Nuclear Science Symposium

Medical Imaging Conference

15th International Workshop on Room-Temperature Semiconductor X- and Gamma-Ray Detectors

Special Focus Workshops

Town and Country Resort & Convention Center

San Diego CA, USA

### TABLE OF CONTENTS

Welcome from the General Chair ................................................................. 2  
Program Outline .................................................................................... 3  
Contact Information .............................................................................. 8  
Registration Information ....................................................................... 10  
Hotel Information ................................................................................. 11  
General Information ............................................................................. 12  
IEEE Membership ............................................................................... 12  
Message Board .................................................................................... 12  
Computer Access .................................................................................. 12  
Exhibits Program .................................................................................. 13  
Publications .......................................................................................... 14  
   The Conference Record (CR).............................................................. 14  
   Transactions on Nuclear Science (TNS) ............................................. 14  
   Comparison of Requirements (CR and TNS) ..................................... 15  
Companion Program ............................................................................ 16  
Continuing Education Program ............................................................... 23  
   Nuclear Science Symposium (NSS) .................................................... 32  
      NSS Plenary Speakers ................................................................... 33  
      NSS Luncheon Speaker ................................................................. 36  
      NSS Program ................................................................................. 37  
Medical Imaging Conference (MIC) ......................................................... 92  
      MIC Plenary Speakers ................................................................... 93  
      MIC Program ................................................................................. 96  
Room-Temperature Semiconductor Detector Workshop (RTSD) .... 148  
   Special Focus Workshops ................................................................ 160  
      Micro-Pattern Gas Detectors ......................................................... 160  
      Innovative Techniques for Hadron Therapy ................................. 162  
      Compton Scatter Imaging .................................................... 163  
      Bi-modality PET and MRI ........................................................... 164  
      GATE ......................................................................................... 164  
      Nuclear Radiology of Breast Cancer (NRBC) ............................. 165  
Acknowledgements ............................................................................... 166  
Conference Committee ......................................................................... 167  
NSS Topic Conveners ......................................................................... 167  
NSS/MIC Program Reviewers ................................................................. 168  
RTSD Assistant Program Chairs ............................................................. 174  
Conference Information and Promotion (CIP) Committee ................. 175  
Sponsoring Institutes and Companies ..................................................... 176  
Conference Time Table ......................................................................... 177  
Registration Form ................................................................................ 179  
Announcement of the 2007 IEEE NSS-MIC ............................................. inside back cover
Dear Colleagues,

It is a pleasure to welcome you to the annual IEEE gathering, which this year is being held in San Diego, California, at the Town and Country Resort & Convention Center. The conference includes presentations of the latest research and applications under the banners of the Nuclear Science Symposium, the Medical Imaging Conference, the 15th International Workshop on Room-Temperature Semiconductor X- and Gamma-Ray Detectors, and a number of Special Focus Workshops. In addition, a comprehensive set of short courses has been arranged in the continuing education program. The Town and Country provides an ideal setting for the conference, with ample lecture space, accommodation and restaurants on a gorgeous site that allows attendees to stroll comfortably from one session to another. Accommodation ranges from modern multi-story towers to quaint bungalow-style rooms. Adjacent to the resort is a large shopping mall, and a light rail system that provides easy access to downtown San Diego.

The program chairs have arranged an exciting and varied scientific program from the more than 1300 submissions that we have received. Integrated into the scientific program is an industrial exhibition featuring the most up-to-date products and services from a wide range of vendors. To supplement the conference program, a companion program will provide daily trips to some of the many attractions in and around the San Diego area.

On behalf of the Conference Committee, I look forward to seeing you in San Diego at the end of October. The Committee has worked extremely hard toward making this a stimulating occasion both technically and socially.

Graham Smith
General Chair
Tuesday, October 31

07:30-20:00 Registration Open, Grand Foyer.
08:30-17:00 Short Course #7. Image Quality. Garden Salon 2.
08:30-10:00 N10. HEP & NP Instrumentation 1: Calorimetry. Golden Ballroom.
08:30-10:00 N13. Analog and Digital Circuits 1. California.
08:30-10:00 R03. Pixel Detectors. Hampton & Windsor.
09:30-16:00 Tour #3: San Diego City Tour
10:30-12:00 N14. NSS Poster 1. San Diego and Golden West.
10:30-12:00 R04. Wide Band-gap Materials. Hampton & Windsor.
12:00-21:00 Exhibits Open
13:00-16:30 Tour #4: Sailing Aboard the Aolani Catamaran
13:30-15:00 N17. Analog and Digital Circuits II. California.
15:30-17:30 NM2. NSS MIC Joint Session 2. Golden Ballroom.
15:30-17:00 N18. HEP & NP Instrumentation 3: Silicon and Diamond Detectors. Pacific Salon 1.
15:30-17:30 R06. RTSD Posters. Atlas Ballroom
19:00-21:00 Exhibitors Reception. Atlas Ballroom.

Wednesday, November 1

07:30-18:00 Registration Open, Grand Foyer.
08:00-10:00 M01. X-ray and CT. Golden Ballroom.
08:25-10:00 R07. CZT III. Hampton & Windsor.
08:30-10:00 N22. Software for Radiobiology and Hadron Therapy. Pacific Salon 1.
08:30-10:00 N24. Gas Detectors III. Pacific Salon 3.
08:30-10:00 N25. Analog and Digital Circuits III. California.
09:00-18:00 Exhibits Open
10:30-15:30 Tour #5: Jewels by the Sea
10:30-12:00 N27. HEP & NP Instrumentation V: Detector Commissioning and Engineering Aspects. Pacific Salon 2.
10:30-11.45 N29. Scintillators I - Plastics & Other Scintillators.
11:20-14:30 R09. RTSD Lunch/Cruise.
13:30-15:00 N30. NSS Poster II. Atlas Ballroom.
15:30-17:30 N34. Solid State Tracking Detectors. California.
15:30-17:30 M04. PET Reconstruction. Golden Ballroom.
15:30-17:30 MR1. MIC RTSD Joint Session. Hampton & Windsor.
18:30-21:00 Conference Reception. Terrace Pavilion.

Thursday, November 2

07:30-17:00 Registration Open, Grand Foyer.
08:00-10:00 M05. Modelling and Image Analysis. Golden Ballroom.
08:00-12:30 Special Focus Workshop: Innovative Techniques for Hadron Therapy. Sheffield.
08:30-10:00 N35. Detector Software. Pacific Salon 1.
08:30-10:00 N25. Analog and Digital Circuits III. California.
Friday, November 3

07:30-12:00  Registration Open, Grand Foyer.
08:00-10:00  M09. PET and PET/CT. Golden Ballroom.
08:35-10:00  R15. Low-Noise Electronics. Hampton & Windsor.
09:00-15:00  Tour #9: Palomar Observatory
10:30-12:00  M10. MIC Awards. Golden Ballroom.
13:00-17:00  Tour #8: VIP Zoo Venture
15:00-17:00  Registration Open, Grand Foyer.
15:30-17:30  M12. CT and SPECT Reconstruction. Golden Ballroom.
18:00-22:00  MIC Dinner at SeaWorld.

Saturday, November 4

07:30-14:30  Registration Open, Grand Foyer.

Sunday, November 5

08:30-17:30  Special Focus Workshop: NRBC. Pacific Salon 1 & 2.
CONTACT INFORMATION

General Chair
Graham Smith
phone: 1 631 344 4253
e-mail: gsmith@bnl.gov

Assistant to General Chair
Jean-Francois Pratte
phone: 1 631 344 4986
e-mail: jfpratte@bnl.gov

NSS Program Chair
Chuck Britton
phone: 1 865 574 1878
e-mail: brittoncl@ornl.gov

MIC Program Chair
John Aarsvold
phone: 1 404 329 2213
e-mail: jaarsvo@emory.edu

RTSD Program Co-Chair
Ralph James
phone: 1 631 344 8633
e-mail: rjames@bnl.gov

Short Course Program Chair
Stephen Derenzo
phone: 1 510 486 4097
e-mail: sderenzo@lbl.gov

Exhibits Chair
Ronald Keyser
phone: 1 865 483 2146
e-mail: ron.keyser@ortec-online.com

Conference Coordinator
Bonnie E. Sherwood
phone: 1 631 344 7250
e-mail: sherwood@bnl.gov

Local Arrangements
Ed Lampo
phone: 1 925 930 7328
e-mail: e.lampo@ieee.org

NSS Deputy Program Chair
Vince Cianciolo
phone: 1 865 574 4712
e-mail: cianciolo@ornl.gov

MIC Deputy Program Chair
Bruce Hasegawa
phone: 1 415 353 9472
e-mail: bruce.hasegawa@radiology.ucsf.edu

RTSD Program Co-Chair
Eugenio Perillo
phone: 39 081 676 113
e-mail: perillo@na.infn.it

Short Course Program Co-Chair
Jennifer Huber
phone: 1 510 486 6445
e-mail: jshuber@lbl.gov

Registration Chair
Christina Sanders
phone: 1 925 424 6055
e-mail: sanders13@llnl.gov

Technical Support
Dora Merelli
phone: 33-1-69085852
e-mail: dora@cea.fr

Guest Editor
Bernard Phlips
phone: 1 202 767 3572
e-mail: phlips@nrl.navy.mil

Companion Program Chair
Anne Smith
phone: 1 631 331 4171
e-mail: annembsmith@msn.com

Treasurer
Anthony Lavietes
phone: 1 925 423 6766
e-mail: lavietes1@llnl.gov

Webmaster
Bo Yu
phone: 1 631 344 5184
e-mail: yu@bnl.gov
REGISTRATION INFORMATION

Pre-registration is advisable to save time and money, and to ensure your registration package will be available for collection when you arrive. The preferred registration method is through the conference web site, as it places your details directly into our database, and where you can pay by Visa, Mastercard, Amex or Discover through our secure web server. You may also pre-register by mail or fax by sending the form at the end of this booklet directly to Travel Destinations Management Group, Inc (TDMG), paying by check, money order or credit card. Checks or money orders must be drawn on or paid through US banks and be in US dollars. Additional copies of the registration form can be downloaded from the registration link of the conference web site.

NOTE: Registration and payment must be received by September 26, 2003 in order to qualify for the lower registration, short course and luncheon/dinner fees listed below.

Registration and payment must be received by October 13 2006 to qualify for reduced registration, lunch, dinner, short course and companion program fees.

Electronic Registration (preferred):
Click on the Conference Registration link at http://www.nss-mic.org/2006 and follow instructions.

By Mail or Fax:
Send form and payment (made out to IEEE 2006 NSS/MIC) to:

IEEE2006 NSS/MIC
c/o TDMG Meetings Dept.
110 Painters Mill Road, Suite 36
Owings Mills MD 21117 USA
Tel: 1 800 437 4589 (US and Canada only)
1 410 363 1300
Fax: 1 410 559 0160 (attn: IEEE 2006 NSS/MIC)

An acknowledgement of your registration will be sent upon its receipt and payment. Please address any questions via e-mail to IEEE@traveldest.com (Attn: IEEE 2006 NSS/MIC) or by phone.

Registration Hours at the Conference

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

- **Sunday, October 29**: 07:30–09:30, 15:30–18:30
- **Monday, October 30**: 07:30–17:00
- **Tuesday, October 31**: 07:30–20:00
- **Wednesday, November 1**: 07:30–18:00
- **Thursday, November 2**: 07:30–17:00
- **Friday, November 3**: 07:30–12:00, 15:00–17:00
- **Saturday, November 4**: 07:30–14:30

Christina Sanders
Registration Chair

**Symposium Registration Fees**

<table>
<thead>
<tr>
<th>Category</th>
<th>By Oct. 13</th>
<th>On-Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEEE Member</td>
<td>$490</td>
<td>$640</td>
</tr>
<tr>
<td>non-IEEE Member</td>
<td>$615</td>
<td>$765</td>
</tr>
<tr>
<td>IEEE Student&lt;sup&gt;1,2&lt;/sup&gt;</td>
<td>$200</td>
<td>$300</td>
</tr>
<tr>
<td>non-IEEE Student&lt;sup&gt;2&lt;/sup&gt;</td>
<td>$300</td>
<td>$400</td>
</tr>
<tr>
<td>Retired/Unemployed IEEE Member&lt;sup&gt;1&lt;/sup&gt;</td>
<td>$100</td>
<td>$150</td>
</tr>
<tr>
<td>One Day Only&lt;sup&gt;3&lt;/sup&gt;</td>
<td>$200</td>
<td>$200</td>
</tr>
<tr>
<td>NRBC Workshop&lt;sup&gt;4&lt;/sup&gt;</td>
<td>$125</td>
<td>$125</td>
</tr>
<tr>
<td>IEEE Life Member&lt;sup&gt;1&lt;/sup&gt;</td>
<td>No charge</td>
<td>No charge</td>
</tr>
<tr>
<td>Constituting Education Program Only</td>
<td>No charge</td>
<td>No charge</td>
</tr>
<tr>
<td>Exhibits Only</td>
<td>No charge</td>
<td>No charge</td>
</tr>
</tbody>
</table>

<sup>1</sup> IEEE member number required at registration.
<sup>2</sup> Proof of student status required.
<sup>3</sup> Valid for 1 occurrence only – if more than 1 day, full registration will be charged.
<sup>4</sup> NRBC registration fee includes a dinner on Nov. 4, and a lunch on Nov. 5.

**Luncheon/Dinner Fees**

<table>
<thead>
<tr>
<th>Category</th>
<th>By Oct. 13</th>
<th>On-Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSS Luncheon&lt;sup&gt;5&lt;/sup&gt; (Mon., Oct. 30)</td>
<td>$35</td>
<td>$40</td>
</tr>
<tr>
<td>RTSD Luncheon&lt;sup&gt;5&lt;/sup&gt; (Wed., Nov. 1)</td>
<td>$42</td>
<td>$47</td>
</tr>
<tr>
<td>MIC Dinner&lt;sup&gt;6&lt;/sup&gt; (Fri., Nov. 3)</td>
<td>$65</td>
<td>$70</td>
</tr>
</tbody>
</table>

<sup>5</sup> Sponsored in part by eV PRODUCTS.
<sup>6</sup> Sponsored in part by Siemens Molecular Imaging and Siemens Medical Solutions.

**Cancellation and Refund Policy**

You are not officially registered until we receive your completed registration form and payment. If your payment is not received by the October 13 deadline, your registration will be cancelled.

All cancellations (partial or full) must be received in writing by October 20, 2006 for consideration. Approved refunds (less a $25 administrative fee) will be issued after November 15, 2006. No refunds will be issued thereafter.

**Hotel Information**

The conference is being held at the Town and Country Resort & Convention Center, one of the largest private meeting facilities in San Diego. Spread over about forty acres, it is landscaped with grand arching palms and has several outdoor swimming pools. Ample dining is available at the six on-site restaurants. Adjacent to the hotel is Fashion Valley Shopping Mall, which has a number of further dining options and a wide range of shopping opportunities. There is also a light rail trolley system to many local areas within San Diego.

For reservations, call 1 800 77 ATLAS, or 1 619 291 7131 (mention conference name: IEEE Nuclear Science Symposium). The conference rate is $139.00 per room (up to 4 people), valid until October 13, 2006. This special rate is extended three days prior to, and three days following, the conference, subject to space availability.

The hotel address is 500 Hotel Circle North San Diego, CA 92108.
**GENERAL INFORMATION**

**IEEE Membership**

An IEEE membership desk will be located in the Grand Foyer close by 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 reduced student registration rate.

**Message Board**

A message board will be located in the Grand Foyer.

**Computer Access**

Pacific Salon Four and Five will have computers and printers and technical support. This 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 2003 will be loaded on all computers. In addition, wireless hotspots will be available in Pacific Salon Six and Seven and in the exhibit area.

Attendees staying in the Town and Country hotel can request an access code at check-in that provides a discount rate for in-room wireless internet access.

**Web Site**

Information for all up-to-date conference programs (NSS, MIC, RTSD and Special Focus Workshops), short courses, and tours can be found at: http://www.nss-mic.org/2006.

**Parking**

Ample parking is available at the Town and Country, at no charge for hotel registrants. Otherwise, it is $4 per hour, not to exceed $16 per day.

**Smoking Policy**

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

**Transportation**

Global Tourism Alliance (GTA), Inc., will provide round trip transportation to and from San Diego international airport at a competitive rate. This can be reserved on-line through a link to GTA on the conference web site.

---

**EXHIBITS PROGRAM**

The IEEE NSS/MIC/RTSD Industrial Program provides our conference attendees with ample opportunities to meet the different exhibitors on Tuesday, 31 October to Thursday, 2 November. The opening hours will follow the hours of the conference and remain open during the lunch time. More than 30 companies from all around the world will be present to meet conference attendees and to demonstrate their latest products. These represent state-of-the-art in detectors, pulse processing instrumentation, imaging, software, and other associated areas. The exhibition area is located in the Atlas Ballroom. The poster sessions will also be in the Atlas Ballroom.

The three-day exhibition is complemented by a series of seminars and technical presentations on Tuesday, Oct. 31 and Wednesday, Nov. 1 in Terrace Salon Three, which will allow an in-depth exchange of information between attendees and exhibitors on existing products, future developments and needs. Terrace Salon Three is located between the Registration Desk and the Atlas Ballroom. The detailed schedule will be posted at the entrance to the exhibit area.

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

**The Exhibition opening hours are as follows:**

- **Tuesday, October 31, 12:00 – 21:00, with the Exhibitor Reception starting at 19:00**
- **Wednesday, November 1, 09:00 – 18:00**
- **Thursday, November 2, 09:00 – 16:00**

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 Ronald Keyser, Exhibits Chairman, at ronkeyser@ieee.org.

**List of Exhibitors (as of 7 Aug 2006)**

- Academy of Molecular Imaging
- Acorad Co., Ltd.
- ADIT Eljen Technology
- Alpha Spectra, Inc.
- AMPTEK INC.
- Berkeley Nucleonics
- CAEN Technologies
- Canberra
- CMCAMAC
- Constellation Technology
- Electron Tubes
- eV Products
- FAST ComTec GmbH/Quantar
- Hamamatsu Corporation
- Hilger Crystals
- Hitachi Chemical Co., Ltd.
- IAEA/Brookhaven Natl Laboratory
- IOP Publishing
- LND, Inc.
- Micron Semiconductor
- ORTEC
- Photonis
- Saint-Gobain Crystals
- Scintitech Corp/AMCRYS-H
- Scionix
- SensL Technologies Ltd.
- Shanghai SICCAS Crystal
- SII NanoTechnology
- SINTEF
- Struck Innovative Systeme
- Target Instruments Inc.
- Wiener, Plein & Baus, Ltd.
- XIA LLC
PUBLICATIONS

The Conference Record (CR)

The Conference Record (CR) is the official repository for manuscripts at the 2006 IEEE conference and will be published on CD-ROM, complimentary to all registered attendees. We will strive to have a timely release of the CD-ROM. The approved word processing templates, available in PDF, MS Word and LaTeX format can be downloaded from http://www.nss-mic.org/2006/publications/templates.

All manuscripts submitted to the IEEE must be in the IEEE Xplore-compatible PDF format. We strongly recommend that authors use the web based service “PDF eXpress” from IEEE to create their PDF files. Instructions on the PDF eXpress service are available at www.nss-mic.org/2006/publications/PDFeXpress.html. Please note that the PDF eXpress service will be available between Oct. 2 and Nov. 17, 2006 for the 2006 NSS/MIC authors.

To submit your manuscript to the Guest Editor, log on to the conference website, follow the menu “My Abstracts” to the abstract submission page, where links for uploading both your manuscript and the copyright form will be found. At this time, your PDF file will be checked for Xplore-compatibility.

The deadline for the Conference Record manuscript submission is November 17, 2006.

All manuscripts submitted through the conference web site will be made available immediately to registered conference attendees at www.nss-mic.org/2006-ConferenceRecord. However, only those that meet the following requirements will be included in the CD-ROM:

- Paper has been presented at the conference.
- Manuscript conforms to the specified page layout requirements.
- PDF file is Xplore compatible.
- PDF file and copyright form are received by November 17, 2006.

For further information regarding the Conference Record, please contact:

Guest Editor
Bernard Phlips
Naval Research Laboratory
Tel: 1 202 767 3572
phlips@nrl.navy.mil

Transactions on Nuclear Science (TNS)

Additionally, papers presented at the conference that contain important information or 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 peer 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 and a reasonable review of prior work in the field), to present a complete description of the work performed and a set of conclusions supported by the measured and/or calculated data. The TNS is published throughout the year, and you can submit your manuscript to TNS at any time. For instructions on TNS manuscript submission, please visit the IEEE’s on-line peer review system Manuscript Central™ (http://tns-ieee.manuscriptcentral.com). For further information regarding the Transactions on Nuclear Science, contact:

TNS Editor in Chief
Paul Dressendorfer
Sandia National Laboratories
1 505 844 5373
dressepv@sandia.gov

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

Nuclear Medical and Imaging Sciences (MIC)
Joel Karp
University of Pennsylvania Health System
1 215 662 3073
karp@rad.upenn.edu

Comparison of Requirements (CR and TNS)

The value of the Conference Record is primarily the immediate and timely release of the information, which precludes peer-review of the manuscript. It is possible that a similar, or the same, article can be submitted to both the Conference Record and the TNS, but authors should keep in mind that manuscripts for TNS publication must undergo rigorous peer-review, and publication is not guaranteed. The CR and TNS are two separate publications and submission to one does not imply submission to the other.

<table>
<thead>
<tr>
<th></th>
<th>CR</th>
<th>TNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page layout</td>
<td>Same as TNS, but without running headers and footers</td>
<td>Standard IEEE Transactions and Journal format</td>
</tr>
<tr>
<td>Copyright form</td>
<td>Required, electronic submission</td>
<td>Required, electronic submission</td>
</tr>
<tr>
<td>Deadline</td>
<td>Nov. 17, 2006</td>
<td>No</td>
</tr>
<tr>
<td>Peer reviewed</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Use of color</td>
<td>Free and encouraged</td>
<td>At author’s expense</td>
</tr>
<tr>
<td>Availability</td>
<td>Online immediately, CD out in early 2007</td>
<td>Published throughout the year</td>
</tr>
<tr>
<td>Submission Site</td>
<td><a href="http://www.nss-mic.org/2006/submissions">www.nss-mic.org/2006/submissions</a></td>
<td>tns-ieee.manuscript-central.com</td>
</tr>
</tbody>
</table>
Companion Program

San Diego, and its surroundings, has a historically diverse culture, and a number of famous attractions. The companion program will offer daily trips to places of interest for everyone. It should be noted that individual tours are subject to cancellation and refund of tour fees if an insufficient number of attendees reserve space for a given tour prior to the beginning of the conference.

Every morning, from 8:00 am to 8:50 am, a continental breakfast will be provided in the Terrace Pavilion for the participants of the tour. Tour coaches depart from the Atlas Ballroom Foyer at the start time indicated. The fees in the table below are for advance registration by October 13. Add $10 more for on-site registration.

<table>
<thead>
<tr>
<th>Tour Name</th>
<th>Date</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sightseeing in Old Town San Diego</td>
<td>Sun., Oct. 29</td>
<td>$40</td>
</tr>
<tr>
<td>South of the Border Adventure</td>
<td>Mon., Oct. 30</td>
<td>$70</td>
</tr>
<tr>
<td>San Diego City Tour</td>
<td>Tues., Oct. 31</td>
<td>$70</td>
</tr>
<tr>
<td>Sailing aboard the Aolani Catamaran</td>
<td>Tues., Oct. 31</td>
<td>$60</td>
</tr>
<tr>
<td>Jewels by the Sea</td>
<td>Wed., Nov. 1</td>
<td>$70</td>
</tr>
<tr>
<td>SeaWorld Splash</td>
<td>Thur., Nov. 2</td>
<td>$60</td>
</tr>
<tr>
<td>Palomar Observatory</td>
<td>Thur., Nov. 2</td>
<td>$50</td>
</tr>
<tr>
<td>VIP Zoo Venture</td>
<td>Fri., Nov. 3</td>
<td>$60</td>
</tr>
<tr>
<td>Palomar Observatory</td>
<td>Fri., Nov. 3</td>
<td>$50</td>
</tr>
<tr>
<td>Orfila Vineyards &amp; Winery</td>
<td>Sat., Nov 4</td>
<td>$60</td>
</tr>
<tr>
<td>Palomar Observatory</td>
<td>Sat., Nov 4</td>
<td>$50</td>
</tr>
</tbody>
</table>

Tour #1: Sightseeing in Old Town San Diego

Sunday October 29, 9:45 am – 1:45 pm
Pre-registration: $40; at conference: $50

Old Town San Diego, the first European settlement in what is now California, is called the state’s birthplace. In 1769, Spanish priest Father Junipero founded California’s first mission here. The mission eventually moved further inland, and 1820s settlers moved closer to the water into the Gaslamp Quarter, leaving “Old Town” behind.

Today’s Old Town San Diego centers on the oldest area. It includes a state historic park and related historic sights outside the park. History aficionados will find plenty to interest them, but most people come to shop and eat in the restaurants.

The State Historic Park occupies nine square blocks and preserves many historic buildings, including some made of adobe (mud) bricks. Other structures include California’s first schoolhouse, a blacksmith shop, the state’s first newspaper office and a stable. These preserved buildings, each a small museum in itself, give a glimpse of life here from 1821 to 1872. Interspersed between museum buildings, you’ll find shops, with emphasis on Mexican-style pottery, tinwork and the like. If you just want to stroll and shop, it will be easy, and you can extend your route outside the park and down San Diego Avenue.

• Clothing and shoes suitable for walking recommended
• Lunch included in price

Tour #2: South of the Border Adventure

Monday October 30, 9:30 am – 4:00 pm
Pre-registration: $70; at conference: $80

Spend a casual day in Baja California along Mexico’s northern coastline. A deluxe motorcoach transports guests on a 1-hour coastal tour through the festive border town of Tijuana and the spectacular scenery of Baja California’s coastline. This area is a haven for Southern Californians who love surfing and relaxing on the beach. En route guests learn shopping and bargaining tips, best value items, and how to get the most out of their international visit.

