed, H. Kudo, University of Tsukuba, Japan

MIC21.S-196 TOF Versus Non-TOF PET Reconstruction In Small FOV Brain Imaging
B. Zhang, Philips Healthcare, USA

MIC21.S-201 Statistical Iterative Reconstruction for High-Resolution Local Tomography with Blind Object Support
E. A. Rashed, Z. Wang, H. Kudo
University of Tsukuba, Japan

MIC21.S-204 Iterative Thresholding Framework for Row-Action Reconstruction from Sparse Projection Data
E. A. Rashed, H. Kudo, University of Tsukuba, Japan

MIC21.S-207 A Gamma Ray Compton Camera Application for GAMOS
L. J. Harkness\textsuperscript{1}, P. Arce\textsuperscript{2}, A. J. Boston\textsuperscript{1}, H. C. Boston\textsuperscript{1}, J. R. Cresswell\textsuperscript{1}, J. Dormand\textsuperscript{1}, M. Jones\textsuperscript{1}, D. S. Judson\textsuperscript{1}, P. J. Nolan\textsuperscript{1}, J. A. Sampson\textsuperscript{1}, D. P. Scraggs\textsuperscript{1}, A. Sweeney\textsuperscript{1}
\textsuperscript{1}University of Liverpool, UK; \textsuperscript{2}CIEMAT, Spain

M. de Prado, P. Arce, M. Canadas, L. Romero, CIEMAT, Spain

A. Zakhnini\textsuperscript{1}, J. Kulenkamp\textsuperscript{1}, S. Sauerzapf\textsuperscript{2}, J. Lippmann-Pipke\textsuperscript{1}, U. Pietrzyk\textsuperscript{1}
\textsuperscript{1}Helmholz-Zentrum Dresden-Rossendorf, Germany; \textsuperscript{2}University of Wuppertal and University Hospital of Freiburg, Germany; \textsuperscript{1}Research Center Juelich, Germany
MIC21.S-216 Intrinsic Spatial Resolution and Sensitivity of a Simple Pair of PET Detectors: Comparisons Between Experiments and GATE Simulation
M. Rodriguez-Villafuerte1,2, Y. Yang1, A. Martinez-Davalos1,2, M. S. Judenhofer1, S. R. Cherry1
1 University of California, Davis, USA; 2Instituto de Física, UNAM, Mexico

MIC21.S-219 Development of a Monte Carlo Simulation Tool for the Light Transportation Inside Scintillation Crystals
X. Yang, T. Farrell, H. Peng, McMaster University, Canada

MIC21.S-222 Computational Modelling of Multi-Head PET/SPECT Imaging Systems
M. E. Myronakis, M. Zvelebil, D. G. Darambar
Institute of Cancer Research / The Royal Marsden Foundation Trust, UK

A. A. M. Menses1, A. Giusti2, A. P. Almeida3, L. P. Nogueira3, D. Braz3, C. E. de Almeida1, R. C. Barros3
1State University of Rio de Janeiro, Brazil; 2Dalle Molle Institute for Artificial Intelligence (IDSIA), Switzerland; 3Federal University of Rio de Janeiro, Brazil

MIC21.S-228 System Modeling for an MR-Compatible MicroPET Insert
J. Zhou, Y. Wu, M. Judenhofer, S. Cherry, J. Qi
University of California, Davis, USA

N. Roe-Vellve1,2, A. Cot1,2, D. Ros1,2, J. Pavia1,2
1Facultat de Medicina, Universitat de Barcelona - IDIBAPS., Spain; 2CIBER en Bioingenieria, Biomateriales y Nanomedicina (CIBER-BBN), Spain; 3Hospital Clinic - IDIBAPS, Spain

MIC21.S-234 Design Optimization of a Dedicated Breast PET Scanner Using TOF Imaging in a Partial Ring Geometry
E. Lee, M. E. Werner, J. S. Karp, S. Surti
University of Pennsylvania, USA

MIC21.S-237 Sensitivity-Parallax Trade-Offs in a Rectangular PET System
L. R. Macdonald, W. C. Hunter, P. E. Kinahan, R. S. Miyaoka
University of Washington, Seattle, USA

MIC21.S-240 CIVA Computed Tomography Modeling
S. A. Legoupil, M. Costin, A. Leveque, CEA, France

MIC21.S-243 Elemental Quantification through Gamma-Stimulated Spectroscopy in GEANT4
A. J. Kapadia, Q. Ye, G. A. Agasthya, Duke University, USA

W. Lehner1, M.-C. Gregoire2, A. Reilhac2, S. R. Meikle1
1University of Sydney, Australia; 2ANSTO, Australia

MIC21.S-249 Initial Study Design of a Breast-Dedicated PET Scanner with Biopsy Capability Using GATE
J. Yan1, S. Majewski2, K. Vaigneur3, D. W. Townsend1
1Singapore Bioimaging Consortium, A*STAR, Singapore; 2West Virginia University, USA; 3AGILE Engineering, USA

MIC21.S-252 PDD and OAR of Tissue Equivalent Phantom Thermoluminescence Dosimeter (TEP-TLD/SR1)
K. Shinsho, Y. Muroi, H. Saitoh, Tokyo Metropolitan University, Japan; A. Urushiyama, St. Paul’s (Rikkyo) University, Japan

G. Liu1, S. Zhu1, M. Zhu1
1Hunan University, China; 2the Hunan Province Cancer Hospital, China

MIC21.S-258 Dose-Free Monitoring of Radiotherapeutic Treatments with Scattered Photons: First Experimental Results at a 6-MV LINAC
M. Cunha1, M. Pinto1, J. Gonçalves1, L. Sampaio1, R. J. Ferreira2,
H. M. Saraiva1, B. Ferreira1, P. Fonte1,2, M. C. Lopes3, P. Martins1, H. Simões1, P. Crespo1,2
1LIP - Laboratório de Instrumentação e Física Experimental de Partículas, Portugal; 2ISEC - Instituto Superior de Engenharia de Coimbra, Portugal; 3University of Aveiro, Portugal; 4Instituto Português de Oncologia de Coimbra Francisco Gentil, EPE, Portugal

MIC21.S-261 Monte Carlo Simulations of Bremsstrahlung Production in a Carbon Target for Imaging in Radiotherapy
I. Ritter1, J. Durst1, T. Michel1, S. Schemm2, G. Suft2, G. Anton1
1University of Erlangen-Nuremberg, Germany; 2Siemens AG, Germany

MIC21.S-264 Deformation Vector Field Compression Scheme for an Efficient Adaptive Radiotherapy Workflow
P. Kumar, Y. Mallya, Philips Electronics India Pvt. Ltd., IN; K. Bzdusek, Philips, USA

MIC21.S-267 Statistical Image Reconstruction for Sub-Millimeter Pinhole PET with Clustered Pinholes
M. C. Goorden1, F. van der Have1,2, R. Kreuger1, R. M. Ramakers2, F. J. Beekman1,2,3
1Delft University of Technology, The Netherlands; 2Molecular Imaging Laboratories, The Netherlands; 3University Medical Center Utrecht, The Netherlands

MIC21.S-270 A Restoration Method for Incomplete Data in DECT
P. Zheng, Y. Xing, Tsinghua University, China

S. Stute1, J. Nuysts1, K. Van Slambrourck1, M. Sibomana1, F. van Velden1, R. Boellaard3, C. Comtat1
1CEA, France; 2K.U. Leuven, Belgium; 3Copenhagen University Hospital, Denmark; 4VU University Medical Center, The Netherlands

MIC21.S-276 Wavelet-Based Regularization for Background Correction Within the Sub-Millimetre 3D EMLM List-Mode Reconstruction Process for a High Resolution Small Animal PET Data
L. Ortega, M. A. King1, B. F. Hutton2, M. A. King1
1University of Massachusetts, United States; 2University College London, UK