The first stop is Rosarito Beach, a village between Tijuana and Ensenada. Guests have an opportunity to browse through the bazaars and visit the
once famous Rosarito Beach Town and Country Hotel or stroll along
the beach and visit the cantinas before continuing the journey.

After a short ride along the coast, guests arrive at Calafia. Surrounded by
breathtaking ocean and coastline views, Calafia is a perfect location for a
delicious Mexican lunch. This one-of-a-kind restaurant provides guests
with a beautiful setting for a tasty margarita followed by a succulent
shrimp and carne asada lunch with all the traditional trimmings.

Following lunch, guests relax and enjoy the return trip to the Town & Country Hotel. Experience the flavor of Mexico and its northern
coastline in a fun and relaxing environment … a day in Mexico that
will not soon be forgotten!

- The Mexican government requires that all US citizens present
  proof of citizenship and photo ID for entry into Mexico. The
  US embassy recommends traveling with a valid US passport
to avoid delays or misunderstandings. Non-US citizens require
  a valid passport and either green card or visa with current,
  endorsed, I-94 card. Foreign travelers will receive an I-94 card
  when arriving at their US port of entry.
- Lunch included in price

**Tour #3: San Diego City Tour**

*Tuesday October 31, 2006, 9:30am – 4:00pm*

Pre-registration: $70; at conference: $80

This introduces guests to San Diego with a city overview tour. From
the hotel, guests will experience a driving tour through Old Town San
Diego, the Gaslamp District, Harbor Drive, the Cruise Ship Terminal
and Horton Plaza before their first stop at Seaport Village, San Diego’s
relaxing bay-front marketplace. Guests will have 45 minutes of free time
for shopping and a morning snack.

Following Seaport Village, guests will be taken to Coronado Island.
Coronado began in 1886, the dream of Elisha Babcock, who vowed
to create a resort that was to be the “finest watering spot on the Pacific
Coast”. Along with its fabled Hotel del Coronado, the town became one
of the great playgrounds of the world, drawing Presidents and Princes,
moguls and movie stars to its shores. Concurrently, North Island Naval
Air Station was developed into one of the country’s most important
aviation centers, (Lindbergh and Doolittle lit the skies and shaped the
destiny of flight in America). Guests will have free time for shopping
at the Hotel del Coronado.

After a couple of hours in Coronado, guests will have free time to explore
Balboa Park. Scenic Balboa Park is America’s largest municipal park.
Nested above the downtown area and housing museums from two
major world expositions, Balboa Park has given San Diego the largest

collection of museums outside our nation’s capital. In addition to the fine
museums, renowned theaters, Spanish architecture, sculptured fountains,
street jugglers, mime and musicians, there are splendid gardens and
excellent restaurants to delight your senses. Today will be an excellent
day for guests to see and experience America’s Finest City.

- Clothing and shoes suitable for walking recommended
- Boxed lunch included in price

**Tour #4: Sailing Aboard the Aolani Catamaran**

*Tuesday October 31, 2006, 1:00pm – 4:30pm*

Pre-registration: $60; at conference: $70

Aolani is the prettiest 49-passenger Coast Guard-certified sailing catamaran in Southern
California. It’s spacious salon lets you get out of the “ele-
ments” if wet or cold. Seating is available for 30 inside
the salon with 360-degree views and seating for 10 in
the adjacent cockpit. She is lightweight and strong (foam
and fiberglass). Catamarans are extremely stable with dual
hulls, offering speed, comfort and fun – you won’t even
know you’re on the water.

Choose to walk around the boat and mingle or find a peaceful and quiet corner and watch San
Diego’s most beautiful sites. Fun is guaranteed!

- Warm clothing (layers) recommended
- Light food and drink available at extra cost

**Tour #5: Jewels by the Sea**

*Wednesday November 1, 2006, 10:30am – 3:30pm*

Pre-registration: $70; at conference: $80

La Jolla is a must-see when visiting San Diego, as well as being one of
the most exquisite areas in the country to live. The first approach to
this seaside community can feel like entering paradise as La Jolla Cove’s
sun-dappled water comes into view.

The first stop is the Birch Aquarium at Scripps. Overlooking the Pacific
Ocean, this beautiful facility presents undersea creatures in realistic
habitats, and allows guests to experience the frontiers of marine science
through interactive museum exhibits featuring the latest research at
Scripps Institute of Oceanography.

Next stop is “the village” of La Jolla. A delicious California-style lunch
will be served at the Crab Catcher, nestled above La Jolla Cove with a
spectacular ocean view.
After lunch, guests will enjoy exploring the special boutiques, galleries and designer studios, viewing the coastline, or beachcombing on their own at the famous La Jolla Cove. All of these are set against a stunning backdrop that is often compared to the French Riviera for its aesthetic appeal.

- Clothing and shoes suitable for walking recommended
- Lunch included in price

**Tour #6: SeaWorld Splash**

**Thursday November 2, 2006, 9:30am – 2:00pm**

Pre-registration: $60; at conference: $70

SeaWorld is America’s finest marine adventure park! A brand new Shamu experience, Believe, has opened in spring of 2006. This entirely new, visually stunning Shamu show will take you on a sensational, breathtaking journey of curiosity and wonder. Shamu is better than ever, and guests will have the opportunity to marvel at the power and beauty of the ocean’s top predators, the killer whales. Next, join the hilarious antics of sea lions, walruses and river otters in Action! Adventure! And sea lions Clyde and Seamore in Deep, Deep Trouble will drench guests with surprises. These hilarious heroes find themselves on a deep dive to deep trouble aboard a sinister otter-driven submarine, commanded by a quirky captain who’s determined to capture a mythical mermaid and her elusive treasure. This action-packed adventure is as big as the sea itself.

Of course, a day would not be complete without a stop at SeaWorld’s arctic exhibit. A motion-based simulator flies guests to an arctic wonderland. In this frozen tundra, guests will visit animals such as the graceful beluga whales, powerful yet unpredictable polar bears and massive walruses.

For the thrill seekers, challenge the power of the sea on a new Journey to Atlantis. Ride a mythical rush through uncharted waters where mysterious mists and unpredictable drops lurk around every turn. Journey to Atlantis twists guests around serpentine turns, plunges down eight stories of adrenaline-pumping exhilaration and drenches guests in mystery.

All of this and so much more await guests, as they discover the incredible marine life that dwells in the vast oceans of our world.

- Clothing and shoes suitable for walking recommended
- Lunch not included in price

**Tour #7: Palomar Observatory**

**Thursday, November 2, 9:00am – 3:00pm**

Pre-registration: $50; at conference: $60

Palomar Observatory is a world-class center of astronomical research that is owned and operated by the California Institute of Technology. The observatory is home to five telescopes that are used nightly for a wide variety of astronomical research programs. The research is conducted by Caltech’s faculty, post-doctoral fellows and students, and by researchers at Caltech’s collaborating institutions. Palomar Observatory is a privately-owned observatory located in San Diego County, 90 miles (145 km) southeast of Mount Wilson Observatory, on Palomar Mountain. The Observatory currently consists of four main instruments: the 200 inch (5.08 m) Hale Telescope, the 48 inch (1.22 m) Samuel Oschin Telescope, the 18 inch (457 m) Schmidt Telescope, and a 60 inch (1.52 m) reflecting telescope. In addition, the Palomar Testbed Interferometer is located at this Observatory.

- Maximum of 42 passengers
- Approximately two-hour bus journey each way
- Boxed lunch included in price

**Tour #8: VIP Zoo Venture**

**Friday November 3, 2006, 1:00pm – 5:00pm**

Pre-registration: $60; at conference: $70

There’s some Beastly Wonders going on at the world famous San Diego Zoo. The zoo, founded by Dr. Harry M Wegeforth in 1916, has grown from modest beginnings. Today, guests will enjoy a private Behind-the-Scenes tour! Following the tour, guests can further explore the zoo and visit new and innovative exhibits, trademarks of the San Diego Zoo. Recent additions and renovations include: the Giant Panda Research Station, Gorilla Tropics, Hippo Beach, Polar Bear Plunge, Scripps Aviary, Tiger River, and Sun Bear Forest.

- Clothing and shoes suitable for walking recommended
- Lunch not included in price
Tour #9: Palomar Observatory

Friday November 3, 9:00am – 3:00pm
Pre-registration: $50; at conference: $60

This tour will be offered again if there is adequate interest. See Tour #7 for description.

Tour #10: Orfila Vineyards & Winery

Saturday November 4, 2006, 9:00am – 1:30pm
Pre-registration: $60; at conference: $70

Located in the San Pasqual Valley, Ambassador Alejandro Orfila and his family are the owners of what was once the Thomas Jaeger Winery. Ambassador Orfila has served as the Secretary General of the Organization of American States and as the Argentine Ambassador to the United States and Japan. He is a third generation member of a winemaking family from the Argentine Andes area.

At Orfila guests experience a behind the scenes look at an 8,000-year-old tradition. Guests are introduced first hand to the entire wine making process, from grape to bottle, and taste wines from California’s first vineyards. This 120-acre pristine urban reserve produces some of San Diego’s finest wines. Among the varietals produced are Merlot, Chardonnay and Sauvignon Blanc with recent awards for the unique Merlot.

- Approximately 45 minutes from hotel
- Clothing and shoes suitable for walking recommended
- Cheese and fruit platter included in price

Tour #11: Palomar Observatory

Saturday November 4, 9:00am – 3:00pm
Pre-registration: $50; at conference: $60

This tour will be offered again if there is adequate interest. See Tour #7 for description.

CONTINUING EDUCATION PROGRAM

An excellent set of short courses will be given at the start of the NSS/MIC programs, covering a wide range of nuclear and medical technology. All courses are one day long. They include lunch, refreshments, lecture notes, and a certificate of completion as part of the registration fee.

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Date</th>
<th>Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interaction of Radiation with Matter: Theory and Practice</td>
<td>Oct. 29</td>
<td>$275</td>
</tr>
<tr>
<td>3. Integrated Circuit Front Ends for Nuclear Pulse Processing</td>
<td>Oct. 29</td>
<td>$275</td>
</tr>
<tr>
<td>4. Molecular Biology for Imaging Scientists</td>
<td>Oct. 30</td>
<td>$275</td>
</tr>
<tr>
<td>5. Detectors for PET and SPECT</td>
<td>Oct. 30</td>
<td>$275</td>
</tr>
<tr>
<td>7. Image Quality†</td>
<td>Oct. 31</td>
<td>$350</td>
</tr>
</tbody>
</table>

* Fee is for advance registration by October 13. Add $50 for on-site registration. IEEE Member qualify for a $25 discount.
† Textbook included.

Stephen E. Derenzo
Short Courses Program Chair
Lawrence Berkeley National Laboratory
Berkeley, California, USA
Email: sederenzo@lbl.gov
Phone: +1-510-486-4097
Fax: +1-510-486-4768

Jennifer Huber
Short Courses Program Co-Chair
Lawrence Berkeley National Laboratory
Berkeley, California, USA
Email: jshuber@lbl.gov
Phone: +1-510-486-6445
Fax: +1-510-486-4768
Course 1. The Interaction of Radiation with Matter: Theory and Practice

This one-day course is intended to give an overview of the interaction of directly and indirectly ionizing radiation with matter. The course will cover the basic interaction mechanisms of photons in the energy range 1 keV to 100 MeV, which include photoelectric absorption, coherent and incoherent scattering, and pair-production. Also covered will be neutron absorption and scattering interactions below 20 MeV including radiative capture, fission and other absorption interactions, and elastic and inelastic scattering. The interactions of charged particles will also be considered including both collisional and radiative energy loss mechanisms.

The basic concepts of phase space will be presented and the common radiation field quantities of intensity, flux density, fluence, current vector, and interaction rate density will be defined. Basic models for radiation calculations relevant to radiation detection, shielding, and dosimetry will be presented. Information on sources of radiation also will be reviewed.

In order to address practical issues, some of the many resources for data such as cross sections, response functions, and energies and yields of secondary particles will be identified. These resources include web sites, reports, journals, and books. A basic understanding of calculus and physics is assumed. The course should be useful as an introduction for scientists and engineers unfamiliar with radiation interactions and as a supplement to those who have familiarity with some forms of radiation but not all.

Instructors

Dr. William L. Dunn is Associate Professor in the Department of Mechanical and Nuclear Engineering at Kansas State University (KSU). Dr. Dunn received his B.S. degree in Electrical Engineering from the University of Notre Dame and his M.S. and Ph.D. degrees, both in Nuclear Engineering, from North Carolina State University. Bill spent over twenty years in contract research, fourteen as President of Quantum Research Services, Inc., prior to joining the faculty at KSU in 2002. His research has focused primarily on industrial radiation applications but he has also worked in radiation shielding, detection, transport, and dosimetry. Dr. Dunn is a Councilor of the International Society of Radiation Physics, is on the editorial board of the journal Applied Radiation and Isotopes, and is Chair of the Organizing Committee for the Workshop on Use of Monte Carlo Techniques for Design and Analysis of Radiation Detectors, to be held in September 2006 in Coimbra, Portugal.

Dr. Richard Hugtenburg is with the School of Physics and Astronomy at the University of Birmingham, UK. He is involved in a variety of research and teaching activities. His research interests include experimental and atomic physics (especially low-energy photon interaction effects), radiobiology, nuclear weapons exposure simulation, and Monte Carlo methods for radiation transport calculations including Markov Chain Monte Carlo. Dr. Hugtenburg is familiar with several of the general-purpose Monte Carlo radiation transport codes such as MCNP, EGSnrc, and PENELOPE. Dr. Hugtenburg also is involved in clinical activities using ionizing radiation.

Course 2. Nuclear Science for Homeland Security

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

The course will start by defining what is meant by homeland security and discuss the general areas in which nuclear science expertise and technology comes into play for homeland security applications. A discussion of the operational environments typically encountered along with specific examples will be provided. A generic discussion of threat classes and their associated measurement methods will be given. The course will describe the basic classes of gamma-ray and neutron detection instrumentation considered for deployment and help students understand how decisions are made with respect to their use. The critical topic of “backgrounds” will be described including both natural radiation background and naturally occurring radioactive materials (NORM). Approaches for data collection, analysis, and decision-making for various applied scenarios will be discussed. The role of advanced materials development, particularly the development of room temperature high resolution gamma ray spectrometers, in aiding homeland security applications will be described. The application of a variety of advanced radiation detection methods including imaging, collimation, pulse shape discrimination, and alternative signatures will be covered. Active methods and their role in homeland security will be described.

Instructors

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

Dr. Eric Smith is a staff scientist at Pacific Northwest National Laboratory, working in the area of applied radiation detection. His primary research areas of interest are modeling and simulation of homeland/
national security scenarios, multi-coincidence trace radionuclide detection techniques, and next-generation radiation sensor technologies. Eric is active in DHS Domestic Nuclear Detection Office R&D and assessment programs, and is a technical advisor to the US Customs and Border Protection’s Radiation Portal Monitor program. Eric has also served as PNNL’s representative to DOE’s Nonproliferation Research and Engineering Radiation Detection Panel. Prior to joining PNNL in 2001, he was a staff member at Argonne National Laboratory and led projects in nondestructive assay and waste characterization. Eric received a B.S. in Nuclear Engineering from Oregon State University, and his M.S. and Ph.D. in Nuclear and Radiological Sciences from the University of Michigan.

Course 3. Integrated Circuit Front Ends for Nuclear Pulse Processing

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

Course Outline

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

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

Instructors

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

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

Giovanni Anelli received a M.S. degree from the Polytechnic of Milan (Italy) in 1997 and a Ph.D. degree from the Polytechnic of Grenoble (France) in 2000, both in electronic engineering. He has been working in the Microelectronics Group at CERN since 1998. His research interests deal with radiation effects on submicron CMOS technologies and with the design of low-noise low-power analog and mixed signal VLSI circuits for High-Energy Physics applications. Dr. Anelli is author and co-author of more than 50 publications and is an IEEE senior member.

Course 4. Molecular Biology for Imaging Scientists

This course is intended as an introduction to fundamental concepts of Molecular Biology presented from a consistent point of view, that of an “information-driven” field. In this context, the revolution that has taken place during the last decade in genetics and molecular biology can be traced back to the development of techniques that enabled scientists to manipulate and analyze genetic material. These approaches, together with new data-gathering technologies such as genomics, proteomics and imaging have a significant potential for translation into medically relevant knowledge. The success of this endeavor depends largely on the creation of an interactive, inter-disciplinary scientific culture in which experts in engineering, physics, chemistry, mathematics, and computer science join biologists to ensure the efficient integration of new technologies. Opportunities for such inter-disciplinary interactions will be emphasized during the Molecular Biology course.

Course Outline

Part 1: Nucleic Acids and the Synthesis of Macromolecules
   • DNA Replication and Repair
   • From DNA to RNA to Protein
   • Gene Regulation
Part 2: The Cell
   • Biomembranes, Subcellular Organization of Eukaryotic Cells, Membrane transport Mechanisms
   • Cell Signaling
   • Regulation of Cell Division and Cell Death
Part 3: Molecular Biology Techniques
   • DNA Engineering, Gene Replacement, Transgenic Animals, RNA interference
   • Recombinant Antibody Technology
   • Large scale analyses of gene and protein expression (DNA Microarrays, Proteomics and an Introduction to Systems Biology

Instructor

Dr. Caius Radu is an Assistant Professor in the Department of Medical & Molecular Pharmacology, David Geffen School of Medicine at UCLA. Dr. Radu received his M.D. degree in Romania and then conducted
post-doctoral research at UT Southwestern Medical Center in Dallas and at UCLA. Dr. Radu’s research interest involves two areas: the first is directed towards applying molecular imaging approaches such as Positron Emission Tomography to monitor immune responses in autoimmune disorders, as well as in cancer. A significant focus of this work is development of novel PET imaging probes specific for activated lymphocytes and of non-immunogenic PET reporter gene systems for in vivo cell-tracking studies. The second area involves studying the immunoregulatory roles of novel proton-sensing G protein-coupled receptors during physiological and pathological conditions characterized by alterations of the extracellular acid-base equilibrium.

Course 5. Detectors for SPECT and PET

This course will survey the state of the art in gamma-ray detectors for PET and SPECT, with a discussion of emerging technologies as well as traditional semiconductor and scintillator devices. The course will begin with a discussion of detector physics, cover signal generation, analog and digital pulse processing techniques, triggering, and acquisition strategies. Considerable emphasis will be placed on statistical characterization of the detectors and on optimal estimation methods that take the statistical properties into account. Lecture topics will include:

- Survey of technologies for gamma-ray detection
- Detector requirements for SPECT and PET
- State of the art in scintillation detectors
- State of the art in semiconductor detectors
- Statistical modeling and estimation methods
- Event triggering and coincidence techniques
- Data acquisition systems
- Examples of applications

Dr. Lars Furenlid was educated at the University of Arizona and the Georgia Institute of Technology. He is currently Research Professor at the University of Arizona and associate director of the Center for Gamma-ray Imaging, with appointments in the Department of Radiology and the College of Optical Sciences. He was a staff scientist at the National Synchrotron Light Source at Brookhaven National Laboratory. His major research area is the development and application of detectors, electronics, and systems for biomedical imaging.

Instructors

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

Dr. Tom Lewellen was educated at Occidental College and the University of Washington. He is currently a Professor at the University of Washington, with appointments in the Department of Radiology (School of Medicine) and Electrical Engineering. He is director of the Nuclear Medicine Physics Group and a senior member of the IEEE. His major research is in the development of electronics and detector systems for SPECT and PET.

Course 6. Small Animal Imaging: Detectors and Technical Aspects

Translational research strives to bridge our fundamental understanding of biological principles with clinical practice. Preclinical imaging provides a set of powerful tools that hold the promise to facilitate this translation from basic science to improved patient diagnostics and therapeutics. This course will introduce the attendees to the detectors and other technologies used in preclinical small animal imaging, with focus in high resolution PET, optical bioluminescence and x-ray CT. Special emphasis will be given to practical problems in the design of and use of new imaging systems dedicated for particular applications.

Course outline

The first part of this course will introduce attendees to the concept of molecular imaging probes and their use in preclinical and clinical imaging. Specific applications with emphasis on cancer will be discussed in some detail. Different types of probes based on radiopharmaceuticals and bioluminescence optical signaling will be discussed with emphasis on their inherent characteristics of signal generation, signal propagation in tissues and background levels.

The second part of this course will discuss the instrumentation technology for the design of small animal PET/SPECT, bioluminescence and x-ray CT imaging systems, with emphasis on the issues of sensitivity, radiation dosimetry and spatial resolution limits. Other novel technologies used in preclinical imaging research will also be introduced and discussed.

The third part of this course will discuss practical aspects of imaging experiments, including experimental design and data analysis. Special emphasis will be given to animal handling; including anesthesia, temperature monitoring and control, pathogen control, blood sampling and experiment reproducibility for multimodality imaging. Image and data analysis will be discussed, with emphasis on the types of measurements derived from the image data and factors that influence these measurements.

Instructors

Dr. Arion Chatziioannou is currently an Assistant Professor at the Department of Medical & Molecular Pharmacology, David Geffen School of Medicine at UCLA. He also is a member of the Crump Institute for Molecular Imaging and the Institute for Molecular Medicine. He received his B.S. degree in Physics from the University of Athens, Greece and his Ph.D. degree in Biomedical Physics from the University of California at Los Angeles. His current research interests are in the development of instrumentation for dedicated small animal imaging systems and other preclinical imaging technologies. He is especially interested in multimodality approaches for quantitative imaging including x-ray micro computed tomography, microPET and optical imaging. Dr. Chatziioannou has authored or coauthored more than 50 journal articles, reviews and book chapters. In addition, he has been invited to speak at many national and international symposia.

Dr. David Stout is currently an Assistant Professor at the Department of Medical and Medical Pharmacology, David Geffen School of Medicine at UCLA and is a member of the Crump Institute for Molecular Imaging. He received his B.S. degree in Biology from the University of California at Irvine and his Ph.D. degree in Biomedical Physics from the University
of California at Los Angeles. His current research interests focus on designing multimodality molecular imaging centers and the methods, equipment and educational training needed to create and operate the Crump molecular imaging center at UCLA. Dr. Stout has authored or coauthored over 25 papers and has frequently presented invited talks and training seminars worldwide.

Dr. Yuan-Chuan Tai is an Assistant Professor of Radiology at Washington University in St. Louis, Missouri, USA. He received his B.S. in Physics from National Tsing-Hua University in Taiwan, M.S. in Electrical Engineering from the University of Texas at Arlington and Ph.D. in Biomedical Physics from the University of California, Los Angeles. Dr. Tai developed the “pseudo-pinhole PET” geometry and holds a patent on the zoom-in imaging techniques for PET. His current research interests include the development of high-resolution PET technologies for animal and human applications, as well as multi-modality small animal imaging techniques.

Instructors:

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

Brandon D. Gallas, Ph.D., is a mathematician at the FDA Center for Devices and Radiological Health, working in the NIBIB/CDRH Laboratory for the Assessment of Medical Imaging Systems. He received his Ph.D. in Applied Mathematics from the University of Arizona in 2001. His research and regulatory work focuses on two broad areas: assessing reader performance and evaluating image quality. He has a wealth of experience running psychophysics experiments and has developed estimates of the uncertainty in the resulting performance estimates. In the field of image quality, he has advanced the field’s ability for efficiently estimating the ideal linear observer.

Eric C. Frey, Ph.D., is an Associate Professor in the Division of Medical Imaging Physics in the Department of Radiology and Radiological Sciences at Johns Hopkins University. From 1988-2002 he was a postdoctoral fellow and then on the faculty in the Departments of Biomedical Engineering and Radiology at the University of North Carolina at Chapel Hill. His major research interests are in SPECT image reconstruction with compensation for image degrading factors, dual isotope imaging, quantitative imaging for targeted radionuclide therapy dosimetry, evaluation and optimization of imaging systems and reconstruction algorithms, and reconstruction and instrumentation.
We want to welcome you to the 2006 IEEE Nuclear Science Symposium, the premier meeting of nuclear science-based hardware and software researchers. Besides the venue of beautiful San Diego, we have an ample technical program consisting of electronics, gas detectors, solid-state detectors, data acquisition systems, neutron-based imaging and high-energy physics-related papers. In addition, we have seen a great deal of growth in the number of submissions for computing and software. In honor of the completion of the Spallation Neutron Source, we have added a session focused primarily on electronics and detectors for that facility. As is always the case, we also welcome colleagues participating in the Medical Imaging Conference and have two oral sessions that are jointly sponsored by the NSS and the MIC.

We have an excellent short course program this year that features seven short courses. We also have the Room-Temperature Semiconductor Detector (RTSD) Workshop, as well as the Micro-Pattern Gas Detector workshop along with the NSS. We have an excellent companion program which will feature the venue of beautiful southern California.

We want to thank the Topic Conveners (those who take the responsibility of organizing the program along the lines of the submitted topics) and the reviewers themselves. The combined NSS, MIC and the workshops had a total number of submissions this year in excess of 1300. Clearly this meeting could not be held without the effort of these workers.

We sincerely wish you an enjoyable and educational experience this year.

**NSS Plenary Speakers**

**N01-2: First Neutrons at the Spallation Neutron Source**

Thomas E. Mason  
Oak Ridge National Laboratory

The wavelengths and energies of thermal and cold neutrons are ideally matched to the length and energy scales in the materials that underpin technologies of the present and future, ranging from semiconductors to magnetic devices, composites to biomaterials and polymers. The Spallation Neutron Source will use an accelerator to produce the most intense beams of neutrons. The project, built by a collaboration of six U.S. Department of Energy laboratories, will serve a diverse community of users drawn from academia, industry, and government labs with interests in condensed matter physics, chemistry, engineering materials, biology, and beyond. Results from the initial commissioning runs will be presented together with an overview of the instruments that will become available in the next few years.

**Biography:**

Thomas Mason is a native of Dartmouth, Nova Scotia in Canada. After receiving his Ph.D in Experimental Condensed Matter Physics at McMaster University in Hamilton, Ontario, he went on to post-doctoral work at AT&T Bell Laboratories in Murray Hill, New Jersey, then became a Senior Scientist at Risø National Laboratory in Denmark. In 1993 he joined the faculty of the Department of Physics at the University of Toronto. In May 1998 he joined Oak Ridge National Laboratory as Scientific Director for the Spallation Neutron Source (SNS) project at Oak Ridge, and in April 2001 he assumed the role of Associate Laboratory Director.

His research has focused on the application of neutron scattering techniques to novel magnetic materials and superconductors. He was awarded an Alfred P. Sloan Foundation Research Fellowship in 1997 and was named an American Association for the Advancement of Science Fellow in 2001.
N01-3: The New Digital Sky

Tony Tyson
University of California, Davis

Fueled by advances in software, microelectronics, and large optics fabrication, a new type of sky survey is being designed. In a relentless campaign of 15 second exposures, the Large Synoptic Survey Telescope (LSST) will cover the sky to the edge of the optical universe every three nights, opening a movie-like window on objects that change or move on rapid timescales: exploding supernovae and potentially hazardous near-Earth asteroids are just two examples. The superb images from the LSST will also chart billions of remote galaxies in 4-D, providing multiple probes of the mysterious Dark Matter and Dark Energy. Thirty TB of multi-color images per night will be transformed into a new view of our four dimensional universe.

Biography:

Tony Tyson is the Director of the Large Synoptic Survey Telescope. His research interests are in cosmology, dark matter, dark energy, observational optical astronomy, experimental gravitational physics, and new instrumentation. He has been a Distinguished Professor of Physics at UC Davis since 2003. He received his Ph.D. degree from University of Wisconsin in 1967 and was a Member of the Technical Staff at Bell Laboratories from 1969 to 2003. Honors: Elected to American Philosophical Society, Elected to National Academy of Sciences, Aaronson Memorial Prize, Elected Fellow, American Academy of Arts and Sciences, and Fellow, American Physical Society.

N01-4: Science and Technology Needs for the Next Generation of Nuclear Power Reactors

Daniel Ingersoll
Oak Ridge National Laboratory

Interest in nuclear energy is surging worldwide, driven by concerns over the stability and cost of fossil energy supplies and the environmental impacts of fossil fuel consumption. Even in the United States, interest in nuclear energy is growing rapidly within every sector of the industry, supported by new bipartisan policies within the government. The current fleet of nuclear power plants in the U.S., sometimes referred to as "Generation II" systems, have steadily improved their performance over the past 20 years, with average capacity factors now exceeding 90%. Several Generation III systems, now in various stages of design, licensing, and deployment, seek to surpass the previous generation by reducing construction and operating costs, largely through plant simplification. While the promise of these Generation III systems has yet to be demonstrated, the research community is already working toward Generation IV systems, which seek to achieve an even higher performance level in terms of safety, economics, and proliferation resistance.

The most promising path for improved economics appears to be through the use of more efficient power conversion systems that are enabled by higher operating temperatures (>800°C versus <400°C for conventional systems). This creates the potential for nuclear plants also to produce large volumes of hydrogen that will be needed for enriching petroleum fuels in the near term and for hydrogen-based transportation fuels in the long term. There is a need for different reactor designs, the development of efficient fuel recycle technologies, and technologies that minimize proliferation risk. For Generation IV reactors to become a reality, a robust science and technology program is needed to develop the materials, chemical processes, and instrumentation that can provide safe, secure, reliable and economic nuclear energy to the masses.

Biography:

Dr. Daniel Ingersoll is a Senior Program Manager for the Nuclear Technology Programs Office at Oak Ridge National Laboratory, with direct involvement in the Advanced High Temperature Reactor project, the Advanced Fuel Cycle Initiative, the International Reactor Innovative and Secure project, and the Space Reactor Technology Program. He has extensive experience in shielding research projects that support DOE advanced liquid-metal-cooled and gas-cooled reactor concepts, DOD radiation environment studies, and DOE advanced fission reactor and high-energy accelerator programs. He received a BS degree in Physics from Miami University in 1973 and a PhD in Nuclear Engineering from the University of Illinois in 1977. He is a Fellow of the American Nuclear Society and Past Chairman of the ANS Radiation Protection and Shielding Division.
The invention of ultra-fast optical lasers with pulse durations comparable to vibrational periods in solids and motions of molecules undergoing structural changes has provided a look at the dynamics that govern important processes in nature. X-rays, on the other hand, with wavelengths comparable to the distances between atoms, have been a key tool for the study of the average structure of liquids and solids at atomic resolution. With recent developments in ultra-fast X-ray sources, the combination of appropriate temporal resolution and spatial resolution is opening new scientific opportunities for direct observation of atomic scale dynamics. The Linear Coherent Light Source (LCLS), the world’s first hard X-ray free electron laser now under construction at SLAC, is just such a source. The science and technology of ultra-fast X-ray studies enabled by the LCLS X-ray free-electron laser will be discussed.

Biography:
Jerome Hastings received his Ph.D. in applied physics from Cornell University in 1975. After spells at both Oak Ridge National Laboratory and Stanford Synchrotron Radiation Laboratory, he spent the next 25 years at Brookhaven National Laboratory, moving to SLAC in 2001, where he is now project director of LCLS Ultra-fast Science Instruments (LUSI). His research interests are in X-ray physics, ultra-fast X-ray optics, and synchrotron radiation instrumentation. He serves on a number of scientific advisory panels to existing and future light sources. He is a Fellow of the American Physical Society.
N02-6 The LCG Persistency Framework: Status and Perspectives  
G. Govi, R. Chytracek, D. Duellmann, M. Frank, I. Papadopoulos,  
A. Valassi, M. Clemencic, CERN, Switzerland; Z. Xie, Princeton  
University, USA

N03 Detectors and Electronics for the SNS  
Monday, Oct. 30 14:00-15:30, Pacific Salon 1  
Session Chair: Sara Pozzi, Oak Ridge National Laboratory

N03-1 (invited) Neutron Detector Research and Development at the  
SNS  
R. Cooper, ORNL/SNS, USA  
On behalf of the SNS Detector Team

N03-2 Performance of 1 Meter Straw Detector for High Rate  
Neutron Imaging  
J. L. Lacey, A. Athanasiades, N. N. Shehad, C. S. Martin, L. Sun  
Proportional Technologies, Inc., U.S.A.

N03-3 (invited) Design and Performance of Vacuum Capable  
Detector Electronics for Linear Position Neutron Detectors  
R. A. Riedel, R. G. Cooper, L. G. Clonts, A. L. Wintenberg  
Oak Ridge National Laboratory, USA

N03-4 PATARA: Solid-State Neutron Detector Readout Electronics  
with Current-Mode Pole-Zero and Shaping and Gated Baseline  
Restorer for the SNS  
J. L. Britton1, S. C. Bunch1, B. J. Blalock1, C. L. Britton1,2,  
D. Mcgregor3, L. Crow4  
1University of Tennessee, USA; 2Oak Ridge National Lab, USA; 3Kansas  
State University, USA; 4Spallation Neutron Source, USA

N03-5 A Conceptual Design of a Readout System for a Neutrino  
Experiment at the Spallation Neutron Source  
K. A. Lan, E. V. Hungerford, University of Houston, USA

N03-6 Development of a Picosecond-Resolution TDC for Large  
Scale Time-of-Flight Systems  
E. Tang, T. Credo, H. Frisch, H. Sanders, University of Chicago,  
USA; K. Byrum, G. Drake, Argonne National Laboratory, USA

N04 Gas Detectors I  
Monday, Oct. 30 14:00-15:15, Pacific Salon 2  
Session Chair: Fabio Sauli, INFN-Trieste and CERN

N04-1 Micromegas TPC R&D Results  
P. Colas1, Y. Giamataris1, V. Lepeltier2, M. T. Ronan3, K. Sachs4,  
T. Zerguerras2  
1LBNL, USA; 2LAL and IPN, France; 3CEA/DAPNIA, France;  
4Carleton U., Canada

N04-2 Study in a Beam Test of the Resolution of a Micromegas TPC  
P. M. Colas, CEA/DAPNIA, France  
On behalf of the MP-TPC Collaboration

N04-3 Resolution Studies in a MPGDT-TPC with Charge Dispersion  
in a Magnetic Field  
K. Boudjemline, Carleton University, Canada  
On behalf of part of the ILCTPC R&D groups

N04-4 R&D Ongoing at DESY for a GEM Based TPC: Resolution  
Studies; Techniques and Results  
M. E. Janssen, DESY - Deutsches Elektronen Synchrotron, Germany  
On behalf of the FLC TPC Group

N04-5 The Performance of a GEM-Based TPC Prototype for the  
Linear Collider Experiment  
M. Kobayashi, KEK (High Energy Accelerator Research Organization),  
Japan  
On behalf of part of the ILC-TPC Collaboration

N05 Photodetectors and Radiation Imaging I  
Monday, Oct. 30 14:00-15:30, Pacific Salon 3  
Session Chair: Zane Bell, Oak Ridge National Laboratory

N05-1 High-Speed HPD for Photon Counting  
A. Fukasawa1, J. Habas2, A. Kageyama3, H. Nakazawa4, M. Suyama1  
1Hamamatsu Photonics, Japan; 2High Energy Accelerator Research  
Organization, Japan

N05-2 Development of Thin-Junction Detector  
W. Chen, Z. Li, P. Rehak, Brookhaven National Lab, USA

N05-3 Monolithic Image Sensors for Charged-Particle Imaging  
S. Kleinfielder1, S. Li1, M. Ahooie1, L. Jin1, H. Matsi1, H. Wieman1,  
N. Xuong2  
1University of California, Irvine, USA; 2University of California, San  
Diego, USA; 3Lawrence Berkeley National Laboratory, USA

N05-4 Proximity Focusing RICH with TOF Capabilities  
S. Korpar1,2, J. Stefan Institute, Slovenia; 2University of Maribor,  
Slovenia  
On behalf of the Belle aerogel RICH group

N05-5 Avalanche Photodiodes as Photodetectors for Liquid Xenon  
Scintillation Light  
U. G. Oberlack, P. Shagin, R. Gomez, Rice University  
USA; R. Farrell, M. Mcclish, Radiation Monitoring Devices, Inc.,  
USA; P. Cushman, B. Sherwood, University of Minnesota, USA

N05-6 Sub-Electron Noise Measurements on Repetitive Non-  
Destructive Readout Devices  
S. Woelfel1,2, S. Herrmann1,2, P. Lechner2, G. Lutz3, M. Porro1,2,  
R. Richter1,2, L. Strüder1,2, J. Treis1,2  
1Max-Planck-Institut für Extraterrestrische Physik, Germany; 2MPI  
Halbleiterlabor, Germany; 3PNSensor GmbH, Germany; 4Max-Planck-  
Institut für Physik, Germany

N06 Instrumentation for Homeland Security  
Monday, Oct. 30 16:00-18:00, Golden Ballroom  
Session Chair: Giancarlo Nebbia, INFN

N06-1 Examination of Count-Starved Gamma Spectra Using the  
Method of Spectral Comparison Ratios  
D. M. Pfund, R. C. Runkle, K. K. Anderson, K. D. Jarman  
Pacific Northwest National Laboratory, United States

N06-2 Image Processing and Display Systems for the CSIRO Air  
Cargo Scanner  
Y. Liu, J. R. Tickner, CSIRO Minerals, Australia

N06-3 Passive Interrogation Using Cosmic Ray Muon Tomography  
C. L. Morris1, G. S. Blanpied2, K. N. Borozdin3, A. M. Fraser1,  
R. Chartrand1, M. C. Galassi1, J. A. Green1, N. W. Hengartner1,  
G. E. Hogan1, A. V. Klimenko1, W. C. Priedhorsky1, R. C. Schirato1,  
L. J. Schultz1, M. J. Sossong1
**N06-4** Prompt Pulsed Neutron Activation Analysis for Detection of Fission Neutrons from Concealed Special Nuclear Materials
F. H. Ruddy, J. G. Seidel, R. W. Flammang
Westinghouse Electric Company, USA

**N06-5** 3D Mapping of Radioactive Gamma-Ray Sources with a Compton Camera
L. Mihăilescu, D. Chivers, K. Vetter
Lawrence Livermore National Laboratory, USA

**N06-6** A Directional Gamma Radiation Spectrometer Based on Pixelated CZT Arrays and Coded Mask Apertures
M. A. Capote, G. J. Batinica, H. Lenos, Agulia Technologies, Inc., USA;
J. Matteson, E. Stephan, R. Rothschild, R. Skelton, G. Huszar, T. Gasaway, M. Pelling, University of California, San Diego, USA

**N06-7** Design of a Large-Area Fast Neutron Directional Detector
P. E. Vanier, L. Forman, I. Dioszegi
Brookhaven National Laboratory, USA; Ion Focus Technology, USA

**N06-8** Status of the Pulsed Photonuclear Assessment (PPA) Inspection System
J. L. Jones, B. W. Blackburn, D. R. Norman, K. J. Haskell,
S. M. Watson, J. T. Johnson, Idaho National Laboratory,
US; A. W. Hunt, F. Harmon, Idaho Accelerator Center/ISU, US

**N07 Core Software Tools**
Monday, Oct. 30 16:00-17:30, Pacific Salon 1
Session Chair: Paolo Calafiura, LBNL

**N07-1** A Geant4-Python Interface: Development and Its Applications
K. Murakami, KEK, Japan; H. Yoshida, Naruto University of Education, Japan

**N07-2** Evaluation of the Power of Goodness-of-Fit Tests for the Comparison of Data Distributions
B. Mascialino, A. Pfeiffer, M. G. Pia, A. Ribon, P. Viarengo
INFN Genova (Italy), Italy; CERN, Switzerland; IST - National Cancer Research Institute, Italy

**N07-3** RAVE - an Open, Extensible, Detector-Independent Toolkit for Reconstruction of Interaction Vertices
W. Waltenberger, F. Moser, Hephý Vienna, Austria

**N07-4** (invited) The Geant4 Toolkit: Status and Developments
J. Apostolakis, CERN, Switzerland
On behalf of the Geant4 Collaboration

**N07-5** Geant4 Simulation in a Distributed Computing Environment
S. Guatelli, P. Mendez Lorenzo, J. Moscicki, M. G. Pia
INFN Genova, Italy; CERN, Switzerland

**N07-6** GNAM and OHP: Monitoring Tools for the ATLAS Experiment at LHC
INFN - Sez. Napoli, Italy; Università di Pisa and INFN sez. Pisa, Italy;
Queen Mary University of London, United Kingdom;
INFN - Sez. Pavia, Italy; Università della Calabria and INFN Cosenza, Italy;
Università della Calabria and CERN, Italy; Università di Pavia and INFN sez. Pavia, Italy

**N08 Data Acquisition and Analysis Systems I**
Monday, Oct. 30 16:00-17:45, Pacific Salon 2
Session Chair: Nathaniel Bowden, Sandia National Laboratories

**N08-1** Event Builder and Level 3 Trigger Computing Farm Upgrade at CDF in Run II
M. Klute, Massachusetts Institute of Technology, USA
On behalf of the CDF Collaboration

**N08-2** A VME-Based Readout System for the CMS Preshower Sub-Detector
CERN, Switzerland; LIP, Portugal; University of Ioannina, Greece

**N08-3** Development of New Data Acquisition Electronics for the Large Water Cherenkov Detector
H. Nishino, Y. Hayato, K. Kaneyuki, K. Okumura, M. Shiozawa, A. Takeda, Institute for Cosmic Ray Research, University of Tokyo, Japan;
Y. Arai, KEK, National High Energy Accelerator Research Organization, Institute of Particle and Nuclear Studies, Japan;
K. Ishikawa, A. Minegishi, Iwatsu Test Instruments Corporation, Japan

**N08-4** Performance of the AMT-3 Based TDC System at Belle
High Energy Accelerator Research Organization, Japan

**N08-5** Commissioning a Pipelined Data Acquisition System for the Belle Central Drift Chamber
H. Nakayama, University of Tokyo, JAPAN; T. Higuchi, S. Y. Suzuki, M. Nakao, R. Itoh, KEK, High Energy Accelerator Research Organization, JAPAN

**N08-6** The Performance of the Online System of the PHENIX Experiment in the RHIC Run 6
M. L. Purschke, Brookhaven National Lab, USA
On behalf of the PHENIX Collaboration

**N08-7** Data Acquisition System of the PAMELA Experiment
A. Basili, INFN, Roma Tor Vergata, Italy
On behalf of the PAMELA Collaboration

**N09 Radiation Damage Effects**
Monday, Oct. 30 16:00-18:00, Pacific Salon 3
Session Chair: Lodovico Ratti, University of Pavia

**N09-1** (invited) The SMART Detectors: Development of Radiation Hard Silicon Devices for SLHC
A. Macchiolo, L. Borrello, M. Boscardin, M. Bruzzi, D. Creanza,
G. F. Dalla Betta, M. DePalma, E. Focardi, N. Manna,
D. Menichelli, A. Messineo, C. Piemonte, S. Ronchin, C. Tosi,
N. Zorzi, V. Radicci
INFN and Università degli Studi di Firenze; INFN and Università degli Studi di Pisa, Italy; ITC-IRST, Italy; INFN and Dipartimento Interateneo di Fisica, Italy

**N09-2** Trapping of Electrons and Holes in p-Type Silicon Irradiated with Neutrons
V. Cindro, G. Kramberger, M. Lozano, I. Mandić, M. Mikuž,
G. Pellegrini, J. Pulkö, M. Ullan, M. Zavrtanik
Jožef Stefan Institute, Slovenia; Instituto de Microelectrónica de
Barcelona, Spain; 3University of Ljubljana, Slovenia

N09-3 Measurement of the Trapping Time Constant in Neutron-Irradiated Silicon Pad Detectors
J. Weber, R. Klingenberg, University of Dortmund, Germany

N09-4 Radiation Hard Semiconductor Devices for Very High Luminosity Colliders
L. Borrello, Physics department and INFN Pisa, Italy
On behalf of the RD50 Collaboration

N09-5 Bias Conditions in Gamma Radiation Assurance Tests of Bipolar Technologies for HEP Applications
M. Ullan, S. Diez, F. Campabadal, M. Lozano, G. Pellegrini, Centro Nacional de Microelectrónica (CNM-CSIC), Spain; D. Knoll, B. Heinemann, Innovation for High Performance Microsystems (IHP), Germany

N09-6 Radiation Tolerance of High-Resistivity LBNL CCDs
Lawrence Berkeley National Laboratory, USA

N09-7 Proton-Induced Degradation in High-Resolution Geiger Tracking Detectors
S. Vasile, aPeak Inc., USA

N09-8 Intensive Irradiation Study on Monitored Drift Tubes Chambers.

1Dipartimento di Fisica, Universita' Roma Tre and INFN Roma III, Italy; 2Dipartimento di Fisica, Universita' degli studi della Calabria and INFN, Italy

N10 HEP & NP Instrumentation I: Calorimetry

Tuesday, Oct. 31 08:30-10:00, Golden Ballroom
Session Chairs: Bernd Surrrow, Massachusetts Institute of Technology
Konstantin Goulianos, Rockefeller University

N10-1 A Study of a New Concept of Compensating Calorimeter
A. Para, H. Wenzel, S.-S. Yu, Fermi National Accelerator Laboratory, USA; T. Zhao, University of Washington, USA

N10-2 Calorimeters in the Very Forward Region of ILC
J. Zhang, University of Colorado, USA
On behalf of the FCAL Collaboration

N10-3 Performance of the Zero Degree Calorimeters for the ALICE Experiment

1Università di Torino and INFN, Italy; 2Università di Cagliari and INFN, Italy; 3Università del Piemonte Orientale and INFN, Italy

N10-4 Calibration of the Lead Tungstate Crystal CMS Electromagnetic Calorimeter Before the LHC Start-Up
A. Ghezzi, 1Università di Milano Bicocca, Italy; 2ETHZ, Switzerland
On behalf of the CMS ECAL Collaboration

N10-5 Fluctuations and Energy Estimation Methods in Segmented Calorimeters
S. Bergenius Gavler, P. Carlson, J. Conrad
KTH Stockholm, Sweden

N10-6 The Electromagnetic Calorimeter of the CMS Experiment.
E. Longo, INFN and Universita degli Studi di Roma La Sapienza, Italy
On behalf of the CMS ECAL Group

N11 Neutron Imaging and Radiography

Tuesday, Oct. 31 08:30-10:00, Pacific Salon 1
Session Chair: Carolyn Seifert, PNNL

N11-1 Development of a Neutron Scatter Camera for Fission Neutrons
N. Mascarenhas, J. Brennan, J. Lund, Sandia National Laboratories, USA; U. Bravar, J. Ryan, University of New Hampshire, USA

N11-2 Analytically Computed Small-Angle Scattering in Fast-Neutron Radiography
P. A. Hausladen, P. R. Bingham, J. A. Mullens
Oak Ridge National Laboratory, United States

N11-3 A High Spatial Resolution Sensor for Thermal Neutron Imaging
L. K. Sheshitkova, E. E. Ovechkina, V. Gaysinskii, J. J. Antal, L. Bobek, V. V. Nagarkar
1RMD Inc., USA; 2University of Massachusetts Lowell, USA

N11-4 High Efficiency Thermal Neutron Imaging with Sub-Microsecond Timing Resolution
A. S. Tremsin, UC Berkeley, USA; W. B. Feller, Nova Scientific, USA

N11-5 Neutron Resonance Capture - Analysis, Scanning and Imaging of Objects
C. W. E. Van Eijk, P. Schillebeeckx, M. C. Clarijs, H. Postma
1Delft University of Technology, The Netherlands; 2EC-JRC Institute for Reference Materials and Measurements, Belgium

N11-6 Coded Source Imaging for Neutrons and X-Rays
A. L. Damato, R. C. Lanza
Massachusetts Institute of Technology, USA

N12 Nuclear Measurements and Monitoring Techniques I

Tuesday, Oct. 31 08:30-10:00, Pacific Salon 3
Session Chair: Glen Warren, Pacific Northwest National Lab

N12-1 Energy Resolution and Dead Layer Measurement for KATRIN Prototype Silicon PIN Diode Arrays
1University of Washington, USA; 2Forschungszentrum Karlsruhe, Germany

N12-2 Increasing Radiation Hardness and B Field Resistance of Commercial of the Shelf PIR Sensors for the ATLAS/CERN Experiment
A. Maio, CFNUL/FCUL & LIP, Portugal; C. Cardeira, IDMEC/IST, Portugal; G. Benincasa, LIP, Portugal
N12-3 Performance of Li-Based Cryogenic Fast-Neutron Spectrometers
T. R. Niedermayer¹, I. D. Hau³, A. Burger², U. N. Roy², Z. W. Bell¹
S. Friedrich¹
¹Lawrence Livermore National Laboratory, USA; ²Fisk University, USA;
³Oak Ridge National Laboratory, USA

N12-4 Development of a Liquid Scintillator Neutron Multiplicity Counter (LSMC)
K. C. Frame¹, W. A. Clay², T. E. Elmont³, E. Eschi¹, N. Johansen³,
P. Karpius¹, D. MacArthur⁴, E. A. McKigney¹, M. K. Smith¹,
S. Stange², J. Thron¹, R. B. Williams¹
¹Los Alamos National Laboratory, USA; ²Stanford University, USA;
³University of Michigan, USA

N12-5 Advanced Approach to the Calibration of a Segmented Gamma Scanner for the Radiosassay of Drum Waste
A. Bosko, G. Geurkov, S. Croft, R. Venkataraman
Canberra Industries Inc, USA

N12-6 A Digital Pulse Shape Discriminator for the Nuclear Materials Identification System
P. A. Haustaden, Oak Ridge National Laboratory, United States;
R. A. Todd, A. R. Miller, RIS Corp., United States

N13 Analog and Digital Circuits I
Tuesday, Oct. 31 08:30-10:00, California Room
Session Chair: Lorenzo Fabris, LLNL

N13-1 Resolution Limits in 130 nm and 90 nm CMOS Technologies for Analog Front-end Applications
M. Manghisoni¹, L. Ratti², V. Re², V. Speziali², G. Traversi²
¹Università degli Studi di Bergamo, Italy; ²INFN, Italy; ³Università di Pavia, Italy

N13-2 A Single Ended Low Noise Rail to Rail CMOS Preamplifier
G. Trampitsch, CERN, Switzerland

N13-3 Parametric Amplifier for Semiconductor Radiation Detectors
R. G. H. Robertson, T. D. Van Wechel
University of Washington, USA

N13-4 Pole-Zero Cancellation Circuit for Charge Sensitive Amplifier with Pile-up Pulses Tracking System
P. Grybos
AGH University of Science and Technology, Faculty of Physics and Applied Computer Science, Poland

N13-5 A High Time-Resolution Analog ASIC Implementing Dual Shapers for Semiconductor Detectors
T. Matsumoto¹, A. Koyama¹, A. Ito¹, T. Moriwaki², N. Kiriki³,
T. Yamada¹, K. Amemiya², Y. Ueno¹, T. Ishitsu¹
¹Hitachi Ltd., Japan; ²Hitachi Information Technology Co., Ltd., Japan;
³Hitachi ULSI Systems Co., Ltd., Japan

N13-6 A Low Power Multi-Channel Single Ramp ADC with up to 3.2 GHz Virtual Clock
E. Delagnes¹, D. Breton², F. Lugiez³, R. Rahmanifard³
¹CEA/DAPNIA/SEDI, France; ²CNRS/INP/ESI, France; ³L.E.A., France

N14 NSS Poster 1
Tuesday, Oct. 31 10:30-12:00, Atlas Ballroom
Session Chairs: Massimo Caccia, Università dell'Insubria
Ralf Engels, FZ-Juelich

N14-1 Comparison of Simulated Handheld Radioisotope Identifier Performance
R. C. Runkle, E. D. Ashbaker, K. D. Jarman, S. M. Robinson,
D. V. Jordan, L. E. Smith
PNL, USA