I. Hong, S. Cho, M. Casey, C. Michel
Siemens Medical Solutions, USA

V. Y. Panin, M. Aykac, M. E. Casey, Siemens Healthcare, USA

MIC21.S-288 Maximum-Likelihood Reconstruction Based on a Modified Poisson Distribution to Reduce Bias in PET
J. L. Nuyts1, S. Stute1, K. Van Slambrourck1, F. van Velden1, R. Boellaard3, C. Comtat1
1K.U. Leuven, Belgium; 2Service Hospitalier Frederic Joliot, France; 3VU University Medical Center, The Netherlands

MIC21.S-291 Maximum Likelihood-Based Motion Estimation in Cardiac SPECT Imaging
J. Mitra1, B. F. Hutton2, M. A. King1
1University of Massachusetts, United States; 2University College London, UK

MIC21.S-294 Local Models for Artefact Reduction in Iterative CT Reconstruction

MIC21.S-297 Image Reconstruction and Motion Correction Using Object Modeling and Point Backprojection
I. S. Klyuzhin, K. Dinelle, V. Sossi
University of British Columbia, Canada
MIC21.S-300 3D-List-Mode Reconstruction with Integrated Event-Based Motion Correction
A. Lougovski, J. Langner, F. Hofheinz, E. Will, J. van den Hoff
Helmholtz-Zentrum Dresden-Rossendorf, Germany

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P. Aguiar, E. Will, J. van den Hoff, Z. El Bitar
1 Fundacion IDICHUS, Complejo Hospitalario Universitario de Santiago de Compostela, Spain; 2 Universidade de Santiago de Compostela, Spain; 3 Universitat de Barcelona, Spain; 4 Institut Catala d’Oncoologia, Spain; 5 Hospital Clinic, Spain; 6 Ciber en Bioingenieria, Biomateriales y Nanomedicina, Spain; 7 CNRS, France

MIC21.S-306 Comparison of Quantitative Accuracy for Three Edge-Preserving Image Reconstruction Strategies
S. Shcherbinin, A. Celler
The University of British Columbia, Canada

MIC21.S-309 Fast Analytical Algorithms for PET and SPECT via Radon/Hilbert Regularization
P. E. Barbano, A. S. Fokas
1 University of Cambridge, UK; 2 Academy of Athens, Greece

T. Koesters, K. P. Schaefers, F. Wuebbeling
University of Muenster, Germany

J. G. Brankov, Illinois Institute of Technology, USA

MIC21.S-318 Impact of Resolution Modeling on Accuracy and Precision of Lesion Contrast Measurements
M. E. Daube-Witherspoon, S. Matej, M. E. Werner, S. Surti, J. S. Karp
University of Pennsylvania, USA

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C. Thibaudeau, J.-D. Leroux, J.-F. Pratte, R. Fontaine, R. Lecomte
Universite de Sherbrooke, Canada

1 GE HEALTHCARE, USA; 2 UNIV OF NOTRE DAME, USA

MIC21.S-327 Point Spread Function for PET Detectors Based in the Probability Density Function of the Line Segment Connecting Two Detector Elements
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Stanford University, USA

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Institut Pluridisciplinaire Hubert Curien, France
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The 2011 Nuclear Science Symposium, Medical Imaging Conference, and Room Temperature Semiconductor Detector Workshop would not be possible without the many hours of hard work contributed by the Organizing Committee and the numerous volunteers who graciously offered their time. The organization of an IEEE meeting outside the US presents some unique challenges, and the committee has done a superb job in resolving the issues smoothly so as to make the conference a scientific, social, and financial success. As General Chair, it has been a pleasure working with such an outstanding team and I thank them sincerely for the enriching experience. It has been especially rewarding working with my friends and colleagues from Spain and to have had the opportunity to make several visits to the beautiful city of Valencia. It should be remembered that the conference is made possible through the sponsorship of the IEEE Nuclear and Plasma Sciences Society (NPSS) and the generous support of the cooperating institutions and organizations listed in this program book and throughout the conference venue. The support from Spanish institutions has been especially encouraging. Following the submission of a record number of abstracts in all categories, the Scientific Program Chairs performed an outstanding and timely job in assembling the contributed papers so as to maximize the benefit to the attendees. I sincerely thank all the Program Chairs for their efforts.