N14-3 Development of a Depth and Angular-Sensitive Gamma-Camera for Imaging Neutron-Interrogated Materials
M. D. Hammig, University of Michigan, USA; B. T. Wells, GaIt LLC, USA

N14-5 Noble Gas Scintillation-Based Radiation Portal Monitors and Active Interrogation Systems
R. S. Chandrasekarahan, ETH Zurich, Switzerland

N14-7 Observation of Cosmic Ray Induced Muonix X-Rays
A. V. Klimenko, K. N. Borodzin, W. C. Priedhorsky, C. L. Morris,
N. Hengartner
Los Alamos National Laboratory, USA

N14-9 Evaluation of Key Detector Parameters for Isotope Identification
C. J. Sullivan, S. E. Garner, M. A. Smith-Nelson, K. B. Butterfield
Los Alamos National Laboratory, United States

N14-11 Simulation of Template Spectra and Study of Nuclide Identification Problems for Scintillator Based Radionuclide Identification Devices Using GEANT4
K. Saucke¹, G. Pausch¹, K. Roemer¹, J. Stein¹,²
¹Target Systems Electronic GmbH, Germany; ²Target Instruments, Inc., USA

N14-13 Development of Compact Wide-Angle Imaging Detector for MeV Gamma-Rays Using Stacked BGO Scintillator Rods
K. Watanabe, S. Mihoya, J. Kawarabayashi, T. Iguchi
Nagoya University, Japan

N14-15 Pedestrian Portal with ‘Nearby’ Source Rejection Capability
A. E. Proctor, S. Pauly, M. Blair, R. Sheldon, T. Thompson, P. Edgley
NuSafe, Inc., USA

N14-17 An Electronically-Collimated Gamma-Ray Detector for Localization of Radiation Sources
K. L. Matthews II, B. M. Smith, W. Hill, A. W. Lackie, W.-H. Wang,
M. L. Cherry
Louisiana State University, USA

N14-19 A Directional Algorithm for an Electronically-Collimated Gamma-Ray Detector
A. W. Lackie, K. L. Matthews II, B. M. Smith, W. Hill, W.-H. Wang,
M. L. Cherry
Louisiana State University, USA

N14-21 Detection of Illicit Nuclear Materials Masked with Other Gamma-Ray Emitters
M. L. Reinhard, D. Prokopovich
Australian Nuclear Science and Technology Organisation, Australia
N14-23 Development of Landmine Detection System Using Scintillators by Measuring Radiations from Landmine
Y. Takahashi¹, T. Misawa¹, C. H. Pyeon³, S. Shiroya³, K. Yoshikawa³, K. Masuda⁴, T. Takamatsu¹
¹Graduate school of energy science, Kyoto University, Japan; ²Research Reactor Institute, Kyoto University, Japan; ³Institute of Advanced Energy, Kyoto University, Japan
N14-25 Analysis of Recent Manifests for Goods Imported Through US Ports
M.-A. Descalle, D. Manatt, D. Slaughter
Lawrence Livermore National Lab., USA
N14-27 Optimal Background Attenuation for Fielded Radiation Detection Systems
S. M. Robinson, J. E. Schewpe, E. R. Siciliano
Pacific Northwest National Laboratory, USA
N14-29 Optimizing the Tracking Efficiency for Cosmic Ray Muon Tomography
J. A. Green, Los Alamos National Laboratory, USA
On behalf of the Muon Tomography Collaboration
N14-31 High-Pressure Ionization Chamber Filled with BF₃ Operating as a Neutron Counter
N. Golnik, Warsaw University of Technology, Poland; M. Zielczyński, Z. Rusinowski, P. Tulik, Institute of Atomic Energy, Poland
N14-33 In-Ground Radiation Detection
Pacific Northwest National Laboratory, USA
N14-35 The Effect of the Three-Dimensional Geometry of Cargo on the Detection of Radioactive Sources in Cargo Containers
Pacific Northwest National Laboratory, USA
N14-37 High-Yield Neutron Source for Cargo Container Screening
Lawrence Berkeley National Laboratory, U.S.A.
N14-39 Spectral Personal Radiation Detectors (SPRDs) - a New Equipment Category for Use by Front Line Officers and First Responders
N14-41 A Comparison of Simulated HPGe and NaI Radiation Portal Monitor Performance Using a Nuisance Source Library
Pacific Northwest National Laboratory, USA
N14-43 Fast Neutron Detection and Imaging Using Liquid Ionization Detectors
E. M. Boyd, B. W. Blackburn, G. E. Kohse, R. C. Lanza, V. Ziskin
Massachusetts Institute of Technology, U.S.A.
N14-45 Actively-Induced, Prompt Radiation Utilization in Nonproliferation Applications
N14-47 Active Nuclear Material Detection at Large Standoff Distances
Analog and Digital Circuits
N14-49 Design and Test of the ALICE SDD Data Concentrator Card CARLOsrx
D. Falchieri, S. Antonini, F. Costa, A. Gabrielli, E. Gandolfi, M. Masetti
Department of Physics & INFN, Italy
N14-51 Position Determination and Resolution of Position Sensitive Neutron Detectors Limited by Charge Equalization and Noise
S. P. Boenisch, B. Namashch, E. Wulf
Hahn-Meitner-Institut Berlin, Germany
N14-53 FETs Array Readout of GEM Detector
Y. Li, X. Zheng, Y. Li, Tsinghua University, China; Y. Lai, Institute of Chemical Defense, China; J. Li, Chinese Academy of Sciences, China
N14-55 Silicon Strips Readout using Deep Sub-Micron Technology
J.-E. C. Genat¹, S. Fougeron², R. Hermel², Y. Karyotakis², H. Lebbolo¹, T. H. Pham¹, A. Savoy-Navarro¹, R. Sefri¹, S. Vilalte²
¹IN2P3-CNRS Universities Paris 6 and 7, France; ²IN2P3-CNRS, France
N14-57 A High Precision Peak Detect Sample and Hold Circuit
P. Y. Chang, H. P. Chou
National Tsing Hua University, Taiwan
N14-59 A Multigigahertz Analog Memory with Fast Read-Out for the HESS2 Front-End Electronics
E. Delagnes¹, F. Feinstein², P. Goret³, P. Nayman³, F. Toussenel³, P. Vincent³
¹CEA, France; ²Université de Montpellier II, France; ³IN2P3/CEA-CNRS, France
N14-61 Cryogenic Operations of Optoelectronic Devices
D. V. Camin, V. Grassi, University of Milano/INFN, Italy
N14-63 A Multi-Channel Front-End ASIC for Pixelated Detectors
Z. Deng¹, Y. Liu¹, L. Zhang¹, Y. Li¹, Y. Li², J. Li³
¹Tsinghua University, China; ²Nuctech Ltd., China; ³Institute of High Energy Physics, China
N14-65 Data Stream Zero Suppression and Word Recoding Using an Accordion pipeline, an FPGA implementation.
V. Bocci, F. Iacoangeli, R. Nobrega
INFN Sezione di Roma, Italy
N14-67 ASIC Front-End for Position Sensitive Photomultiplier Based PET Systems with Gain Adjustment and DOI Measurement
V. Herrero-Bosch, R. Gadea-Girones, R. Colom-Palero, A. Sebastià-Cortes, J. D. Martínez, Universidad Politecnica de Valencia, Spain; C. W. Lerche, J. M. Benlloch, Universidad de Valencia, Spain
N14-69 A Fast VLSI Preamplifier for Segmented HPGe Gamma-Ray Detectors
A. Pullia\textsuperscript{1,2}, F. Zocca\textsuperscript{1,2}, S. Riboldi\textsuperscript{1,2}, C. Cattadori\textsuperscript{2}
\textsuperscript{1}University of Milano, Italy; \textsuperscript{2}INFN, Italy

N14-71 A Low-Impedance Large-Swing Output Stage for CMOS Preamplifiers of Semiconductor Detector Signals
A. Pullia\textsuperscript{1,2}, F. Zocca\textsuperscript{1,2}
\textsuperscript{1}University of Milano, Italy; \textsuperscript{2}INFN, Italy

N14-73 A Charge Sensitive Preamplifier with an Active Ultra Fast Recovery Circuit for Experiments on Neutron Time-of-Flight Facilities
C. Boiano\textsuperscript{1}, R. Bassini\textsuperscript{1}, A. Pullia\textsuperscript{1,2}, P. Mastinu\textsuperscript{1}, M. Calviani\textsuperscript{1,3}, C. Massimi\textsuperscript{1,4}
\textsuperscript{1}INFN, Italy; \textsuperscript{2}University of Milano, Italy; \textsuperscript{3}University of Padova, Italy; \textsuperscript{4}University of Bologna, Italy

N14-75 An Amplifier for Bolometric Detectors
G. Pessina, C. Arnaboldi
INFN di Milano Bicocca and Dipartimento di Fisica dell’Università di Milano Bicocca p.zza della Scienza 3 20126, Italy

N14-77 Simple Charge Sensitive Preamplifiers for Experiments with a Small Number of Detector Channels
C. Arnaboldi, G. Pessina
Università degli studi e INFN di Milano Bicocca, p.zza della scienza, 3 20126, Italy

N14-79 Design Criteria for the Optimization of Hybrid Charge-Sensitive Preamplifiers for High Resolution Gamma-Ray Spectroscopy
F. Zocca\textsuperscript{1,2}, A. Pullia\textsuperscript{1,2}
\textsuperscript{1}University of Milano, Italy; \textsuperscript{2}INFN, Italy

N14-81 The SYNC Chip and the SYNC Test Bench
S. Cadeddu, V. De Leo, C. Deplano, E. Fois, A. Lai
Istituto Nazionale Fisica Nucleare, Italy

N14-83 A Front End Electronic Card Using a High Gain and High Bandwidth Preamplifier with a Fast Discriminator for Time of Flight Measurements.
M. Giobanu\textsuperscript{1}, N. Herrmann\textsuperscript{2}, K. D. Hildenbrand\textsuperscript{1}, Y. J. Kim\textsuperscript{1}, M. Kís\textsuperscript{1}, A. Schütttauf\textsuperscript{3}
\textsuperscript{1}Gesellschaft für Schwerionenforschung, Germany; \textsuperscript{2}Universität Heidelberg, Germany

N14-85 An ASIC Circuit for Timing Measurements with Strip Detectors, Designed for the SiliPET Project
A. Gola\textsuperscript{1,2}, C. Fiorini\textsuperscript{1,2}, G. Di Domenico\textsuperscript{1,4}, G. Zavattini\textsuperscript{1,4}, N. Auricchio\textsuperscript{1,4}
\textsuperscript{1}Politecnico di Milano, Italy; \textsuperscript{2}INFN, Sezione di Milano, Italy; \textsuperscript{3}Università di Ferrara, Italy; \textsuperscript{4}INFN, Sezione di Ferrara, Italy

N14-87 A Low Power, Low Signal 5 Bit Analog to Digital Pipe Line Converter for Monolithic Active Pixels
D. Dzahini, M. Dahoumamne, O. Rossetto, E. Lagorio, J. Bouvier, IN2P3-LPSC, France; M. Winter, IN2P3-IPHC, France; H. Ghazlane, CNESTEN, Morocco; D. Dallet, IXL, France

N14-89 MRI Compatible G-Link and PCI Based Data Acquisition Hardware for the RatCAP Scanner
Brookhaven National Laboratory, USA

N14-91 Multi-Channel Front-End Readout IC for Position Sensitive Solid-State Detectors
T. O. Tumer, V. Cajipe, M. Clajus, S. Hayakawa, A. Volkovskii
NOVA R&D, Inc., USA

N14-93 Upgrade of the RatCAP Front-End ASIC
J.-F. Pratte, J. Junnarkar, P. O’Connor, V. Radeka, P. Vaska, C. Woody, D. Schlyer, A. Kandasamy, S. Stoll, Brookhaven National Laboratory, USA; R. Lecomte, R. Fontaine, Université de Sherbrooke, Canada

N14-95 Two-Dimensional Integrated Circuits for Hybrid Solid-State Pixel Detectors
T. O. Tumer, V. Cajipe, M. Clajus, S. Hayakawa
NOVA R&D, Inc., USA

N14-97 Performance of Radiation Detectors with the Pulse-Reset Readout Based on PentaFET.
V. Polushkin, S. Sharp, P. Statham
Oxford Instruments Nano-Analysis, England

N14-99 The AMS-02 Transition Radiation Detector to Search for Dark Matter in Space
F. Bucci, University “La Sapienza”, Italy
On behalf of the AMS collaboration

N14-101 Balloon-Borne Sub-MeV Gamma-Ray Imager Using Electron Tracking Gaseous TPC and Scintillation Camera
H. Kubo\textsuperscript{1}, K. Hattori\textsuperscript{1}, S. Kabuki\textsuperscript{1}, S. Kurosawa\textsuperscript{1}, K. Miuchi\textsuperscript{1}, T. Nagayoshi\textsuperscript{1}, H. Nishimura\textsuperscript{1}, Y. Okada\textsuperscript{1}, R. Orito\textsuperscript{3}, H. Sekiya\textsuperscript{1}, A. Takada\textsuperscript{1}, T. Tanimori\textsuperscript{1}, K. Ueno\textsuperscript{1}
\textsuperscript{1}Kyoto University, Japan; \textsuperscript{2}Waseda University, Japan; \textsuperscript{3}Kobe University, Japan; \textsuperscript{4}University of Tokyo, Japan

N14-103 Response of Pentagonal PZT Elements as a Sensor of a $\pi$ Detector to Hypervelocity Particle Collisions
T. Miyachi, M. Fujii, N. Hasebe, G. Kuraza, M. Miyajima, K. Mori, O. Okudaira, N. Yamashita, Waseda University, Japan; T. Iwai, University of Tokyo, Japan; H. Matsumoto, Japan Aerospace Exploration Agency, Japan; K.-I. Nogami, Dokkyo University School of Medicine, Japan; H. Ohashi, Tokyo University of Marine Science and Technology, Japan; H. Shibata, Kyoto University, Japan; S. Minami, T. Onishi, S. Takachi, Osaka City University, Japan; E. Grün, R. Srama, Max-Plank-Institut für Kernphysik, Germany; N. Okada, Honda Electronics Co., Ltd., Japan

N14-105 A High Fidelity Scintillating Fiber Tracker for SONTRAC
J. S. Lepere, J. R. Macri, J. Levasseur, J. M. Ryan, University of New Hampshire, USA; R. S. Miller, University of Alabama in Huntsville, USA

N14-107 Basic Performance of PHENEX: Polarimeter for High ENERgy X-rays
Y. Kishimoto, S. Gunji, Y. Ishigaki, M. Kanno, H. Murayama, C. Ito, F. Tokanai, K. Suzuki, H. Sakurai, Yamagata University, Japan; T. Mihara, M. Kohama, M. Suzuki, A. Hayato, The Institute of Physical and Chemical Research (RIKEN), Japan; K. Hayashida, N. Anabuki, M. Morimoto, H. Tsunemi, Osaka University, Japan; Y. Saito, T. Yamagami, Institute of Space and Astronautical Science(ISAS), Japan; S. Kishimoto, High Energy Accelerator Research
High Energy and Nuclear Physics Instrumentation

N14-115 Performance of a 4-7GeV/c Kaon Identification System in KEK-PS E248
Y. Tajima1, H. Kawai1, H. Nakayama2, K. Takamatsu1, T. Tsuru1, H. Y. Yoshida1
1Yamagata University, Japan; 2Chiba University, Japan; 3High Energy Accelerator Research Organization (KEK), Japan

N14-117 The Silicon Tracker for the CBM Experiment at FAIR
C. Muenz1, J. W. Goethe-Universitaet Frankfurt am Main, Germany
On behalf of the CBM Collaboration

N14-119 The Design of the Cooling for the CMS Barrel Electromagnetic Calorimeter
O. Teller, CERN, Switzerland
On behalf of the CMS ECAL Collaboration

N14-121 Implementation of a Software Feedback for the CMS Monitoring Lasers
L. Zhang, D. Baillieux, A. Bornheim, K. Zhu, R.-Y. Zhu
California Institute of Technology, USA

N14-123 The Low-Threshold HPGe Detector for Dark Matter Search
J. Li1,2, Y. Li1, Q. Yue1, Z. Wang3
1Tsinghua University, China; 2Chinese Academy of Sciences, China; 3Academia Sinica, hina

N14-125 Results on the Position Sensitivity of Advanced Gamma Tracking Array (AGATA) Prototype Detectors and Generation of Simulated Basis Pulse Shapes

N14-127 Digital Pulse Shape Acquisition from BaF2: Preliminary Results
F. Amorini1, E. De Filippo1, P. Guazzoni2, E. Laguida1, G. Lanzano3, A. Pagano1, S. Pirrone2, F. Riccio1, S. Russo1, P. Rusotto1, M. Sassi1, L. Zetta1
1INFN and Laboratori Nazionali del Sud, Italy; 2Dipartimento di Fisica and INFN, Italy

N14-139 Z-Boson Resonance as a Calibration and Alignment Process for the ATLAS
N. C. Benekos, Max-Planck-Institut für Physik, Germany; L. Chevalier, J. F. Laporte, CEA-Saclay, France; M. Schott, Ludwig-Maximilian Universität, Germany

N14-141 Cosmic and Final ATLAS ID-SCT Tests
M. J. Costa, CERN, Switzerland
On behalf of the ATLAS-SCT collaboration

N14-143 Induced Current Signals in Planar pn Diodes for Light Charged Products Identification
A. Castoldi1,2, C. Guazzoni1,2
1Politecnico di Milano, Italy; 2INFN, Italy

N14-145 A General Study on Sampling Frequency Limits for Digital Spectrometer
X. Deng, Z. Deng, Y. Liu, Tsinghua University, China

N14-147 The Remotely-Controllable Voltage-Regulation Stations for the Distributed Power Supply System of the ATLAS Pixel Detector
M. Citterio, A. Andreazza, A. Andreani, S. Latorre, F. Sabatini, INFN - Milano, Italy; K. Einsweiler, Lawrence Berkeley National Laboratory (LBNL), USA; S. Kersten, T. Henss, J. Boek, J. Schultes, K. Lantzsch, P. Mattig, Bergische Universität Wuppertal, Germany
N14-149 The ALICE Dimuon Forward Spectrometer
E. Siddi, INFN, Italy
On behalf of the ALICE Collaboration

N14-151 Study of RICH Counter with Silica Aerogel Radiator
1Chiba University, Japan; 2IPNS, High Energy Accelerator Research Organization (KEK), Japan; 3Nagoya University, Japan; 4Jozef Stefan Institute, Slovenia; 5Tokyo Metropolitan University, Japan; 6Faculty of Chemistry and Chemical Engineering, Univ. of Maribor, Slovenia; 7Faculty of Mathematics and Physics, Univ. of Ljubljana, Slovenia; 8Toho University, Japan

N14-153 Performance of High Resistivity Magnetic Czochralski Silicon Diode as Charged Particle Detector
C. C. Bueno1,2, F. de Camargo1, J. A. C. Gonçalves1,2, E. Tuominen3, J. Harkonen3
1IPEN-CNEN/SP, Brasil; 2PUC/SP, Brasil; 3Helsinki Institute of Physics, Finland

N14-155 Investigation of FSBA-800 Type Quartz-Polymer Optical Fiber Characteristics in the 60Co Gamma Irradiation Field
I. Rustamov, M. Ashurov, M. Baydjanov, Scientific Industrial Association (SIA) Phonon, Uzbekistan; E. Gasanov, B. Yuldashev, Institute of Nuclear Physics, Uzbekistan

N14-157 An Evaluation of the Efficacy of a Tracking Array
L. Nelson, The University of Liverpool, United Kingdom
On behalf of the AGATA Collaboration

N14-159 Optical Transition Radiation Beam Profile Detector for Antiproton Production at FNAL
G. R. Tassotto, V. E. Scarpine, R. M. Thurman-Keup, FNAL, USA; A. H. Lumpkin, ANL, USA

N14-161 STAR Time of Flight Readout Electronics and DAQ
J. Schambach, J. Hoffmann, University of Texas at Austin, USA; G. Eppley, B. Llopt, T. Nussbaum, Rice University, USA; L. Bridges, J. Kennington,  Blue Sky Electronics, USA; C. Mesa, M6 Research, USA

N14-163 Design and Performance of the Alignment System for the CMS Muon Endcaps
M. Hohlmann1, G. Baksay1, M. Browngold1, J. Bellinger2, D. Carlsmithe2, M. Case2, K. Dehmel2, D. Early2, F. Feyzi2, S. Guragain2, R. Loveless2, D. Northacker2, O. Prokofiev2, V. Sknar3, V. Sytnik3
1Florida Institute of Technology, USA; 2University of Wisconsin, USA; 3University of California, USA; 4Fermi National Accelerator Lab, USA; 5Petersburg Nuclear Physics Institute, Russia

N14-165 Gas Compositions Studies for the ATLAS MDT Calibration Model
R. M. Avramidou1,2, Y. Sedykh3
1National Technical University of Athens, Hellas; 2University of Michigan, USA

N14-167 Pixel Multichip Module Development at Fermilab for the PHENIX Experiment
M. A. Turqueti1, J. Andresen1, M. L. Brooks1, S. Butsyk4, G. Cardoso1, D. Christian1, J. Kapustinsky3, G. J. Kundelb1, S. W. Kwan1, D. M. Lee2
1Fermi National Accelerator Laboratory, USA; 2Los Alamos National Laboratory, USA

N14-169 Isotopic Identification in Chimera Detector: Recent Results and Perspectives
A. Pagano, INFN Sezione di Catania, Italy
On behalf of the CHIMERA Collaboration

N14-171 Upgrade of the DØ Luminosity Monitor Readout System
J. Anderson1, L. Bridges2, B. Casey3, Y. Enari4, J. Green1, M. Johnson1, R. Kvarciany1, C. Miao1, R. Partridge1, H. D. Yoo1, J. Wang1
1Fermi National Accelerator Laboratory, United States; 2Blue Sky Electronics, United States; 3Brown University, United States

N14-173 A Modular NIM Electronics for Pulse Shape Method with Large Area Planar Silicon Detectors of CHIMERA
R. Bassini1, C. Boiano1, A. Pagano2, A. Pullia1
1INFN-milano, Italy; 2INFN-catania, Italy

N14-175 A Programmable Trigger Emulator Based on True Random Bits
G. Sidiropoulos, N. Manthos, University of Ioannina, Greece; P. Vichoudis, European Organization for Nuclear Research, Switzerland

N14-177 Nonlinearity in Semiconductor Detectors
M. W. Cooper, B. J. Hyronimus, J. L. Orrell, M. W. Shaver, C. E. Seifert
Pacific Northwest National Laboratory, US

N14-179 Pion Decay-Mode Tagging in a Plastic Scintillator Using COPPER 500MHz FADC
K. Yamada1, M. Yoshida1, Y. Igarashi2, A. Muroi1, K. Tauchi2, M. Tanaka2, M. Aoki2, M. Ikeno2, Y. Takubo3
1Osaka University, Japan; 2KEK, Japan

N14-181 The CMS Beam Condition Monitoring System
R. S. Wallny, UCLA Dept. of Physics and Astronomy, USA
On behalf of the CMS BCM Collaboration

Nuclear Measurements and Monitoring Techniques

N14-183 Irradiation Effect on the Microstructure Change of Nano-Filamentary Copper-Silver Composites
Y. Choi, Sunmoon University, Korea; K. N. Choo, D. S. Kim, Y. H. Kang, Korea Atomic Energy Research Institute, Korea

N14-185 Automated Spectrometer for Radionuclide Analysis of Liquid and Gaseous Flows
A. Sokolow, V. Kuzmenko, A. Pchelintsev
Baltic Scientific Instruments, Latvia

N14-187 Mobile-Dose: a Compact and Flexible Dose-Meter Suitable for Gamma Source Classification and Nuclear Medicine Dose Calibration
R. de Asmundis1, A. Boiano1, A. Ramaglia2,3
1INFN Naples, Italy; 2University of Napoli, Italy; 3INFN Naples, Italy

N14-189 Safeguards and Non-Proliferation Issues as Related to Advanced Fuel Cycle and Advanced Fast Reactor Development with Processing of Reactor Fuel
R. Aryaiejad1, J. D. Cole, M. W. Drigert
Idaho National Laboratory, US
N14-193 Fissile Mass Flow Monitor Source-Strength Calibration Using the ORNL Neutron Detector System
T. Uckan, J. March-Leuba, D. Powell
Oak Ridge National Laboratory, USA

N14-195 Nuclear Microcalorimeter Spectrometers

N14-197 1 and 10 Gigabit Ethernet Readout Interfaces for DETNI
B. A. Mindur
1Hahn-Meitner-Institut Berlin GmbH, Germany; 2AGH University of Science and Technology, Poland

N14-199 Effect of Temperature on Counting Information in a Uranium Enrichment Monitor Based on a NaI(Tl) Spectrometer and Transmission Source
Los Alamos National Laboratory, USA

N14-201 Positron Lifetime Instrumentation Developed for the Australian National University Positron Beam
T. J. Paulus1, A. J. Hill2, S. S. Paulus1, S. Pas3, N. Ciccosillo3, Y. Shekibi2
1Paulus Engineering Company, USA; 2CSIRO, Australia

N14-203 A Neutron Spectrometer with High Spatial Resolution for the Characterization of Mixed Fast Neutron Fields
A. Fazzi, S. Agosteo, A. Foglio Para, A. Pola, V. Varoli
Politecnico di Milano, Italy

N14-205 HPGe-Base Two-Dimensional Doppler Broadening Instrumentation Developed for the Australian National University Positron Beam
T. J. Paulus1, A. J. Hill2, S. S. Paulus1, S. Pas3, N. Ciccosillo3, Y. Shekibi2
1Paulus Engineering Company, USA; 2CSIRO, Australia

N14-207 A Way to Deal with Saturation of CVD Diamond Neutron Detectors at the National Ignition Facility
S. L. Dauffle, J. A. Koch, N. Izumi, R. Tommasini
Lawrence Livermore National Laboratory, USA

N14-209 Radiation Fields in the Vicinity of Compact Accelerator Neutron Generators
D. L. Chichester, B. W. Blackburn, A. J. Caffrey
Idaho National Laboratory, USA

N14-211 Using RPC Detectors as a Cosmic Rays Monitor in the Naples Area
R. de Asmundis, INFN Naples, Italy; P. Avella, F. Toglia, University of Napoli “Federico II”, Italy

N14-213 A Special Capsule with Multi-Channels for Irradiation Creep Test in HANARO
Y. Choi1, B. G. Kim2, M. S. Cho3, Y. H. Kang1
1Sunmoon University, Korea; 2Korea Atomic Energy Research Institute, Korea; 3Korea Atomic Energy Research Institute, Korea

N14-215 Radiation Hardness of CCD Vertex Detectors
A. Sopczak, C. Bowdery, G. Davies, M. Koziel
Lancaster University, UK

N14-217 Investigation of the Thermo-Annealing of Gamma-Induced Transmission Losses in the FVP-400 Type Quartz-Quartz Optical Fiber
L. Rustamov, M. Ashurov, M. Baydjanov, Scientific Industrial Association (SIA) Phonol, Uzbekistan; E. Gasanov, B. Yuldashev, Institute of Nuclear Physics (INP), Uzbekistan

N14-219 Radiation Damage in Lead Tungstate Crystal Phosphor
A. Rakov, S. Ismoilov
Institute of Nuclear Physics Uzb AS, Uzbekistan

N14-221 Effects of Gamma Irradiation on Silicon Carbide Semiconductor Radiation Detectors
E. H. Ruddy, J. G. Seidel
Westinghouse Electric Company, USA

N14-223 Target Theory Applied in the Radiation Damage Analysis for Organic Detectors
C. H. de Mesquita1,2, J. M. Fernades Neto1, M. M. Hamada1
1IPEN/CNEN-SP, Brazil; 2Sao Paulo University, Brazil

Computing and Software for Experiments

N14-225 Computations of Ballistic Deficits in Pulse Shaping Amplifiers for the Pulses from Cylindrical Ionization Chambers
A. K. Gourishetty
Indian Institute of Technology, Kharagpur, India

N14-227 Deterministic Transport Methods for the Simulation of Gamma-Ray Spectroscopy Scenarios
L. E. Smith, J. E. Ellis, C. J. Gesh, R. J. McConn, G. H. Meriwether, E. A. Miller, R. T. Pagh, A. B. Valsan, Pacific Northwest National Laboratory, USA; T. Wareing, Transpire, Inc., USA

N14-229 Gene Expression Programming and Artificial Neural Network Approaches for Event Selection in High Energy Physics
L. Teodorescu, Brunel University, UK

N14-231 Gene Expression Programming Software Application for High Energy Physics Data Analysis
L. Teodorescu, Brunel University, UK

N14-233 Development and Performance of Grid Accounting for LHC
A. Khan, X. Chen, Brunel University, UK

N14-235 Designing SWORD--Software for Optimization of Radiation Detectors
E. I. Novikova1, M. S. Strickman1, C. Fitzgerald2, E. A. Wulf2, B. F. Philips2
1Naval Research Laboratory, USA; 2Loyola College in Maryland, USA

N14-237 Identification and Reconstruction of Muons in the ATLAS Detector
E. C. Lancon, CEA-Saclay, France
On behalf of the ATLAS Collaboration
N14-239 Distributed Analysis in ARDA/CMS
A. Khan, C. Munro, Brunel University, UK

N14-241 Muon Identification in ATLAS from the Inside Out
S. Tarem, N. Panikashvili, Technion, Israel Institute of Technology, Israel; Z. Tarem, CERN, Switzerland

N14-243 Conditions Database and Calibration Software Framework for ATLAS Monitored Drift Tube Chambers
M. Verducci, CERN, Switzerland
On behalf of the ATLAS Muon Collaboration

N14-245 The CMS Simulation Software
J.V. Tarba, Fermilab, USA
On behalf of the CMS Collaboration

N14-247 Visual Risk Assessment of Space Radiation Exposure for Future Space Exploration Missions
H. F. Hussein, University of Houston/NASA Johnson Space Center, USA; M.-H. Y. Kim, Wyle Laboratories/NASA Johnson Space Center, USA; F. A. Cucinotta, NASA Johnson Space Center, USA

N14-249 A Dual-Grid Implementation of SPM Analysis for Early Diagnosis of Alzheimer’s Disease
S. Bagnasco, Istituto Nazionale di Fisica Nucleare, Italy
On behalf of the MAGIC-5 Collaboration

N14-251 Implementation of a Generic Surface Sampler Using Geant4
J. A. Detwiler, University of Washington, USA
On behalf of the Majorana Collaboration

N14-253 A Framework of Defect Recognition for Industrial Computed Tomography
Z. Qi, L. Zhang, Y. Xing, Tsinghua University, P.R.China

N14-255 An Edge Services Framework (ESF) for EGEE, LCG, and OSG
A. S. Rana, F. Würthwein, University of California at San Diego, USA; K. Keahey, T. Freeman, A. Vaniachine, Argonne National Laboratory, USA

N14-257 gPLAZMA ‘grid-aware PLuggable AuthoriZation MAgnagement System’: Introducing RBAC (Role Based Access Control) Security in dCache-SRM
A. S. Rana, F. Würthwein, University of California at San Diego, USA; T. Perelmutov, R. Kennedy, J. Bakken, I. Fisk, Fermi National Accelerator Laboratory, USA; P. Fuhrmann, M. Ernst, Deutsches Elektronen Synchrotron (DESY), Germany; D. Skow, Argonne National Laboratory, USA; M. Lorch, IBM, Germany

N14-259 “MaGe”, a Simulation Framework for Germanium-Based Neutrinoless Double-Beta Decay Experiments
R. Henning1, S. Belogurov2, Y.-D. Chan1, A. Denisov3, J. Detwiler4, M. Dr Marco5, B. Fujikawa1, V. Gehman16, K. Hudek1, R. Johnson1, D. Jordan1, K. Kuzkaz1, A. Klimentko5, M. Knapp5, K. Kroening1, K. Lesko1, X. Liu1, M. Marino1, A. Mokhtaran1, L. Pandola10, D. Radford11, C. Tomei10, C. Tull11
1Lawrence Berkeley National Laboratory, USA; 2Institute for Theoretical and Experimental Physics, Russia; 3Joint Institute for Nuclear Research, Russia; 4University of Washington, USA; 5Queen’s University, Canada; 6Los Alamos National Laboratory, USA; 7Pacific Northwest National Laboratory, USA; 8University of Tübingen, Germany; 9Max-Planck-Institut für Physik, Germany; 10IFN Laboratori Nazionali del Gran Sasso, Italy; 11Oakridge National Laboratory, USA

N14-261 The ATLAS Job Options Inspector
S. Binet, P. Calafiura, W. Lavri Jensen, Lawrence Berkeley National Laboratory, United States; M. Gheysen, N. Richoz, F. Bapst, O. Johnsen, University of Applied Sciences of Western Switzerland, Switzerland

N14-263 Measurement of Muon Energy Loss in ATLAS
K. Nikolopoulos, D. Fassouliotis, C. Kourkoumelis, University of Athens, Greece; A. Poppleton, CERN, Switzerland

N14-265 Efficient Job Handling in the GRID
J. Moscicki, CERN, Switzerland

N14-267 Microdosemetry for Microbeam Radiation Therapy (MRT): Theoretical Calculations Using the Monte Carlo Toolkit Geant4
J. Spiga1,2,3 E. A. Siegbahn1, E. Bräuer-Krisch1, P. Randaccio1,2,3, A. Bravin1
1European Radiation Synchrotron Facility, France; 2University of Cagliari, Italy; 3Istituto Nazionale di Fisica Nucleare, Italy

N14-269 An Original Model for the Simulation of Low Energy Antiprotons
S. Chauvie1,2, INFN, Italy; S. Croce e Carle Hospital, Italy
On behalf of the Geant4 Low Energy Electromagnetic Group

N14-271 A Platform for Monte Carlo Simulation of Cancer Therapy with Photon and Light Ions Beams Based on the Geant4 Toolkit
L. Guigues1, D. Sarrut1,2, A. Vacavant1, N. Dufour1, M.-C. Ricol1, E. Testa1, M. Boutemeur2, N. Freud3, J.-M. Létang4
1CREATIS, UMRR CNRS 5515, France; 2Centre Leon Bérard, France; 3Institut de Physique Nucléaire de Lyon, France; 4Institut National des Sciences Appliquées, France

N14-273 The Development of a Set of Images to Test Analysis and Visualization Software in Commercial Nuclear Medicine Software
S. Chauvie1,2, G. Perno1, A. Boriano4, A. Biggi1
1INFN Torino, Italy; 2S. Croce e Carle Hospital, Italy

N14-275 P326 Photon Vetoes Simulation
E. Leonardi, INFN - Sezione di Roma 1, Italy

N14-277 Monte-Carlo Simulation of a Biochip Irradiation with the Geant4 Toolkit
A. Le Postollec, M. Dobrijevic, Laboratoire d’astrophysique, d’astrophysique et d’aéronomie de bordeaux, France; S. Incerti, P. Moretto, H. Seznec, Centre d’études nucléaires de bordeauxgradignan, France

N14-279 The New ROOT Mathematical Software Libraries
M. Lorenzo, CERN, Switzerland

N14-281 The LCG SPI Project in LCG Phase II
A. Pfeiffer, CERN, Switzerland
On behalf of the SPI team

N14-283 Glandular Dose in Mammography: a Comparison Between a BR12 Model and a Realistic Breast Voxel Model
G. Hoff, Pontifical Catholic University in Rio Grande do Sul, Brazil; C. E. da Almeida, G. Drexlner, State University of Rio de Janeiro - UERJ, Brazil

N14-285 Evaluation of Different Ways to Describe an X-Ray Spectrum and the Implications in the Absorbed Energy in a Head Voxel Model
G. Hoff, V. Cassola
Pontifical Catholic University in Rio Grande do Sul, Brazil
** NM1 NSS MIC Joint Session 1**

Tuesday, Oct. 31 13:30-15:00, Golden Ballroom

Session Chairs: Neal Clithorne, University of Michigan
Stephen Derenzo, LBNL

NM1-1 Direct Detection of Beta Particles on a Microfluidic Chip Using Position Sensitive APDs
N. T. Vu¹, Y. H. Chung¹, Z. T. F. Yu¹, R. W. Silverman¹, T. Aschereau¹, R. K. L. S. Shah¹, H. R. Tseng¹, A. F. Chatziioannou¹
¹ UCLA, U.S.A.; ²Radiation Monitoring Devices, U.S.A.

NM1-2 A Low-Cost Approach to High-Resolution, Single-Photon Imaging Using Columnar Scintillators and Image Intensifiers
B. W. Miller, H. B. Barber, H. H. Barrett, L. Y. Chen
University of Arizona Health Sciences Center, USA

NM1-3 Neutron Spectroscopy of Mouse Using Neutron Stimulated Emission Computed Tomography (NSECT)
Duke University, USA

NM1-4 Design and Development of a High Performance Micro-CT System for Small-Animal Imaging
E. Lage, J. J. Vaquero, S. Redondo, M. Abella, G. Tapias, M. Mescon
Hospital G. U. Gregorio Marañón, Spain

NM1-5 Assessment of a New CT System for Small Animals
S. Redondo, J. J. Vaquero, E. Lage, M. Abella, G. Tapias, M. Mescon
Hospital G. U. Gregorio Marañón, Spain

NM1-6 The Medipix3 Prototype, a Pixel Readout Chip Working in Single Photon Counting Mode with Improved Spectrometric Performance
R. Ballabriga, M. Campbell, E. H. M. Heijne, X. Llopard, L. Tlustos
CERN, Switzerland

** N15 HEP & NP Instrumentation II: Pixel Detectors**

Tuesday, Oct. 31 13:30-15:00, Pacific Salon 1

Session Chairs: Andre Sopczak, Lancaster University
Jan Jakubek, Czech Technical University in Prague

N15-1 Column Parallel CCDs and In-situ Storage Image Sensors for the Vertex Detector of the International Linear Collider
T. J. Greenshaw, Oliver Lodge Laboratory, England

On behalf of the LCFI Collaboration

N15-2 Forward Pixel-Based Vertex Detector for PHENIX
S. A. Butsyk, Los Alamos National Laboratory, USA

On behalf of the PHENIX Collaboration

N15-3 Status of the ATLAS Pixel Detector
M. Gilchriese, Lawrence Berkeley National Laboratory, USA

On behalf of the ATLAS Pixel Collaboration

N15-4 A Pixel Telescope for Detector R&D for a Future Linear Collider
I.-M. Gregor, DESY, Germany

On behalf of the EUDET Collaboration

N15-5 Integration Studies for the ATLAS Pixel Detector
K. Reeves, University of Wuppertal, Germany

N15-6 The Silicon Pixel Plane for the PHENIX Forward Vertex Tracker
G. Cardoso, Fermi National Accelerator Laboratory, IL

On behalf of the Fermilab/Los Alamos PHENIX collaboration

** N16 Gas Detectors II**

Tuesday, Oct. 31 13:30-14:45, Pacific Salon 3

Session Chair: Marc Capeans, CERN

N16-1 50 µm Pitch Multi-Grid-Type Nano-Strip Gas Counter as a New Generation Gaseous Counter
H. Nito, H. Takahashi, K. Fujita, P. Siritipprusamee, S. Paes, The University of Tokyo, JAPAN; H. Toyokawa, Japan Synchrotron Radiation Research Institute, JAPAN; S. Kishimoto, T. Ino, H. M. Shimizu, High Energy Accelerator Research Organization, JAPAN; M. Furusaka, Hokkaido University, JAPAN

N16-2 Micro-Pocket Fission Detector (MPFD) Performance Characteristics
M. F. Ohmes, A. S. M. S. Ahmed, R. E. Ortiz, J. K. Shultis, D. S. McGregor
Kansas State University, United States

N16-3 Development of Tracking Detectors with Industrially Produced GEM Foils
F. Simon¹, B. Azmoun², L. Burns³, K. Kearney³, G. Keeler⁴, R. Maika¹, F. Sauli⁵, N. Smirnov⁴, B. Burrow¹, C. Woody⁴, D. Crary⁴
¹Massachusetts Institute of Technology, USA; ²Brookhaven National Laboratory, USA; ³Tech Etch, USA; ⁴Yale University, USA; ⁵INFN Trieste, Italy; ⁶CERN, Switzerland

N16-4 Study of a Charge Distribution on a Readout Board with a Triple GEM Chamber
S. Uno, T. Uchida, M. Sekimoto, T. Murakami, M. Tanaka, S. Tanaka, N. Ujiie, K. Nakayoshi, High Energy Accelerator Research Organization(KEK), Japan; K. Kadomatsu, A. Sugiyama, Saga University, Japan; E. Nakano, S. Nakagawa, Osaka City University, Japan

N16-5 Experimental Measurement of Drift Velocities of Ar+ Ions in Atmospheric Pressure Argon
P. N. B. Neves¹, C. A. N. Conde¹, L. M. N. Tavora¹²
¹Universidade de Coimbra, Portugal; ²ESTG, Instituto Politecnico de Leiria, Portugal

** N17 Analog and Digital Circuits II**

Tuesday, Oct. 31 13:30-15:00, California Room

Session Chair: Gian Franco Dalla Betta, University of Trento

N17-1 Optimum Segmentation and Thickness of Silicon Pixel Detectors for Signal-to-Noise Ratio and Timing Resolution
G. M. Anelli, CERN, Switzerland; G. De Geronimo, P. O’Connor, BNL, USA; C. Pietmonte, ITC-irst, Italy

N17-2 A Mixed-Signal High Functionality CMOS Front-End for X-Ray Detectors
S. Caccia, G. Bertuccio, D. Maiocchi, Politecnico di Milano, Italy; P. Malcovati, University di Pavia, Italy; D. Martin, European Space Agency, ESTEC, The Netherlands; N. Ratti, Alcatel Alenia Space - Italia, Italy
N17-3 Design and Performance of Analog Circuits for DNW-MAPS in 100-nm-scale CMOS Technology
L. Ratti1,2, M. Manghisoni1,2, V. Re1,2, V. Speziali1,2, G. Traversi1,2
1University of Parma, Italy; 2INFN, Italy; 3University of Bergamo, Italy

N17-4 VELA: the CMOS Circuit Based on Fast Current Read-Out for X-Ray Spectroscopy with DePMOS Pixels
L. Bombelli1,2, C. Fiorini1,2, M. Porro3, A. Longoni1,2, S. Herrmann3, W. Butler4
1Politecnico di Milano, Italy; 2INFN, Italy; 3Max-Planck-Institut Halbleiterlabor, Germany; 4Ingenieurbuero Werner Butler, Germany

N17-5 DEDIX - Development of Fully Integrated Multichannel ASIC for High Count Rate Digital X-Ray Imaging Systems
P. Grybos1, M. Idzik1, K. Swientek1, P. Maj2, L. Ramello3, T. Stobiecki2
1AGH University of Science and Technology, Faculty of Physics and Applied Computer Science, Poland; 2AGH University of Science and Technology, Faculty of Electrical Engineering, Electronics, Control Systems and Computer Science and Electronics, Poland; 3DISTA, Universita del Piemonte Orientale and INFN, Italy

N17-6 ASIC with Multiple Energy Discrimination for High Rate Photon Counting Applications
G. De Geronimo1, A. Dragone2, J. Grosholz3, P. O’Connor4, E. Vernon5
1Brookhaven National Laboratory, USA; 2eV PRODUCTS, USA

N18 HEP & NP Instrumentation III: Silicon and Diamond Detectors
Tuesday, Oct. 31 15:30-17:00, Pacific Salon 1
Session Chair: Christoph Ilgner, CERN & University of Dortmund

N18-1 The CDF Run II Silicon Detector
A. Mitra, Academia Sinica, Taiwan
On behalf of the CDF Run II Silicon Operations Group

N18-2 A Beam Condition Monitoring System for the CDF Experiment
R. S. Wallny, UCLA, USA
On behalf of the CDF Collaboration

N18-3 Design and Performance of the Layer 0 Detector for D0
R. L. Lipton, Fermilab, USA
On behalf of the DØ Layer 0 Collaboration

N18-4 Performance Study of the Silicon Strip Detector
H. Hyun1, S. H. Do1, S. W. Jung1, D. H. Kah1, H. D. Kang1, D. S. Kim1, H. J. Kim1, Y. I. Kim1, H. Park1, S. S. Ryu1
1Kyungpook National University, South Korea; 2Pukyong National University, South Korea; 3Daeje University, South Korea

N18-5 Bandwidth of Micro-Twisted Cables and Spliced SIMM/GRIN Fibers and Radiation Hardness of PIN/VCSEL Arrays
K. K. Gan, The Ohio State University, USA

N18-6 Polycrystalline CVD Diamonds for the Beam Calorimeter of the ILC

N19 Synchrotron Radiation Instrumentation
Tuesday, Oct. 31 15:30-17:00, Pacific Salon 2
Session Chair: Paul O’Connor, BNL
**N19-1 (invited) High Speed Semiconductor Detectors for Synchrotron Experiments at LCLS and XFEL**
L. W. J. Strieder, MPI für extraterrestrische Physik, Germany
On behalf of the European Consortium for High Speed Imaging

**N19-2 A High-Speed Detector System for X-Ray Fluorescence Microprobes**
1BNL, USA; 2CSIRO, Australia; 3Politecnico Di Bari, Italy

**N19-3 Lens-Based CCD Detector for X-Ray Crystallography**
T. J. Madden, A. McArthur, Argonne Laboratory, USA; M. Molitsky, Structural Biology Center, USA; I. Naday, Avix Electronics, USA; E. Westbrook, Lawrence Berkeley Laboratory, USA

**N19-4 The PILATUS 6M Detector for Macromolecular Crystallography and Other Applications**
C. Broennimann, Paul Scherrer Institut, Switzerland
On behalf of the SLS Detector Group

**N19-5 High Resolution Photon Counting Detection System for Advanced Inelastic X-Ray Scattering Studies**

**N19-6 EMCCD-Based Detector for Time-Resolved X-Ray Diffraction and Scattering Studies of Biological Specimens**
V. V. Nagarkar, B. Singh, RMD Inc., USA; L. Guo, D. Gore, T. Irving, Illinois Institute of Technology, USA

---

**N20 Data Acquisition and Analysis Systems II**
Tuesday, Oct. 31 15:30-17:15, Pacific Salon 3
Session Chair: Nicholas Mascarenhas, Sandia National Laboratories

**N20-1 The Realization of Distributed Information Management System in DAQ Testbed**
M. Ye, K. Zhu, Y. Chu
Institute of High Energy Physics, Academia Sinica, China

**N20-2 Bus-Invert Coding for Low Noise 2eSST Block Transfers on VME64x**
A. Aloisio1, P. Branchini2, F. Cevenini2, V. Izzo3, S. Loffredo2, R. Giordano1
1University of Naples ‘Federico II’ and INFN, Italy; 2INFN, Sezione di Roma 1, Roma, Italy

**N20-3 Offline Pulse Shape Discrimination Algorithms for Neutron Spectrum Unfolding**
M. Flaska, S. A. Pozzi, Oak Ridge National Lab, USA

**N20-4 A DWDM Link for Real-Time Data Acquisition Systems**
A. Aloisio1, F. Ameli2, F. Cevenini1, E. Giacomozzi2, V. Izzo1
1University of Naples ‘Federico II’ and INFN, Italy; 2INFN, Sezione di Roma 1, Italy

**N20-5 Control and Operation of the LHCB Readout Boards Using Embedded Microcontrollers and the PVSS II SCADA System**
S. Koestner, CERN, Switzerland

**N20-6 Using High Level Software Packages for Controlling a Network Based Detector System**
C. C. W. Robson, A. Bousselham, S. Silverstein, C. Bohm
Stockholms Universitet, Sweden

**N21 Astrophysics and Space Instrumentation I**
Tuesday, Oct. 31 15:30-17:30, California Room
Session Chair: Steven Boggs, University of California Berkeley Space Sciences Laboratory

**N21-1 Position Calibrations and Angular Resolution of the Prototype Nuclear Compton Telescope**
M. E. Bandstra1, J. D. Bowen1, A. C. Zoglauer1, S. E. Boggs2, W. Coburn1, C. B. Wunderer1, M. Amman3, P. N. Luke1
1Space Sciences Laboratory, University of California, USA; 2Department of Physics, University of California, USA; 3Lawrence Berkeley National Laboratory, USA

**N21-2 Astrophysics with 3-DTI Gamma-Ray Telescopes**
S. D. Hunter1, P. F. Bloser2, G. A. de Nolfo1, J. F. Krizmanic1, M. L. McConnell1, J. M. Ryan2, S. Son1
1NASA/GSFC, USA; 2University of New Hampshire, USA

**N21-3 The PAMELA Space Experiment**
M. Boezio, Istituto Nazionale di Fisica Nucleare Sezione di Trieste, Italy
On behalf of the PAMELA Collaboration

**N21-4 The Low-Energy Limits to Background Discrimination in Two-Phase Liquid-Xenon Dark Matter Detectors**
J. Kwong1, T. Shutt2, C. E. Dahl1, A. Bolozdynya3, P. Brusov2
1Princeton University, USA; 2Case Western Reserve University, USA

**N21-5 Noble Liquid Scintillation Detectors for Low-Energy Particle Astrophysics**
L. C. Stonehill, Los Alamos National Laboratory, USA
On behalf of the DEAP Collaboration

**N21-6 TIGRE Prototype Gamma-Ray Telescope**
A. D. Zych, T. J. O’Neill, D. Bhattacharya, M. Polsen, V. Kong, C. Trojanowski
University of California, Riverside, U.S.