Such an IEEE meeting would not be possible without the submission of high-level scientific contributions from authors wishing to showcase their results to the critical appraisal of their peers. I express my sincere gratitude to all the authors who submitted their abstracts in a timely manner thus ensuring the success of the meeting. It is indeed this intellectual and scientific content which has given the IEEE NSS-MIC-RTSD conference its well-justified reputation for quality and innovation. Many scientific and medical instruments and methods have been presented first at this meeting, and we are confident that the meeting in Valencia will undoubtedly continue this long standing tradition.

David Townsend
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Contact Information

General Chair
David Townsend
david_townsend@sbic.a-star.edu.sg

Conference Coordinator
José-Manuel Perez
jm.perez@ciemat.es

NSS Program Chair
Paul Lecoq
paul.lecoq@cern.ch

MIC Program Chair
Alberto Del Guerra
alberto.delguerra@df.unipi.it

RTSD Program Co-Chair
Ralph James
rjames@bnl.gov

MIC Short Courses Chair
Grant Gullberg
GTGullberg@lbl.gov

Industrial Program Co-Chair
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Ron.Keyser@ametek.com

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Companion Program Co-Chair
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kathy.gullberg@gmail.com

Companion Program Co-Chair
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agonzalez@i3m.upv.es

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r.engels@fz-juelich.de

Registration Chair
Christina Sanders
nsstmic.regchair@gmail.com

External Relations
Jose M. Udias
jose@nuc2.fis.ucm.es

Local Coordinator
José M. Benlloch
benlloch@i3m.upv.es

NSS Deputy Program Chair
Faustino Gómez
faustino.gomez@usc.es

MIC Deputy Program Chair
Juan J. Vaquero
juanjose.vaquero@uc3m.es

RTSD Program Co-Chair
Ernesto Dieguez
ernesto.dieguez@uam.es

NSS Short Courses Chair
Joao Varela
joao.varela@cern.ch

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Manuel Lozano
manuel.lozano@imb-cnm.csic.esch

Scholarship Co-Chair
Andres Santos
andres@die.upm.es

Companion Program Co-Chair
Carolyn Hoffmann
Carolyn.Hoffman@verizon.net

Guest Editor
Mokhtar Chmeissani
mokhtar@ifae.es

Conference Webmaster
Bo Yu
yu@bnl.gov

Computer Support
Joel Surget
joel.surget@cea.fr

Conference Promotion
Dora Merelli
dora.merelli@cea.fr
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Colleagues:

The first NSS was held in 1954, so we are approaching 60 years of scientific exchange amongst the attendees at this conference. The conference has continued to expand with the formation of the MIC conference and the RTSD workshop. In 2012 we will hold the conference at the refurbished Disneyland Hotel in Anaheim California. The changes at the Hotel were made specifically to accommodate conferences such as ours, and the committee was pleased to find that the location will strongly encourage the informal exchange of ideas in the surrounding spaces that is a hallmark of the NSS/MIC/RTSD.

The hotel conference area is separated from the entertainment areas of Disneyland by a pedestrian walking/shopping area known as Downtown Disney. This area offers a wide variety of restaurants, coffee shops and stores to accommodate the needs of the attendees. As one would expect, there are also a wide variety of activities for attendees who bring family members with them and the conference will be able to offer not only tours, but also some special packages for those wishing to take advantage of the Disney parks.

Our motto for 2012 is “The Wonder of Science” and the Organizing Committee is planning a program to bring together all aspects of the science in our disciplines to further the state-of-the-art and disseminate up-to-date scientific information through the oral and poster presentations. There will be several short courses and workshops before the main conferences. The popular refresher courses will be held during the week to review current topics of special interest. A commercial exhibition featuring the state-of-the-art products and services from a wide range of companies will take place during the middle part of the meeting.

On behalf of the organizing committee, I encourage you to make plans now to attend the 59th NSS conference of the IEEE Nuclear and Plasma Sciences Society as well as the not quite so old extensions of the IEEE MIC and RTSD conferences. I look forward to welcoming you to Disneyland, Anaheim in October 2012 for the NSS-MIC-RTSD.

Tom Lewellen
2012 NSS/MIC/RTSD
General Chair