**N21-7 A Track Imaging Cerenkov Experiment (TICE)**
K. Byrum1, G. Drake1, E. Hays1, D. Kieda2, E. Kovacs4, S. Magill1, L. Nodulman1, R. Northrup3, S. Swordy3, R. Talaga1, R. G. Wagner1, S. P. Wakely1, S. A. Wiss1
1Argonne National Laboratory, USA; 2University of Utah, USA; 3University of Chicago, USA

**N21-8 In Orbit Timing Calibration of the Suzaku Hard X-Ray Detector**
Y. Terada1, T. Enoto2, R. Miyawaki2, Y. Fukazawa3, M. Kawaharada3, T. Kamae1, M. Kokubun3, K. Makishima1,2, T. Mizuno1, T. Murakami1, K. Nakazawa4, M. Nomachi3, T. Takahashi3, H. Takahashi3, M. S. Tashiro4, T. Tamagawa1, S. Watanabe5, K. Yamaoka4, T. Kamae1, Y. Fukazawa3, M. Kawaharada3, T. Kamae1, M. Kokubun3, K. Makishima1,2, T. Mizuno1
1RIKEN, Japan; 2University of Tokyo, Japan; 3Hiroshima University, Japan; 4Stanford University, USA; 5Kanazawa University, Japan; 6Japan Aerospace Exploration Agency, Japan; 7Osaka University, Japan; 8Saitama University, Japan; 9Aoyama Gakuin University, Japan

---
**N22 Software for Radiobiology and Hadrontherapy**

Wednesday, Nov. 1 08:30-10:00, Pacific Salon 1
Session Chair: Paul Gueye, Hampton University

**N22-1 (invited) An Example of Technology Transfer from High Energy Physics to Medicine, Simulation in Radiotherapy**
T. Sasaki, KEK, Japan

**N22-2 Validation of Geant4 Electromagnetic and Hadronic Models Against Proton Data**
P. G. A. Cirrone, G. Cuttone, F. Di Rosa, S. Guatelli, B. Mascialino, G. Russo, Istituto Nazionale di Fisica Nucleare, Italy

**N22-3 Simulation of Heavy Ion Therapy System Using Geant4**
S. Kameoka, T. Sasaki, K. Murakami, K. Amako, High Energy Accelerator Research Organization (KEK), Japan; T. Aso, Toyama National College of Maritime Technology, Japan; A. Kimura, Ashikaga Institute of Technology, Japan; M. Komori, N. Kanematsu, T. Kanai, Y. Takeda, S. Yonai, National Institute of Radiological Sciences (NIRS), Japan; Y. Kusanu, T. Nakajima, O. Takahashi, Accelerator Engineering Corporation (AEC), Japan; M. Tashiro, Gunma University, Japan; Y. Ihara, H. Koikegami, Ishikawa-harima Heavy Industries (IHI), Japan

**N22-4 A Visualization Tool for Geant4-Based Medical Physics Applications**
A. Kimura, Ashikaga Institute of Technology, Japan; S. Tanaka, Ritsumeikan University, Japan; A. Saito, Japan Science and Technology Agency, Japan; T. Sasaki, High Energy Accelerator Research Organization, Japan

**N22-5 Monte Carlo Simulation of Electromagnetic Interactions of Radiation with Liquid Water in the Framework of the Geant4-DNA Project**
Z. Francis1, S. Chauvie2, S. Incerti3, B. Mascialino4, G. Montarou4, P. Moretto5, P. Nieminen6, M. G. Pia7
1 Laboratoire de Physique Corpusculaire - CRNS/IN2P3, France; 2 Azienda Ospedaliera Santa Croce e Carle Cuneo and INFN, Italy; 3 INFN, Italy; 4 European Space Agency, The Netherlands

**N22-6 Models of Biological Effects of Radiation in the Geant4 Toolkit**
S. Chauvie1, Z. Francis2, S. Incerti3, B. Mascialino4, G. Montarou4, P. Moretto5, P. Nieminen6, M. G. Pia7
1 Azienda Ospedaliera Santa Croce e Carle Cuneo and INFN Sezione di Torino, Italy; 2 Laboratoire de Physique Corpusculaire, CNRS/IN2P3, Université Blaise Pascal, France; 3 Centre d’Etudes Nucléaires de Bordeaux Gradignan, CNRS/IN2P3, Université Bordeaux 1, France; 4 INFN Sezione di Genova, Italy; 5 European Space Agency, The Netherlands

**N23 HEP & NP Instrumentation IV: New Detection Techniques**

Wednesday, Nov. 1 08:30-10:00, Pacific Salon 2
Session Chairs: Anatoly Rosenfeld, Centre for Medical Radiation Physics, University of Wollongong
Michael Lerch, Centre for Medical Radiation Physics, University of Wollongong

**N23-1 Pulsed Neutron Dose Monitoring - a New Approach**
A. Klett, Berthold Technologies, Germany; A. Leuschner, DESY, Germany

**N23-2 Multi-Anode Readout Chip for MaPMTs**
P. Barrillon, S. Blin, T. Caceres, C. de La Taille, P. Puzo, N. Seguin-Moreau
Laboratoire de l’accelerateur lineaire, France

**N23-3 Hybrid Photon Detectors for the LHCb RICH Counters**
A. N. Pickford, University of Glasgow, UK
On behalf of the LHCb Collaboration

**N23-4 MCP-PMT Anode Development for Picosecond-Resolution Time-of-Flight Detectors**
T. Credo, H. Frisch, H. Sanders, F. Tang, Enrico Fermi Institute, University of Chicago, USA; K. Byrum, G. Drake, Argonne National Laboratory, USA

**N23-5 Avalanche Photodetector Readout for the NOvA Detector**
R. W. Rusack, The University of Minnesota, USA
On behalf of the NOvA collaboration

**N23-6 Study on Nuclear Fragmentation by High Speed Emulsion Read-Out System**
T. Toshito, High Energy Accelerator Research Organization (KEK), Japan
On behalf of the HIMAC-P152 Collaboration

**N24 Gas Detectors III**

Wednesday, Nov. 1 08:30-09:45, Pacific Salon 3
Session Chair: Jaroslav Va’vra, SLAC

**N24-1 BESIII Muon Identification System**
J. Zhang
Institute of High Energy Physics, Chinese Academy Sciences, China

**N24-2 R&D on Developing a Bakelite RPC Without Linseed Oil Coating**
C. Lu, Princeton University, USA; J. Zhang, Institute of High Energy Physics, China; M. Su, Gaonenkedi Co., China

**N24-3 The RPC System for CMS Experiment**
G. Pugliese, University & INFN of Bari, Italy
On behalf of the CMS Collaboration

**N24-4 Cosmic Ray Certification of the ATLAS Muon Barrel Chambers**
A. Di Girolamo, INFN Roma1, Italia; P. Iengo, M. Della Pietra, INFN Napoli, Italia; S. Zimmermann, CERN, Svizzera

**N24-5 Development of a He-3 MicroStrip Tube for Neutron Scattering Experiment**
K. Fujita, H. Takahashi, S. Prasit, H. Niko, Graduate school of Engineering, The University of Tokyo, Japan; T. Ino, H. M. Shimizu, S. Kishimoto, High Energy Accelerator Research Organization, Japan; M. Furusaka, Graduate School of Engineering, Hokkaido University, Japan; H. Toyokawa, Japan Synchrotron Radiation Research Institute, Japan; M. Kanazawa, Futaba Corporation, Japan

**N25 Analog and Digital Circuits III**

Wednesday, Nov. 1 08:30-09:45, California Room
Session Chair: Giovanni Anelli, CERN

**N25-1 ASIC for Small Angle Neutron Scattering Experiments at the SNS**
G. De Geronimo, J. Fried, G. C. Smith, B. Yu, E. Vernon,
N25-2 IDeF-X V.1.1: Performances of a CMOS 16 Channels Analog Readout ASIC for Cd(Zn)Te Detectors
F. Luppi, P. Baron, O. Gevin, O. Limousin, B. Dirks, E. Delagnes
Commissariat a l’Energie Atomique, FRANCE

N25-3 CASIS: a Very High Dynamic Range Front-End Electronics with Integrated Cyclic ADC for Calorimetry Applications
G. Zampa, V. Bonvicini, G. Orzan, N. Zampa
INFN Sezione di Trieste, Italy

N25-4 The SIDDHARTA Chip: a CMOS Multi-Channel Circuit for Silicon Drift Detectors Readout in Exotic Atoms Research
L. Bombelli1,2, C. Fiorini1,2, T. Frizzi1,2, A. Longoni1,2
1Politecnico di Milano, Italy; 2INFN, Italy

N25-5 ACD, a New, Very Low-Power, Compact Analogue-to-Digital Conversion Technique for Particle Tracking Detectors
F. Anghinolfi, CERN, Switzerland

N26 Data Analysis and Grid

Wednesday, Nov. 1 10:30-12:15, Pacific Salon 1
Session Chair: Juergen Knobloch, CERN

N26-1 (invited) Distributed Data Analysis in the LHC Era
M. Lamanna, CERN, Switzerland

N26-2 Distributed Data Mining and Analysis for Data-Intensive Science Applications
T. M. Kechadi, University College Dublin, Ireland

N26-3 Emon - Peer-to-Peer Data Distribution in High Energy Physics
I. Scholtes, University of Trier, Germany; S. Kolos, University of California, Irvine, USA

N26-4 Grid Computing and the BaBar Experiment
1Ferrara University and INFN, Italy; 2Rutherford Appleton Laboratory, United Kingdom

N26-5 LcgCAF: a CDF Submission Portal to Access Grid Resources
D. Lucchesi, F. Delli Paoli, University and INFN of Padova, Italy; D. Jeans, S. Sarkar, INFN National Center for Telematics and Informatics, Italy; I. Sfiligoi, Laboratori Nazionali di Frascati, Italy

N26-6 Ganga - an Optimiser and Front-End for Grid Job Submission
A. Maier, CERN, Switzerland
On behalf of the Ganga Development Team

N26-7 Experiences in the Gridification of the Geant4 Toolkit in the LCG/EGEE Environment
P. P. Mendez Lorenzo, M. M. Lamanna, A. A. Ribon, J. J. Moscicki
CERN, Switzerland

N27 HEP & NP Instrumentation V: Detector Commissioning and Engineering Aspects

Wednesday, Nov. 1 10:30-12:00, Pacific Salon 2
Session Chair: Rolf-Dieter Heuer, DESY

N27-1 The ATLAS Liquid Argon Calorimeter: Integration, Installation, Commissioning and Performance from Selected Particle Beam Test Results
M. Aleksa, CERN, Switzerland
On behalf of the ATLAS Liquid Argon Calorimeter Group

N27-2 Gas Analysis and Monitoring System for the RPC Detector of CMS at LHC
S. Bianco, Laboratori Nazionali di Frascati dell’INFN, Italy
On behalf of the CMS RPC Collaboration (Bari - Frascati - Napoli - Pavia)

N27-3 Engineering Overview of the ATLAS Inner Detector
M. Olcese
Istituto Nazionale di Fisica Nucleare (INFN), Italy

N27-4 Module Integration on the Inner Shells (TIB) of the CMS Tracker
C. Genta, INFN and University of Florence, Italy
On behalf of the CMS Collaboration

N27-5 The CMS Magnet Test and Cosmic Challenge
A. Ball, CERN, Switzerland
On behalf of the CMS Collaboration

N27-6 Digital Hadron Calorimetry for the International Linear Collider Using Gas Electron Multiplier Technology
A. P. White1, A. Brandt1, H. Brown1, K. De1, C. Han1, J. Li1, C. Medina1, A. Nozawa1, J. Smith1, J. Yu1, T. Zhao2
1University of Texas at Arlington, USA; 2Changwon National University, Korea

N28 Nuclear Measurements and Monitoring Techniques II

Wednesday, Nov. 1 10:30-12:00, Pacific Salon 3
Session Chair: Ingrid-Maria Gregor, DESY

N28-1 Identification of Actinides Inside Nuclear Waste Packages by Measurement of Fission Delayed Gammas
F. Carrel, M. Gmar, F. Lainé, J. Loridon, J.-L. Ma, C. Passard
CEA, France

N28-2 Nuclear Resonance Fluorescence of U-235
G. A. Warren1, W. K. Hensley1, W. Bertozzi1, S. E. Kobry2, R. J. Ledoux3, W. H. Park2
1Pacific Northwest National Lab, USA; 2Passport Systems, Inc, USA; 3Massachusetts Institute of Technology, USA

N28-3 New Results of the ΔE/E Silicon Microdosimeter
A. Fazzi1,2, A. Pola1,2, D. Moro1,2, S. Agosteo1,2, P. Colautti2
1Politecnico di Milano, Italy; 2Istituto Nazionale di Fisica Nucleare, Italy; 3Università di Ferrara, Italy

N28-4 Characterization of CMOS Solid-State Photomultiplier for a Digital Radiation Rate Meter
C. J. Stapels1, F. L. Augustine1, M. R. Squillante1, J. F. Christian1
1Radiation Monitoring Devices, Inc., USA; 2Augustine Engineering, USA
N28-5 Optimization of the Canberra UltraRadic GM Tube Wrapping
H. Zhu, S. Kane, S. Croft, R. Venkataraman, F. Bronson
Canberra Industries, Inc., USA

N28-6 Optimized Strategies for Smart Nuclear Search
K. N. Borozdin, A. V. Klimenko, W. C. Priedhorsky, N. Hengartner,
C. C. Alexander, R. A. Cortez, Los Alamos National Laboratory,
USA; H. G. Tanner, University of New Mexico, USA

N29 Scintillators I - Plastics & Other Scintillators
Wednesday, Nov. 1 10:30-11:45, California Room
Session Chairs: Rainer Novotny, University of Giesern
Ren-yuan Zhu, Caltech

N29-1 Luminosity Measurement at ATLAS - Development, Construction and Test of Scintillating Fibre Prototype Detectors
S. Ask, CERN, Switzerland
On behalf of the ATLAS Luminosity and Forward Physics Working Group

N29-2 Extruded Plastic Scintillator with Solid-State Photomultipliers
V. Rykalin1, A. Pla-Dalmau2, A. Dyshkant1, J. Blazy1, V. Zutshi1,
K. Franc1
1INICADD, USA; 2FERMILAB, USA

N29-3 New Effective Organic Scintillators for Fast Neutron and Short-Range Radiation Detection
N. Z. Galunov1, S. V. Budakovskyy1, J. K. Kim1, Y. K. Kim2,
O. A. Tarasenko1, E. V. Martynenko1
1Institute for Scintillation Materials, National Academy of Sciences of Ukraine, Ukraine; 2Innovative Technology Center for Radiation Safety Hanyang University, Republic of Korea

N29-4 Performance of the Liquid Xenon Scintillation Detector for the MEG Experiment
W. Ootani, International Center for Elementary Particle Physics,
University of Tokyo, Japan
On behalf of the MEG collaboration

N29-5 Position Resolution and Imaging Performance of Lanthanum Bromide Scintillators with Crossed Fiber Readout
B. Budden, G. L. Case, M. L. Cherry, J. Isbert, M. Stewart
Louisiana State University, USA

N30 NSS Poster 2
Wednesday, Nov. 1 13:30-15:00, Atlas Ballroom
Session Chairs: Simon Kwan, Fermilab
Jean-Francois Pratte, BNL

Data Acquisition and Analysis Systems

N30-1 Reliability Assessment of Wireless Controller and Data Acquisition Systems
M. Fathizadeh, A. Hossain, Purdue University, USA

N30-4 An FPGA Based Implementation for Real-Time Processing of the LHC Beam Loss Monitoring System’s Data
C. Zamantzas, B. Dehning, E. Effinger, J. Emery, G. Fierioli
CERN, Switzerland

N30-6 ADONIS : a New System for High Count Rate HPGe Spectrometry
T. Montague, E. Barat, T. Dautremer, J. Lefevre, L. Laribi, J.-C. Trama
Commissariat à l’Energie Atomique - CEA Saclay, France

N30-8 Configurable Digital Emulator of Radiation Sources
R. Abbiati1,2, S. Scarpaci1,2, A. Geraci1,2, G. Ripamonti1,2
1Politecnico di Milano, Italy; 2INFN, Italy

N30-10 Radiographic Inspection of Thick Metal Components, Part I: Fitting the Standard Linear Image Formation Model
M. C. Robini, I. E. Magnin
CREATIS (CNRS UMR5515 and INSERM research unit U630), France

N30-12 A Configurable Digital Processor for Scintillation Detector Events
A. Geraci1,2, R. Abbiati1,2, S. Brambilla1, F. Camera2, B. Million1,
S. Scarpaci1,2
1Politecnico di Milano, Italy; 2INFN, Italy

N30-14 Radiographic Inspection of Thick Metal Components, Part II: a New Stochastic Approach to 3-D Reconstruction
M. C. Robini, I. E. Magnin
CREATIS (CNRS UMR5515 and INSERM research unit U630), France

N30-16 A Multiplexer Design for a PS-APD PET Scanner
Y. Wu, C. Catana, S. R. Cherry, UC Davis, USA

N30-18 “Software Requirements Analysis for Nuclear Experiments”
E. Gaytán Gallardo, F. J. Ramírez Jiménez
Instituto Nacional de Investigaciones Nucleares, México

N30-20 A Reliable Multicast Protocol, TRMP, for Data Acquisition Systems
Y. Nagasaka, S. Kajiyama
Hiroshima Institute of Technology, Japan

N30-22 De-Oscillating Preamplifier Signals Through Digital Filtering Techniques
E. Zocca1,2, A. Pullia1,2
1University of Milano, Italy; 2INFN, Italy

N30-24 14-Bit and 2GS/s Low Power Digitizing Boards for Physics Experiments
D. R. Breton, CNRS - LAL ORSAY, FRANCE; E. Delagnes, CEA/DSM/DAPNIA/SEDI, FRANCE

N30-26 Automatic Test System for Wafer Level Probing of Optical and Electrical Parameters of Photodiode Array Dies
I. Goushcha, B. Tabbert, M. Peters, R. Langeveld, A. O. Goushcha
Semicoa, USA

N30-28 A High-Speed Data Acquisition System for Segmented Ge-Detectors
A. Hidvegi1, D. Eriksson1, B. Cederwall1, S. Silversein1, C. Bohm1
1Stockholm University, Sweden; 2Royal Institute of Technology, Sweden

N30-30 Replaceable Middleware Communication Modules for Distributed Data Acquisition Systems
C. C. W. Robson, A. Bouselham, C. Bohm
Stockholms universitet, Sweden

N30-32 Development of a High Resolution TDC Module for the WASA Detector System Based on the GPX ASIC
H. Kleines, W. Erven, P. Wüstner, A. Ackens, G. Kemmerling,
Gaseous Detectors

N30-36 Correcting for the Scattered X-Rays Contribution at When Calibrating for Low Energy X-Rays
A. Nohtomi, N. Takata, National Institute of Advanced Industrial Science and Technology, Japan; T. Sakae, Proton Medical Research Center, Japan

N30-38 Simulation Study of the ATLAS Muon Drift Tube Chambers Performance in Presence of Magnetic Field
R. M. Avramidou1, E. N. Gazis1, K. Mermigka1, R. Veenhof2,3
1National Technical University of Athens, Greece; 2CERN, Switzerland; 3Instituto Superior Tecnico IST, Portugal

N30-40 A Simple Technique for Identifying Natural Alpha Emitters
S. L. Sharma, A. K. Gourishetty, Indian Institute of Technology, Kharagpur, India; R. Choudhury, Bhabha Atomic Research Centre, India

N30-42 The Performance of the ATLAS Innermost MDT Muon Precision Tracker in Cosmic Rays and in Positron and Muon Beams.
A. S. Krepouri1, K. I. Bachas1, C. A. Anastopoulos1, R. E. Nicolaidou1, C. I. Petridou1, D. Sampsonidis1
1Aristotle University of Thessaloniki, Greece; 2CEA, Saclay, France

N30-44 Scintillation Light, Ionization Yield and Scintillation Decay Times in High Pressure Xenon and Xenon Methane
K. N. Pushkin1,2, D. Y. Akimov1, A. A. Burenkov1, V. V. Dmitrenko2, A. G. Kovalenko1, I. S. Kuznetsov1, V. N. Stekhanov1, C. Tuzuka1, S. E. Ulin1, Z. M. Utessov2
1Institute for Theoretical and Experimental Physics, Russia; 2Moscow Engineering Physics Institute (State University), Russia; Advanced Research Institute for Science and Engineering, Waseda University, Japan

N30-46 Large Pulse-Height Loss Due to Capacitive Decay in the Detector-Circuit During Collection of Charges
S. L. Sharma, A. K. Gourishetty, Indian Institute of Technology, Kharagpur, India; D. C. Biswas, R. K. Choudhury, Bhabha Atomic Research Centre, India

N30-48 Measurements of Ballistic Deficits for Parallel Plate Ionization Chambers
S. L. Sharma, A. K. Gourishetty, Indian Institute of Technology, India; D. C. Biswas, R. K. Choudhury, Bhabha Atomic Research Centre, India

N30-50 Photoelectron Collection Efficiency in Mixtures of Gases with CF4
J. M. D. Escada1, P. J. B. M. Rachinhas1, T. H. V. T. Dias1, F. P. Santos1, J. A. M. Lopes1,2, C. A. N. Conde1, A. D. Stauffer3
1Universidade de Coimbra, Portugal; 2Instituto Superior de Engenharia de Coimbra, Portugal; 3York University, Canada

N30-52 Performance of Glass RPC in Streamer Mode for Irradiating Coherent Photons
S. Narita, Iwate University, Japan; Y. Hoshi, H. Hayasaka, K. Neichi, Tohoku-Gakuin University, Japan; A. Yamaguchi, Tohoku University, Japan

N30-54 High-Pressure Xe Cylindrical Ionization Chamber with Different Shielding Mesh Configurations
H. S. Kim1, S. H. Park1, Y. K. Kim1, J. H. Ha1, S. Y. Cho1, J. K. Kim1, S. M. Kang1
1Korea Atomic Energy Research Institute, Korea; 2Yonsei University, Korea; 3Hanyang University, Korea

N30-56 Elimination of Ballistic Deficits for Ionization Chamber Pulses by Using Trapezoidal Pulse Shaper
A. K. Gourishetty, S. L. Sharma, Indian Institute of Technology, India; R. K. Choudhury, Bhabha Atomic Research Centre, India

N30-58 Energy Calibration of MAXI/GSC for the International Space Station
T. Miyakawa, A. Yoshida, K. Yamaoka, Y. Ito, S. Sugita, K. Saito, Aoyama Gakuin University, Japan; T. Mihara, N. Isobe, M. Kohama, M. Miyamoto, RIKEN(The Institute of Physical and Chemical Research), Japan; M. Matsuoaka, H. Tomida, M. Morii, S. Ueno, Japan Aero space Exploration Agency(JAXA), Japan; N. Kawai, Tokyo Institute of Technology, Japan; H. Negoro, M. Nakajima, Nikon University, Japan

N30-60 Studying Performance of a Coplanar-Anode High-Pressure Xenon Gamma-Ray Spectrometer
S. D. Kiff, Z. He, University of Michigan, United States

N30-62 Improving Spectroscopic Performance of a Coplanar-Anode High-Pressure Xenon Gamma-Ray Spectrometer
S. D. Kiff, Z. He, University of Michigan, United States; G. C. Tepper, Virginia Commonwealth University, United States

N30-64 Monte Carlo Calculation of Drift Velocities and Diffusion Coefficients for Ar Ions in Gaseous Argon
J. A. S. Barata1,2, C. A. N. Conde1
1Universidade da Beira Interior, Portugal; 2Universidade de Coimbra, Portugal

N30-66 The ATLAS RPC Test Stand at INFN Roma Tor Vergata
G. Aielli1, P. Camarri1, R. Cardarelli1, M. Corradi1, A. Di Giaccio1, L. Di Stante1, B. Libert1, E. Paoloetti1, E. Pastori1, L. Pasquali1, A. Salamon1, R. Santevicnic1, E. Solfaroli1
1INFN Sezione di Roma Tor Vergata, Italia; 2INFN Sezione di Bologna, Italia

N30-68 Performance of a Large-Volume, Low-Background, Internal-Source Proportional Counter
Pacific Northwest National Laboratory, USA

Photodetectors and Radiation Imaging

N30-70 Linearity of the Photocurrent Response with Light Intensity for Silicon PIN Photodiode Array
A. O. Goushcha, B. Tabbert, Semicoa, USA

N30-72 Gamma-Ray Channeling Optics
D. M. Tournaire, R. I. Epstein, M. A. Hoffbauer, E. A. Akhador
Los Alamos National Laboratory, USA

N30-74 Analysis of Dynamic Range and SNR in 128x128 CMOS Image Sensor for X-Ray Imaging
J.-H. Baek1, G. Cho1, Y.-H. Kim2, G.-H. Lim2, S.-C. Jeon1, B. K. Cha1, Y. S. Kim1, Y. K. Chi1
1Korea Advanced Institute of Science and Technology, South Korea; 2Changwon National University, South Korea
N30-98 Reducing the Distortion in Resistive Layer Positioning Devices: a Simulation Study
P. Despré1, T. Funk1, W. C. Barber1, K. S. Shah2, B. H. Hasegawa1
1Physics Research Laboratory, University of California, San Francisco, USA; 2Radiation Monitoring Devices Inc., USA

N30-100 Timing Resolution Studies Using Various Scintillator Materials
M. Rawool-Sullivan, J. P. Sullivan, S. R. Torma, M. S. Wallace
Los Alamos National Laboratory, USA

N30-102 Development of Multi-Pixel Photon Counter (MPPC)
K. Yamamoto, K. Yamamura, K. Sato
HAMAMATSU PHOTONICS K.K., Japan

N30-104 Silicon Photomultiplier (SiPM) for the Experimental Physics and Medical Imaging System
V. Savelev, Osninsky State University, Russia

N30-106 Study of Performance with Diverting Agents in Formation Damage and Return of Permeability for Unconsolidated Sandstones Using Computed Tomography
B. T. Lopez1, J. L. B. Ribeiro1, J. C. Queiroz2, L. C. B. Bianco2, M. J. Anjos3, E. F. Campos3
1Federal University of Rio de Janeiro, Brazil; 2Petrobras, Brazil; 3State University of Rio de Janeiro, Brazil

N30-108 Development of Multi-Pixel Photon Counters
M. Yokoyama, Kyoto University, Japan
On behalf of the KEK DTP photon sensor group

Scintillators and Scintillation Detectors

N30-110 Influence of RE Doping on the Scintillation Properties of LSO Crystals
G. Ren, L. Qin, S. Lu, H. Li, D. Ding
Shanghai Institute of Ceramics, China

N30-112 Comparison of LaBr3 and NaI(Tl) Scintillators for Radioactive Isootope Identification Devices
B. D. Milbraith, B. J. Choate, J. E. Fast, W. K. Hensley, R. T. Kouzes, J. E. Schweppe
Pacific Northwest National Laboratory, USA

N30-114 Thin Film Scintillators for Rapid Screening of Potential Radiation Detection Materials
Pacific Northwest National Laboratory, USA

N30-116 Radiation Induced Color Centers in Lead Tungstate Crystals
J. Chen, R. Mao, L. Zhang, R.-Y. Zhu
California Institute of Technology, USA

N30-118 A Study on the Radiation Damage in Large Size LSO and LYSO Crystal Samples
J. Chen, R. Mao, L. Zhang, R.-Y. Zhu
California Institute of Technology, USA

N30-120 Energy Resolution of a Pixilated NaI (TI) Detector
W. Mengesha, B. Nathaniel, A. Matthew, L. James
Sandia National Laboratories (SNL), USA

N30-122 Simultaneous Beta and Gamma-Ray Digital Spectroscopy Using a Triple-Layer Phoswich Detector
A. T. Farsoni, D. M. Hamby, Oregon State University, USA

N30-124 High-Energy Photon Detection with LYSO Crystals
R. W. Novotny, W. M. Doering, P. Drexler, M. Thiel, University
N30-126 Non-Proportionality and Energy Resolution of NaI(Tl) at Wide Temperature Range (-40°C to +23°C) T. Shimazu, M. Moszynski, W. Czarnacki, A. Syntfeld-Kazuch, M. Gierlik Soltan Institute for Nuclear Studies, Poland

N30-128 A Grid-Type Scintillating Device for Radiation Imaging E. Takada, M. Hayashi, H. Kuroda, H. Imai, Toyama National College of Technology, Japan; J. Kawarabayashi, Nagoya University, Japan


N30-132 Pixelated CsI(Tl) Scintillator for CMOS-Based X-Ray Image Sensor B. K. Cha, G. Cho, B.-J. Kim, M. S. Rahman, S. C. Jeon, J. H. Bae, Y. K. Chi, KAIST (Korea Advanced Institute of Science and Technology), South Korea; G.-H. Lim, Y.-H. Kim, Changwon National University, South Korea

N30-134 Non-Proportionality and Energy Resolution of CsI(Tl) A. Syntfeld-Kazuch, L. Swiderski, W. Czarnacki, M. Moszynski, Soltan Institute for Nuclear Studies, Poland; W. Klamra, Royal Institute of Technology, Sweden; P. Schotanus, SCIONIX Holland B.V., the Netherlands

N30-136 Plasma Panel Sensors as Scintillation Detectors P.S. Friedman, Integrated Sensors, LLC, USA

1Hokkaido University, Japan; 2Hitachi Chemical, Japan

N30-140 Distributed Radiation Sensor with Flexible Light Guide Filled with Liquid Organic Scintillator J. Kawarabayashi, N. Naoi, K. Asai, K. Watanabe, T. Iguchi Nagoya University, Japan

N30-142 Improvement on Scintillation Properties and Afterglow for Lu2xGd2(1-x)SiO5:Ce (LSGO,x=0.2) Single Crystals T. Usui, S. Shimizu, N. Shimura, K. Kurashige, Y. Kurata, H. Ishibashi, Crystal Materials Group, High Performance Materials R&D Center, Hitachi Chemical Co., Ltd., Japan; H. Yamamoto, Tokyo University of Technology, Japan

1National Institute of Radiological Sciences, Japan; 2Osaka university, Japan; 3JASRI-SPring-8, Japan

N30-146 Light Output Response of GSO(Ce) Crystal to Relativistic Carbon Ions G. Wakabayashi, Y. Koba, M. Imamura, Y. Uozumi, N. Koba, T. Shimazu, M. Kaneko, H. Ohkawa, N. Ikeda, Kyushu University, Japan; T. Kin, University of Occupational and Environmental Health, Japan; N. Matsufuji, National Institute of Radiological Sciences, Japan

1University of Patras, Greece; 2Technological Educational Institute of Athens, Greece; 3Greek Atomic Energy Commission, Greece

N30-150 Thermoluminescence of Cs2LiYCl6, Cs2LiYCl6:Ce3+ and Cs2LiYCl6:Pr3+ Crystals E. V. Van Loef, W. M. Higgins, M. S. Squillante, K. S. Shah Radiation Monitoring Devices, USA

1University of Patras, Greece; 2Technological Educational Institute of Athens, Greece; 3Euromedica medical center, Greece

1Brown University, United States; 2University of Nebraska Lincoln, United States; 3Northwestern University, United States

N30-156 Study of a New Class of Picosecond X-Ray Scintillators: Organic/Inorganic Perovskite M. Kocis, H. Mueller European Synchrotron Radiation Facility, Grenoble, France


N30-160 Characterization of Silicon Photomultipliers for PET Imaging Q. Xie, C.-M. Kao, K. Byrum, G. Drake, A. Vaniachine, R. Wagner, G. C. Blazey, V. Rykalin, C.-T. Chen
1The University of Chicago, USA; 2Huazhong University of Science and Technology, China; 3Argonne National Laboratory, USA; 4Northern Illinois University, USA


N30-164 Scintillation Properties of Cs2NaAlF6:Ce
J. Glodo, E. V. D. van Loef, W. M. Higgins, K. S. Shah Radiation Monitoring Devices, Inc., USA

1Pacific Northwest National Laboratory, USA; 2University of California, San Diego, USA
N30-168 Correlating Temporal Luminosity of Scintillators to Pulse Shape Discrimination
G. N. Lolap, T. A. Devol, Clemson University, USA

N30-170 Facility for Studying Non-Proportionality and Energy Resolution of Scintillator
W.-S. Choong¹, K. M. Vetter², W. W. Moses¹, S. A. Payne¹, N. J. Cherepy², J. D. Valentine², D. S. Wilson¹
¹Pacific Northwest National Laboratory, USA; ²LLNL, USA

N30-172 Response of a LaBr₃(Ce) Detector to 2-11 MeV Gamma Rays
Idaho National Laboratory, USA

N30-174 Temperature- and Trap-State-Dependent Measurements of Detector Nonlinearity: an Experimental Approach and Apparatus
C. E. Seifert, S. K. Sundaram, M. D. Wojcik
University of Michigan, USA

N30-176 Evaluation of a Junction Termination Extension APD for Use with Scintillators
E. V. Gramsch, Universidad de Santiago, Chile; O. P. Pcheliakov, I. Chistokhinb, E. Tishkovsky, E. V. Gramsch
Pacific Northwest National Laboratory, USA

N30-178 Angular Response Functions for Sodium Iodide and Cesium Iodide Detectors
R. T. Klann¹, Q. Lou², C. L. Fink¹
¹Argonne National Laboratory, USA; ²University of Illinois – Urbana-Champaign, USA

N30-180 Recent Results with Large Volume LaBr₃ and LaCl₃ Scintillator Detectors
F. G. A. Quarati¹, A. J. J. Bos², S. Brandenburg³, C. Dathy¹, P. Dorenbos², S. Kraft³, R. W. Ostendorf³, V. Ouspenski¹, A. Owens¹
¹European Space Agency, ESTEC, Netherlands; ²Technical University of Delft, Netherlands; ³Kernfysisch Versneller Instituut, Netherlands; ⁴Saint Gobain, France; ⁵Cosine Research BV, Netherlands

Solid State Tracking Detectors

N30-182 Position Sensing with Nonuniform Electrode Designs on High-Resistivity Silicon
M. D. Hammig, D. K. Wehe, University of Michigan, USA

N30-184 Design and Quality Assurance of the Sensors of the CMS Silicon Strip Tracker
A. Macchiolo, Università degli Studi di Firenze - INFN Firenze, Italy
On behalf of the CMS Tracker Collaboration

N30-186 Charge Collection Delay Phenomena of a 3D Detector Structure and Its Applications
J. J. Kalliovirta¹², S. Eränen², R. Orava³⁴
¹Helsinki Institute of Physics, Finland; ²VTT Information Technology, Finland; ³University of Helsinki, Finland; ⁴European Organization for Nuclear Research, Switzerland

N30-188 Intelligent Particle Finders with the Micro Vertex Detector at ZEUS
E. Karstens, Freiburg University/ DESY, Germany
On behalf of the HFL Group of the ZEUS Collaboration

N30-190 Development of a Micro Vertex Detector for the PANDA-Experiment at the FAIR Facility
F. Huegging, Forschungszentrum Juelich, Germany
On behalf of the PANDA Collaboration

N30-192 Performance, Background Studies and Reconstruction Software Improvements for the Silicon Vertex Tracker of the BaBar Experiment
G. Marchiori, Università di Pisa and INFN, Italy
On behalf of the BaBar SVT Collaboration

N30-194 Development of the Next-generation Gamma-ray Burst Detector based on the Silicon Drift Detector and Scintillator

N30-196 Serial Powering of ATLAS Silicon Strip Sensors
M. M. Weber, G. Villani, A. Tuononen, CCLRC, UK

N30-198 Integration
A. P. Collijn, University of Amsterdam, Netherlands
On behalf of the ATLAS Collaboration

New Solid State Detectors

N30-200 Characterization of a Megavolt, Megahertz Fluoroscope
J. A. Mendez¹², S. A. Watson¹, S. J. Balzer¹, C. A. Vecere¹, S. D. Perkins¹, C. Gossein¹
¹Los Alamos National Laboratory, USA; ²The University of New Mexico, USA

N30-202 Double Sided 3D Detector Technologies at IMB-CNMC
G. Pellegrini, M. Lozano, J. Rafi, M. Ullan, Centro Nacional de Microelectronica IMB-CNMC-CSIC, Spain; R. Bates, D. Pennicard, C. Fleta, University of Glasgow, UK

N30-204 Low Energy X-Ray Detection with a Silicon Multi-Cathode Detector
C. R. Tull, S. Barkan, V. Saveliev, L. Feng, M. Takahashi, N. Matsumori, SHI Nano Technology USA, Inc, USA; J. Iwanczyk, Photon Imaging, Inc, USA; D. Newbury, J. Small, National Institutes of Standards & Technology, USA

N30-206 Radiation Detectors for HEP Applications Using Standard CMOS Technology
A. Marras¹², D. Passeri², P. Placidi³¹, D. Biagetti³, L. Servoli³, G. M. Bilei², P. Ciampolini¹²
¹Universita di Parma, Italy; ²INFN, Italy; ³Università di Perugia, Italy

N30-208 Characterization and Scintillation Studies of a Solid-State Photomultiplier

N30-210 Development of Particle Detector Based on GaN/SiC Schottky Barrier Diode
S. Narita¹, S. Ota¹, Y. Yamaguchi¹, T. Hitora³¹, Y. Ashikaga², M. Sarata¹, E. Yamaguchi¹²
¹Iwate University, Japan; ²Doshisha University, Japan; ³ALGAN K.K., Japan

N30-212 Impact of Non Ideal Signal Transfer of On-Chip Source-Follower JFET on Silicon Drift Detector Noise Performance
A. Castoldi¹², D. Fugazza¹², A. Gaaliberti², C. Guazzoni¹²
¹Politecnico di Milano, Italy; ²INFN, Italy
N30-214 Monte Carlo Studies of High-Resolution Microcalorimeter Detectors

N30-218 Large-Volume Si(Li) Compton Polarimeter
D. Protic1, T. Stoechlker2, T. Klings1, I. Mohos3, U. Spillmann2 1Institut fuer Kernphysik, Germany; 2Atominstitut, Austria

N30-200 Advanced Modeling Techniques for Signal Decomposition of Planar HPGe Double-Sided Strip Detectors

N30-222 Electrical Characterization of Silicon Photo Multiplier Detectors for Optical Front-End Design
C. Marzocca, Politecnico di Bari, Italy

N30-224 Recent Developments in Lithium Silicate Fiber Neutron Sensors
C. Hull, S. Pauly, T. Crawford, M. Blair, R. Sheldon, NuSafe, Inc., USA

N30-226 Modified Internal Gate - a Novel Detector Concept
A. M. Aurola, M. Yli-Koski, Helsinki University of Technology, Finland

N30-228 Neutron and Gamma Dosimetry with a Single Silicon Sensor: Theoretical and Experimental Verification
A. B. Rosenfeld1, M. Yudelev2, I. Anokhin2, O. Zinets3, M. L. F. Lerch4, M. Reinhard4, V. Perevertailo5 1University of Wollongong, Australia; 2Karmanos Cancer Institute, USA; 3Institute for Nuclear Research, Ukraine; 4Australian Nuclear Science and Technology Organisation, Australia; 5SPA Detector, Ukraine

N30-230 Position-Sensitive Si(Li) Transmission Detectors for the EXL-Experiments at GSI-Darmstadt
D. Protic, T. Klings, S. Niessen, Institut fuer Kernphysik, Germany; P. Egelhof, Gesellschaft fuer Schwerionenforschung, Germany; E. C. Pollacco, CEA Saclay, France

N. Tartoni, G. E. Derbyshire, B. L. Willis, S. P. Thompson, C. C. Tang, Diamond Light Source Ltd., United Kingdom; A. M. P. Bell, CCLRC Daresbury Laboratory, United Kingdom

N30-234 Curved Track Segment Finding Using ‘‘Tiny’’ Triplet Finder (TTF)
J. Wu, M. H. Wang, E. Gottschalk, Z. Shi, Fermilab, USA

N30-236 Time Calibration of the LHCb Muon System
A. Lai, S. Cadeddu, V. De Leo, C. Deplano, E. Fois, Istituto Nazionale Fisica Nucleare, Italy

N30-238 FPGA Curved Track Fitter with Very Low Resource Usage
J. Wu, M. Wang, E. Gottschalk, Z. Shi, Fermilab, USA

N30-240 Status of the Trigger System of BESIII
Z. Liu, Inst. of High Energy Physics, Chinese Academy of Sciences, China

N30-242 Hardware Aspects of the Upgraded DØ Central Track Trigger
E. S. Hazen, Boston University, USA

N30-244 The CDF II eXtremely Fast Tracker Upgrade
S. Donati, Istituto nazionale di Fisica Nucleare, sezione di Pisa, Italy

N30-246 The off Detector Electronics of the LHCb Muon Detector
A. Balla, M. Beretta, M. Carletti, P. Ciambromne, M. Gatta, G. Felici, S. Cadattedu, V. De Leo, C. Deplano, E. Fois, A. Lai, Istituto Nazionale Fisica Nucleare, Italy

N30-250 The ATLAS Trigger Muon Vertical Slice
M. Biglietti, G. Carlini, F. Conventi, Universit degli Studi di Napoli and INFN, Italy; G. Usai, Enrico Fermi Institute, University of Chicago, USA; T. Kono, Z. Tarem, CERN, Switzerland; A. Krasznahorkay, CERN and University of Debrecen Debrecen, Hungary; N. Panikashvili, S. Tarem, Technion Institute of Technology, Israel; G. Cataldi, E. Gorini, M. Primavera, S. Spagnolo, A. Ventura, Universit degli Studi di Lecce and INFN, Italy; M. Bellomo, D. Scannicchio, V. Vercesi, Università di Pavia and INFN, Italy; T. Del Prete, Università di Pisa and INFN, Italy; T. Lagouri, Charles University, INPF, Czech Republic; A. Di Mattia, S. Falciano, C. Luci, L. Luminari, F. Marzano, A. Nisati, E. Pasqualucci, A. Sidoti, Universita di Roma I and INFN, Italy; K. Nagano, KEK, Japan; N. Kanaya, Kobe University, Japan

N30-252 Di-Muon Selection for the Second Level Trigger in the ATLAS Experiment
S. Tarem, N. Panikashvili, Technion, Israel Institute of Technology, Israel

N30-254 Automatic Test Fixture for the FE Control Electronics of the LHCb Muon Detector
F. Iacoangeli, R. Nobrega, V. Bocci, INFN, Italy

N30-256 Trigger Algorithms, Simulation and Performance Optimization of the Dzero Central Track Trigger
G. W. Wilson, University of Kansas, U.S.

N30-258 Signal splitting effect analysis for Muon tracker signal in frequency domain
K. Lee, E. Kim, J. Park, Seoul National University, South Korea

N30-260 The Time of Flight System and Trigger Electronics for the PAMELA Experiment in Space
S. Russo1, G. Barbarino1, D. Campana1, G. De Rosa1, W. Mann2, G. Osteria1, M. Simon2
N30-262 Very Front End Card Calibration and Front-End Electronics of the CMS Electromagnetic Calorimeter

On behalf of the CMS Collaboration

Instruments for Medical and Biological Research

N30-264 Method of Generating Monochromatic Soft X-ray with Small Focal Spot

A. Yamaguchi, M. Izumi, Toshiba Corporation, Japan; N. Aoki, E. Seki, Toshiba Electron Tubes and Devices Corporation, Japan

N30-266 The Data Acquisition Software of the RatCAP Conscious Small Animal PET Tomograph


Brookhaven National Lab, USA; Université de Sherbrooke, Canada

N30-268 A Novel Apparatus for Analysis of Skin in Vivo

A. Gola, A. A. Scordino, S. S. Tudosco, S. F. Messumeci, S. S. Privitera, A. A. Scordino

INFN, Italy; Università di Catania, Italy

N30-270 The Readout Electronics and the DAQ System of the DRAGO Anger Camera

A. Gola, C. Fiorini, M. Porro, M. Zanchi

Politecnico di Milano, Italy; INFN, Sezione di Milano, Italy; MPI für Extraterrestrische Physik Halbleiterlabor, Germany

Accelerators and Beam Line Instrumentation

N30-272 Development of the Optical Transition Radiation Monitor for the High Intensity Proton Beam Profile Measurement


Institute of Particle and Nuclear Studies (IPNS), High Energy Accelerator Research Organization (KEK), Japan; Institute of Materials Structure Science (IMSS), High Energy Accelerator Research Organization (KEK), Japan

N30-274 Measurements and Simulations of Ionization Chamber Signals in Mixed Radiation Fields for the LHC BLM System

M. Stockner, B. Dehning, E. Holzer, for the BLM team CERN, Switzerland

N30-276 Instrumentation Packaging Standards for the ILC

R. S. Larsen, Stanford Linear Accelerator Center, USA; R. W. Downing, R. W. Downing, Inc.

N30-278 Highly Sensitive Silicon Detectors of Thermal Neutrons

J. Uher, C. Frojdhi, J. Jakubek, C. Kenney, Z. Kohout, V. Linhart, S. Parker, S. Petersson, S. Pospisil, G. Thungström

Czech Technical University, Czech Republic; Mid-Sweden University, Sweden; Stanford University, USA; University of Hawaii, USA

N31 Software for Radiation Protection and Nuclear Medicine

Wednesday, Nov. 1 15:30-17:15, Pacific Salon 1

Session Chair: Maria Pia, CERN

N31-1 Geant4 Anthropomorphic Phantoms

B. Mascialino, S. Guatelli, M. G. Pia

INFN Sezione di Genova, Italy

N31-2 Geant4 Modelling of Anatomy Trough DICOM Interface

S. Chauvie, C. Andenna, G. Amati, B. Caccia, M. Mattia, G. Frustaglione, S. Valenti, B. Mascialino, S. Guatelli

INFN, Italy; S. Croce e Carle Hospital, Italy; ISPESL, Italy; CASPUR, Italy; Italian National Institute of Health, Italy

N31-3 Monte Carlo Geant4 Code for Internal Dose Assessment in Nuclear Medicine

L. Strigari, M. Benassi, M. D’Andrea, E. Menghi, M. C. Pressello, A. d’Angelo

Regina Elena National Cancer Institute, Italy

N31-4 Interactive Distributed Analysis for Medical Images

P. Cerello, INFN, Italy

On behalf of the MAGIC-5 Collaboration

N31-5 Geant4 Studies for the HPD-PET Crystals


Universita degli Studi di Bari, Italy; PH-Department, Switzerland

N31-6 Estimating Conversion Coefficient of KERMA Free in Air to Glandular Dose in Mammography: A Comparison Between BR12 Model and a Realistic Voxel Model

G. Hoff, Pontifical Catholic University in Rio Grande do Sul, Brazil; C. E. de Almeida, G. Drexler, State University of Rio de Janeiro UERJ, Brazil

N31-7 DistMe: a Java Based Toolbox for the Distribution of Parallel Monte Carlo Simulations. Application to Nuclear Medicine Using the GATE Simulation Package

R. Reuillon, D. Hill, Université Blaise Pascal, France; Z. El Bitar, V. Breton, CNRS-IN2P3, France

N32 HEP & NP Instrumentation VI: Muon Detectors

Wednesday, Nov. 1 15:30-16:30, Pacific Salon 2

Session Chair: Uwe Bratzler, CERN

N32-1 Final Evaluation of the Mechanical Precision of the ATLAS Muon Drift Tube Chambers


Max-Planck-Institut für Physik, Germany

N32-2 Integration, Installation, and Commissioning of Large Monitored Drift Tube Chambers of the ATLAS Barrel Muon Spectrometer

J. Dubbert, M. Groh, O. Kortner, H. Kroha, J. von Loeben, H. von der Schmitt, Max-Planck-Institut für Physik, Germany; O. Biebel, D. Merkl, F. Rauscher, A. Staude, Ludwig-Maximilians-Universität, Germany

N32-3 Commissioning of the BIL Tracking Chambers for the ATLAS Muon Spectrometer

F. Petrucci

Dipartimento di Fisica, Universita’ Roma Tre and INFN Roma III, Italy
N32-4 Tracks Finding Without External Trigger on MDT Muon Chambers for the ATLAS Muon Spectrometer
S. Di Luise, M. Iodice, P. Branchini, F. Pietrucci
INFN Roma Tre, Italy

N33 Trigger and Front End Systems
Wednesday, Nov. 1 15:30-17:30, Pacific Salon 3
Session Chairs: Yasuo Arai, KEK
Friedrich Wulf, Hahn- Meitner- Institut Berlin

N33-1 Level-2 Calorimeter Trigger Upgrade at CDF
A. Bhatti, L. Sartori, M. Dell'Orso, T. Liu, M. Convey, H. Frisch, V. Rusu,
G. Flanagan, M. Priendebine, L. Rogondino, S. Torre, V. Veszpremi
1 University of Pisa and INFN, Italy; 2Fermilab, USA; 3Rockefeller University,
USA; 4University of Chicago, USA; 5Purdue University, USA;
6Laboratori Nazionali di Frascati, Italy

N33-2 The New DØ Level-1 Calorimeter Trigger
M. Abolins, M. Adams, T. Adams, E. Agullo, L. Bagby, J. Ban, E. Barberis,
S. Beale, J. Benitez, J. Biel, R. Brock, J. Bystricky, D. Calver, S. Cihangir,
M. Cwiok, D. Edmunds, H. Evans, C. Fantasia, J. Fogleston, J. Green,
J. Hegeman, R. Gehoe, P. Laurens, P. LeDu, C. Johnson, S. Lammers,
J. Mitrevski, M. Mulhearn, M. Naimuddin, B. Padley, J. Parsons,
G. Pawloski, E. Perez, P. Renkel, A. Roc, W. Sippach, A. Stone,
G. Tart, W. Taylor, R. Unalan, N. Varelas, H. Weerts, D. Wood,
L. Zhang, T. Zmuda
1Michigan State University, USA; 2University of Illinois at Chicago, USA;
3Florida State University, USA; 4University of Alberta, Canada;
5Fermi National Accelerator Laboratory, USA; 6Columbia University, USA;
7Northeastern University, USA; 8York University, Canada;
9DAPNIA/CEA, France; 10University College Dublin, Ireland;
11Indiana University, USA; 12Nikhef, The Netherlands; 13Southern Methodist University, USA;
14Delhi University, India; 15Rice University, USA

N33-3 Performance Measurement of the Upgraded DØ Central Track Trigger
R. K. Mommsen, 1,2 University of Manchester, United Kingdom; 2Fermi
National Accelerator Laboratory, US
On behalf of the DØ CTT Group

N33-4 The ATLAS LVL1 Barrel Muon Trigger Commissioning with Cosmic Rays
S. Veneziano, A. Aloisio, G. Carlino, F. Conventi, M. Della Pietra,
D. della Volpe, V. Izzo, A. Migliaccio, G. Chiodi, G. Ciapetti,
D. De Pedis, A. Di Girolamo, A. Di Mattia, E. Gennari, C. Luigi,
A. Nisati, E. Pasqualeucci, F. Pastore, E. Petrolo, F. Spila,
L. Zanello, A. De Simone, A. Salamon, E. Solfaroli
1Un. Roma “La Sapienza” and I.N.F.N. Roma, Italy; 2Un. Of Napoli “Federico II”
and I.N.F.N. Napoli, Italy; 3Un. Of Roma “Tor Vergata”
and I.N.F.N. Roma 2, Italy

N33-5 The CMS Regional Calorimeter Trigger Electronics
Integration
S. Dasu, R. Fobes, T. Gorski, M. Grothe, M. Jaworski, P. Klabbers,
J. Lackey, G. Ort, P. Robl, W. H. Smith
University of Wisconsin, USA

N33-6 Development of a TCP/IP Processing Hardware
T. Uchida, M. Tanaka, KEK, Japan

N33-7 An Asynchronous Level-1 Tracking Trigger for Future LHC Detector Upgrades
A. Madorsky, D. E. Acosta, H. Patodia
University of Florida, USA

N33-8 A Complete Read Out Chain for X-Ray Spectrometry
A. Rossi, S. Caccia, G. Bertuccio, F. Borghini, V. Ferragina,
P. Malcovati, D. Martin, N. Ratti
1University of Pavia, Italy; 2Politecnico di Milano, Italy; 3European Space
Agency, ESTEC, The Netherlands; 4Alcatel Aenia Space – Italia, italy

N34 Solid State Tracking Detectors
Wednesday, Nov. 1 15:30-17:30, California Room
Session Chairs: Z. Li, BNL

N34-1 Charge Collection Efficiency of ALICE Silicon Drift Detectors
L. V. Kotov, The Ohio State University, USA
On behalf of the ALICE ITS collaboration

N34-2 Experience with the Test and Qualification of Double-Sided Silicon Microstrip Sensors for the ALICE Inner Tracking System
L. Boschi, O. Borysov, M. Bregant, P. Camerini, E. Cattaruzza,
G. Contini, A. Dytlovich, E. Fragiacco, G. Gacomi, N. Grion,
G. Maragliotti, S. Piano, S. Potin, I. Rashevskaya, R. Rui,
O. Starodubtsev, S. Naumov
1INFN, Sezione di Trieste, Italy; 2Università di Trieste, Italy; 3BITP,
Ukraine; 4JINR, Russia; 5NSC KhPT, Ukraine

N34-3 Silicon Detectors for Low Energy Particle Detection
C. S. Tindall, N. P. Palaioc, B. A. Ludewigt, S. E. Holland,
Lawrence Berkeley National Laboratory, USA; D. E. Larson, S. E. McBride,
T. Moreau, R. P. Lin, V. Angelopoulos, University of California
Berkeley, USA

N34-4 Monolithic Pixel Detector in a 0.15um SOI Technology
Y. Arai, Y. Ikegami, Y. Uchiyoda, Y. Unno, O. Tajima, T. Tsuboyama,
S. Terada, M. Hazumi, T. Kohriki, KEK, High Energy Accelerator
Research Organization, JAPAN; H. Ikeda, JAXA, JAPAN;
K. Hara, Univ. of Tsukuba, JAPAN; H. Ishino, Tokyo Inst. Tech., JAPAN;
T. Kawasaki, Niigata Univ., JAPAN; G. Varner, E. Martin,
Univ. of Hawaii, USA; H. Tajima, SLAC, USA; M. Ohno,
H. Komatsubara, K. Fukuda, J. Ida, Oki Electric Industry Co. Ltd.,
JAPAN; H. Miyake, Osaka Univ., JAPAN

N34-5 Development of New 3d Si Detectors at BNL and CNM
Z. Li, W. Chen, Y. H. Guo, D. Lissauer, D. Lynn, V. Radeka,
Brookhaven National Lab, USA; M. Lozano, G. Pellegrini,
Centro Nacional de Microelettronica, Spain

N34-6 Development of Large Area Integrated Silicon Tracking Elements for the LHC Luminosity Upgrade
C. Haber, R. Ely, M. Gilchriese, W. Miller, Lawrence Berkeley
National Laboratory, USA; D. Lynn, D. Lissauer, Z. Li, J. Kierstead,
Y. Semertzidis, Brookhaven National Laboratory, USA;
O. K. Baker, K. W. McFarlane, Hampton University, USA;
A. Tuononen, M. Weber, G. Villani, Rutherford Appleton Laboratory, UK

N34-7 Development of 130 nm Monolithic Active Pixels with In-Pixel Signal Processing
F. Forti, University and INFN, Pisa, Italy
On behalf of the SLIM5 Collaboration
N34-8 Status and Test Procedure of the Full Equipped MWP
Chambers for the LHCb Muon System
A. Massafferri, G. Carboni, E. Santovetti, INFN - Universita Tor Vergata - Sezione II, Italia; R. Nobrega, V. Bocci, INFN - Universita La Sapienza - Sezione I, Italia

N35 Detector Software
Thursday, Oct. 26 08:30-10:00, Pacific Salon 1
Session Chair: Julia Yarba, Fermilab

N35-1 (invited) Detectors for Software
P. L. Gueye, Hampton University, USA

N35-2 The CMS Hadronic Calorimeter Simulation
S. Banerjee, Tata Institute of Fundamental Research, India
On behalf of the CMS Collaboration

N35-3 The CMS Electromagnetic Calorimeter Simulation
E. Cossutti, Istituto Nazionale di Fisica Nucleare - Sezione di Trieste, Italy
On behalf of the CMS Collaboration

N35-4 Simulation for LHC Radiation Background: Optimisation of Monitoring Detectors and Experimental Validation
S. Guatelli¹, M. Glaser², B. Mascialino¹, M. Moll², M. G. Pia¹, F. Ravotti²
¹INFN Genova, Italy; ²CERN, Switzerland

N35-6 Simulation with GEANT4 of a Novel Position Detector Based on Nanotechnologies
A. Montanari¹, R. Angelucci², M. Cuffiani³, G. M. Dallavalle¹, L. Malferrari¹, F. Odorici¹, R. Rizzoli², G. P. Veronese³
¹Istituto Nazionale di Fisica Nucleare, Italy; ²Consiglio Nazionale delle Ricerche, Italy; ³Dipartimento di Fisica, Italy

N36 HEP & NP Instrumentation VII: Tracking Detectors and Neutrino Experiment Devices
Thursday, Nov. 2 08:30-09:45, Pacific Salon 2
Session Chair: Janet Conrad, Columbia University

F. L. Fabbri¹, L. Benussi¹, M. Bertani¹, S. Bianco¹, M. A. Caponero², D. Colonna³, F. Felli³, M. Giardoni¹, A. La Monaca¹, F. Massa³, B. Ortenzi¹, M. Pallotta¹, A. Paoluzzi³, L. Passamonti³, D. Pierluigi², B. Ponzio¹, C. Pucci³, A. Russo¹, G. Saviano³
¹Laboratori Nazionali di Frascati dell’INFN, Italy; ²Laboratori Nazionali di Frascati dell’INFN and ENEA Frascati, Italy; ³Laboratori Nazionali di Frascati dell’INFN and Universita’ di Roma I, Italy

N36-2 Construction of the BES III Drift Chamber
Y. Chen, Institute of High Energy Physics, Academia Sinica, China

N36-3 Enclosure Effects on the Internal Field Distribution in HPGe Planar Detectors
I. Kojouharov, J. Kojouharova, J. Gerl, GSI, Germany

N36-4 CERN Neutrinos to Gran Sasso (CNGS): First Beam
E. Gschwendtner, CERN, Switzerland
On behalf of the CNGS project team

N36-5 The Spectrometers of the OPERA Experiment

N37 Scintillators II - Energy Resolution - Radiation Damage
Thursday, Nov. 2 08:30-10:00, Pacific Salon 3
Session Chairs: Pieter Dorenbos, Delft University of Technology

N37-1 Energy Resolution of LGS0 Scintillators

N37-2 Beginning Experiments with Segmented NaI(Tl) Scintillation Detectors
M. M. Allen, N. Bowden, J. Brennan, J. Lund, W. Mengesha
Sandia National Laboratories, USA

N37-3 Development of High Resolution Scintillator Systems Based on Photocell Technology

N37-4 Radiation Damage and Activation from Proton Irradiation of Advanced Scintillators
P. E. Blaser, M. L. McConnell, J. R. Macri, P. J. Bruillard, J. M. Ryan, University of New Hampshire, USA; W. Hajdas, Paul Scherrer Institut, Switzerland

N37-5 Resistance of LaBr3:5%Ce3+ and LaCl3:10%Ce3+ Scintillators to 100 MeV Proton Irradiation
P. Dorenbos, A. J. Bos, J. T. M. de Haas, H. Brouwer, Delft University of Technology, Netherlands; S. Kraft, E. J. Buis, E. Maddox, Cosine Research BV, Netherlands; A. Owens, F. G. A. Quarati, European Space Agency ESTEC, Netherlands; C. Dathy, V. Ouspenski, Saint Gobain Crystals, France

N38 Simulation: Physics Models and Validation
Thursday, Nov. 2 10:30-12:00, Pacific Salon 1
Session Chair: Massimo Lamanna, CERN

N38-1 (invited) Geant4 Physics Capabilities for Multidisciplinary Applications - a Review
A. Heikkinen, Helsinki Institute of Physics, Finland
On behalf of the Geant4 Collaboration

N38-2 Thermal Neutron Scattering from Nuclei Within Chemically Bound Atoms in Geant4
T. Koi, SLAC, USA
N38-3 Validation of Neutrons in Geant4 Using TARC Data  
A. S. Howard, CERN, Switzerland

N38-4 Neutron Verification Studies Within the Geant4- and ROOT-Based Package MaGe  
M. G. Marion, A. G. Schubert, J. A. Detwiler, R. A. Johnson, J. F. Wilkerson, University of Washington, USA; Y.-D. Chan, R. Henning, Lawrence Berkeley National Laboratory, USA; S. R. Elliott, V. M. Gehman, K. Kazkaz, D. Mei, Los Alamos National Laboratory, USA

N38-5 Validation of the Bremsstrahlung Models of Geant4  
L. Pandola, Laboratori Nazionali del Gran Sasso, Italy
On behalf of the Geant4 Low Energy Electromagnetic Group

N38-6 Geant4 Atomic Relaxation Validation Against the NIST Reference Data  
V. Zampichelli, S. Guatelli, A. Mantero, B. Mascalino, M. G. Pia INFN Sezione di Genova, Italy

N39 Instrumentation for Medical and Biological Research  
Thursday, Nov. 2 10:30-12:00, Pacific Salon 2
Session Chairs: Richard Lanza, MIT  
Roberto Accorsi, The Children's Hospital of Philadelphia

N39-1 (invited) Parametric Imaging of Photosynthesis with $^{11}$CO$_2$ and Positron Emitting Tracer Imaging System (PETIS)  
N. Kawachi, S. Ishii, S. Fujimaki, N. Suzui, N. S. Ishioka, S. Matsuhashi, Japan Atomic Energy Agency, Japan

N39-2 Adaptive Imaging Using the I-ImaS X-Ray Imaging System  
M. Nov, J. Jones, G. Hall, Imperial College, UK; R. Speller, University College, UK; R. Turchetta, Rutherford Appleton Laboratory, UK; R. Longo, University of Trieste, Italy; J. Ostby, SINTEF, Norway; D. Cavouras, University of Athens, Greece; F. Triantis, University of Ioannina, Greece; P. van der Stelt, University of Amsterdam, Netherlands; F. Psomadellis, ANCO S.A., Greece

N39-3 Feasibility Evaluation of the Application of Silicon Drift Detectors in Studies of Drug Delivery in Liver  
R. Alberti$^{1,2}$, C. Fiorini$^{1,2}$, C. Guazzoni$^{3,2}$, T. Klatka$^{1,2}$, A. Longoni$^{1,2,3}$, R. Delfino$^{1,2}$, V. Lorusso$^{1}$, L. Pascolo$^{1,3}$, L. Vaccari$^{1}$, F. Arfelli$^{1,2}$, M. Mancini$^{1}$, R. H. Menk$^{1}$, L. Rigon$^{1}$, G. Tromba$^{1}$

$^1$Politecnico di Milano, Italy; $^2$INFN, Italy; $^3$IFN-CNR, Italy; $^4$Centro Studi Fegato, Italy; $^5$Universita' degli Studi di Trieste, Italy; $^6$Bracco, Italy; $^7$Center of Molecular Biomedicine, Italy; $^8$Sincraronre Trieste S.p.A., Italy; $^9$The Abdul Salam International Centre for Theoretical Physics, Italy

N39-4 A CMOS Active Pixel Sensor and Microelectrode Array for Retinal Stimulation  

N39-5 Improving the Peak-to-Valley Dose Ratio in a Synchrotron X-Ray Microbeam Array  
M. L. F. Lerch$^{1}$, E. A. Siegbahn$^{1}$, H. Nettelbeck$^{1}$, E. Brauer-Krisch$^{1}$, B. Oborn$^{1}$, G. Takacs$^{1}$, W. Zealley$^{1}$, A. Bravin$^{1}$, A. Rosenfeld$^{1}$

$^1$University of Wollongong, Australia; $^2$European Synchrotron Radiation Facility, France

N39-6 Effects of Sinogram Filtering in the Quality of PET Reconstructions: Preliminary Results  

N40 Scintillators III - Composites - ZnO  
Thursday, Nov. 2 10:30-11:45, Pacific Salon 3
Session Chairs: Kent Burr, GE Research  
Marek Moszynski, Solan Institute for Nuclear Studies

N40-1 Transparent Ceramic Lutetium Aluminum Garnet Scintillators  

N40-2 Composite Scintillators for Radiation Detection and Nuclear Spectroscopy  

N40-3 Scintillation Properties of SrHfO3:Ce3+ and BaHfO3:Ce3+ Ceramics  
E. V. Van Loef$^1$, W. M. Higgins$^1$, J. Glodo$^1$, C. Brecher$^1$, A. Lempicki$^1$, V. Venkataramani$^1$, W. W. Moses$^1$, S. E. Derenzo$^1$, K. S. Shah$^1$

$^1$Radiation Monitoring Devices, USA; $^2$ALEM Associates, USA; $^3$General Electric, USA; $^4$Lawrence Berkeley National Laboratory, USA

N40-4 The Effects of Thermochemical Treatments on the Scintillation and Photoluminescence Properties of ZnO Single Crystals  
J. S. Neal, L. A. Boatner, Oak Ridge National Laboratory, USA; S. E. Derenzo, E. D. Bourret-Courchesne, Lawrence Berkeley National Laboratory, USA

N40-5 Development of ZnO:Ga as an Ultra-Fast Alpha Particle Detector  
E. D. Bourret-Courchesne, S. E. Derenzo, M. J. Weber Lawrence Berkeley National Laboratory, USA

N41 HEP & NP Instrumentation VIII: Particle ID Systems  
Thursday, Nov. 2 13:30-15:00, Pacific Salon 1
Session Chairs: Riccardo de Asmundis, INFN, Napoli  
Luca Lista, INFN, Napoli

N41-1 The Time of Flight Detector Upgrade at PHENIX  
S. Huang, Vanderbilt University, USA
On behalf of the PHENIX Collaboration

N41-2 Aging Studies of 2nd Generation BaBar RPCs  
H. R. Band, U. of Wisconsin, US
On behalf of the BaBar IFR Group

N41-3 Development of a Readout System for Large Scale Time-of-Flight Systems with Picosecond Resolution  
T. Credo, H. Frisch, H. Sanders, F. Tang, J. van Santen, Enrico Fermi Institute, University of Chicago, USA; K. Byrum, G. Drake, Argonne National Laboratory, USA
N41-5 Initial Tests of a Hadron Blind Detector for the PHENIX Experiment at RHIC

N41-6 Performance of the PHENIX Time Expansion Chamber/Transition Radiation Detector
M. Leite, University of Sao Paulo, Brazil
On behalf of the Phenix TEC/TRD Group

N42 Photodetectors and Radiation Imaging II
Thursday, Nov. 2 13:30-15:00, Pacific Salon 2
Session Chair: Ronald Wurtz, LLNL

N42-1 Critical Comparison of Silicon Photomultipliers and Photomultiplier Tubes for Low Light Sensing Applications
P. L. Hughes, V. Saveliev, M. O'Shea, D. J. Herbert, A. G. Stewart, J. C. Jackson
SensL, Ireland

N42-2 Combined Study of SiPM Saturation and Recovery Time Effects for PET Applications: Towards a Direct Comparison with an LSO-APD Detector
V. C. Spanoudaki1, N. A. Otte2, A. B. Mann3, I. Konorov4, S. Paul1, I. Torres-Espallardo1, J. Galindo1, S. I. Ziegler1
1Klinikum rechts der Isar, Technical University of Munich, Germany; 2Max-Planck-Institut für Physik, Germany; 3Technical University of Munich, Germany

N42-3 Avalanche Drift Diode as Novel Detector for Single Photon Counting
C. Merck1, R. Eckhardt2, R. Hartmann3, P. Holl2, G. Lutz1, H.-G. Moser1, J. Ninkovic1, N. Otte1, R. Richter1, H. Soltau2, L. Strueder3
1Max-Planck-Institut für Physik, Germany; 2PNSensor GmbH, Germany; 3Max-Planck-Institut für extraterrestrische Physik, Germany

N42-4 New Developments on Silicon Photomultiplier for Medical and High-Energy Physics Applications
C. Piemonte, ITC-irst, Italy
On behalf of the DASiPM collaboration

N42-5 5 X 5 Array of Single Photon Avalanche Diodes (SPAD)
S. S. Tediosi1,2, S. S. Privitera1,2, F. F. Musumeci1,2, L. L. Lanzanò1,2, A. A. Scordinio1,2, A. A. Campisi1, L. L. Cosentino1, P. P. F. Finocchiaro1, G. G. Fallica1, S. S. Lombardo1, M. M. Mazzillo3, D. D. Sanfilippo3, E. E. Sciacca3, G. G. Valvo3
1INFN, Italy; 2Università di Catania, Italy; 3ST-Microelettronics, Italy

N42-6 SPM Tiles: Large Area, Position Sensitive Photodetectors
D. J. Herbert, P. J. Hughes, A. G. Stewart, L. Wall, F. Quinlan, C. J. Jackson
SensL, Ireland


New Solid State Detectors

Thursday, Nov. 2 15:30-17:00, Pacific Salon 2

Session Chair: Douglas McGregor, Kansas State University

Simulation Results from Double Sided 3D Detectors


Experimental Study of Pre-Diffusion in Multilinear Silicon Drift Detectors

A. Castoldi, C. Guazzoni, R. Hartmann, P. Madoglio, L. Strüder

Wafer-Bonded Silicon Gamma-Ray Detectors

E. A. Wulf, B. F. Philips, J. D. Kurfess, K. D. Hobart, F. J. Kub

Development of Large Arrays of Microcalorimeters for Precision Gamma-Ray Spectroscopy


Geiger Sensor Arrays for Microvertex Applications

S. Vasile, J. Rau, aPeak Inc., USA

The Influence of Defects on Charge Transport in Single-Crystal Synthetic Diamond Detectors

P. J. Sellin, A. Lohstroh, S. G. Wang, J. Parkin, A. W. Davies, University of Surrey, UK; D. Twitchen, Element Six Ltd, UK

HEP Software Systems

Thursday, Nov. 2 15:30-17:15, Pacific Salon 3

Session Chair: Paolo Calafiura, LLNL

Offline Data Handling in the NA48 Experiment

R. Fantechi, INFN - Sezione di Pisa, Italy

P326 Software Architecture

R. Fantechi, INFN - Sezione di Pisa, Italy

Alignment of the Inner Detector of the ATLAS Experiment

J. R. Schieck, Max-Planck-Institute for Physics, Germany

On behalf of the ATLAS Inner Detector Collaboration
The IEEE Medical Imaging Conference (MIC) is the premier research gathering for scientists and engineers interested in the physics and engineering of the use of ionizing radiation in medical imaging. We, the MIC chairs, welcome you to the 2006 MIC and express our pleasure that you have chosen to attend and participate in this year’s conference. We hope the conference is, as it has been each year it has been held, an excellent forum for communicating and discussing the most recent advances in the science and engineering of nuclear, radiological, and novel medical imaging technologies and techniques.

The 2006 MIC scientific program, including joint NSS/MIC and MIC/RTSD sessions, runs from Tuesday afternoon October 31 through Saturday afternoon November 4 with the core MIC program Wed Nov 1 through Sat Nov 4. The program is a vibrant scientific program that includes a two-speaker plenary session; an awards/oral session; approximately 450 posters in 3 poster sessions; and 96 oral presentations in the awards/oral session, 12 oral MIC sessions, and 3 joint oral session. Two excellent scientists and speakers, Jan Schnitzer, MD, Scientific Director, Sidney Kimmel Cancer Center, San Diego, CA, and Ron Nutt, PhD, Chief Executive Officer, Advanced Biomarker Technologies, Knoxville, TN, will give the plenary talks. The MIC also includes the MIC dinner/evening at Sea World San Diego.

The MIC thrives and excels only through the generous but essential volunteer activities of many individuals at many levels. We conclude with heartfelt ‘thank you’ to all who helped shape the 2006 MIC, especially, the reviewers of this year’s submissions. The reviewers are 220 colleagues who volunteered their time and expertise in the assessment of 588 submissions and whose contributions were critical to creation of the outstanding scientific program of this year’s MIC. These individuals produced 3×588 = 1764 reviews. Many thanks to the reviewers and all other contributors to the planning and running of the 2006 MIC. Again, welcome to the preeminent 2006 scientific conference devoted to the physics and engineering of x-ray and radionuclide medical imaging. Welcome to the 2006 Medical Imaging Conference!

New targets are needed for detecting disease through molecular imaging and for treating disease through directed delivery in vivo. Sequencing the human genome has identified a target pool of 25,000 genes that may generate posttranslationally a million distinct, possible protein targets. Genomic and proteomic analysis of normal and diseased tissues has yielded thousands of candidates for diagnostic and tissue assessment as well as potential therapeutic targets. But the sheer number of candidates can overwhelm the required in vivo validation process leading some to question the ultimate impact of these approaches on speeding up achieving targeting in vivo. Moreover, in vivo epithelial and endothelial cell barriers prevent access of many circulating agents into tissue compartments where these “omic” targets are expressed and where biologics, imaging agents, nanoparticles, gene vectors and drugs can be most effective. The sheer volume and complexity of the “omic” tissue data can be reduced to a manageable subset of intravenously accessible candidates most relevant to targeting, imaging, and treating disease by using newly-developed global analytical techniques to map proteins expressed in vivo at the luminal endothelial cell surface. This approach has demonstrated distinct molecular signatures for endothelia of normal and neoplastic tissues. We applied this strategy to various rodent and human organs and solid tissues to uncover, from the vast number of proteins expressed in tissue, about 50 differentially expressed proteins in each tissue, including several promising tissue-selective endothelial cell surface proteins that permit rapid and specific immunotargeting and imaging in vivo. More recently, we have identified such targets concentrated in transport vesicles called caveolae. Intravital microscopy and SPECT imaging show that antibodies targeting caveolae are not only tissue-specific but perhaps more importantly, are pumped actively across endothelium to penetrate and percolate throughout the tissue within seconds to minutes (normal lung) and minutes to hours (solid tumors) after intravenous injection. This unique integration of proteomic and imaging methods allow us to study how disease and tissue microenvironments can influence protein expression at the surface of endothelial cells lining blood vessels and how caveolae function to transport endogenous molecules as well as possibly targeted drugs, nanoparticles and gene vectors from the circulatory blood across the endothelial cell barrier to reach underlying tissue and even tumor cells. This strategy may be useful clinically for noninvasively diagnosing, treating and even monitoring many diseases.

Biography:

Dr. Jan E. Schnitzer is the Scientific Director of the Sidney Kimmel Cancer Center, in San Diego, California, an independent, nonprofit research institution dedicated to the development and advancement of
biomedical research to eliminate cancer. Dr. Schnitzer earned a BSE in Chemical Engineering from Princeton University and an M.D. (1985) from the University of Pittsburgh Medical School. He completed his postdoctoral training at Yale University Medical School in the Department of Cell Biology, then held faculty positions as Assistant Professor at the University of California School of Medicine with appointments in the Departments of Medicine and Pathology and the Institute of Biomedical Engineering (1990-1994), and as Associate Professor at Harvard Medical School, Beth Israel Hospital, Boston, Massachusetts (1994-1999). He joined the faculty of the SKCC in 1999, where he currently is Professor of Molecular and Cellular Biology, Director of the Vascular Biology and Angiogenesis Program, and Scientific Director. As the Scientific Director, Dr. Schnitzer is responsible for many administrative duties in addition to running his laboratory of approximately 30 scientists and technicians. The SKCC was recently awarded a $14.4 million Program Project Grant, over five years, from the National Cancer Institute, with Dr. Schnitzer as the Principal Investigator. He is the author of over 65 publications and book chapters and serves on many NIH and NCI Grant Review Panels. He also lectures at major symposia worldwide as an invited speaker and has received numerous honors and awards.

Molecular imaging with PET and SPECT, as well as with other imaging technologies and other major modalities (CT, MRI, MRS, ultrasound, and optical) are seeing expanded use in the diagnosing of, and in the following of therapies for, cancer, cardiovascular disease, and neurological disorders. Several important technological developments made PET and PET/CT clinically viable and routine, and propelled them, in the last decade, to the forefront of molecular medicine. Recently, microPET, microSPECT, microCT, microMRI, and integrated versions of these modalities have found significant roles in molecular medicine in the economical development of new pharmaceuticals and in the scientific advancement of biological research. Newer technologies under development will further advance the adoption and use of molecular imaging. These include a PET insert with novel solid-state radiation detectors that can be operated inside a whole-body MRI system and innovative microchemistry systems with new biomarker generators, microfluidics, and/or minicyclotrons for molecular imaging probe development. These technological advances can and have produced significant changes in the ways that medical imaging, laboratory research, and clinical medicine are practiced. This presentation will discuss the above with focus on the emergence of molecular imaging as the key to the development of molecular medicine and the expectation that PET (and integrations) will emerge as the most widely used of all imaging modalities.

Biography:

Dr. Ronald Nutt is CEO of Advanced Biomarker Technologies (Knoxville, TN), a company dedicated to developing molecular imaging biomarkers. He earned his undergraduate and graduate degrees in electrical engineering from the University of Tennessee, and began his rich career as a researcher at Oak Ridge National Laboratory, as a faculty member at the University of Tennessee, and then as Vice-President of EG&G Ortec where he was responsible for many innovations in nuclear physics instrumentation. Dr. Nutt co-founded several companies, including CTI Molecular Imaging in 1983 where he served as VP of Research and Development, and then as President and CEO, and CTI PET Systems Inc., a joint venture with Siemens Medical Solutions, where he served as President. Dr. Nutt has contributed more than 30 patents, numerous technical publications, and many invited talks at scientific conferences in the field of molecular imaging. In 1993, Dr. Nutt received the Region 3 IEEE Outstanding Engineer Award for “Outstanding Technical and Entrepreneurial Achievements in Medical Imaging”. Dr. Nutt was recognized as a Fellow of the IEEE in 1995 with a citation that reads in part “For contributions to nuclear research, especially to that in the area of positron emission tomography (PET)”. Dr. Nutt also received the Nathan W. Daugherty Award in 1997, the highest Engineering Alumni Award from the University of Tennessee. In 1999, Dr. Nutt was named the Academy of Molecular Imaging’s Distinguished Scientist of the Year; and in 2000, his contributions to the invention and development of PET/CT were recognized by TIME magazine when they named PET/CT the Medical Invention of the Year.
**MIC PROGRAM**

**NM1  NSS MIC Joint Session 1**

Tuesday, Oct. 31 13:30-15:00, Golden Ballroom

Session Chairs: Neal Clinthorne, University of Michigan
Stephen Derenzo, LBNL

NM1-1 Direct Detection of Beta Particles on a Microfluidic Chip Using Position Sensitive APDs
N. T. Vu¹, Y. H. Chung¹, Z. T. F. Yu², R. W. Silverman¹, R. Taschereau¹, R. Farrell², K. S. Shah³, H. R. Tseng¹, A. F. Chatziioannou¹
¹UCLA, U.S.A.; ²Radiation Monitoring Devices, U.S.A.

NM1-2 A Low-Cost Approach to High-Resolution, Single-Photon Imaging Using Columnar Scintillators and Image Intensifiers
B. W. Miller, H. B. Barber, H. H. Barrett, L. Y. Chen
University of Arizona Health Sciences Center, USA

NM1-3 Neutron Spectroscopy of Mouse Using Neutron Stimulated Emission Computed Tomography (NSECT)
Duke University, USA

NM1-4 Design and Development of a High Performance Micro-CT System for Small-Animal Imaging
E. Lage, J. J. Vaquero, S. Redondo, M. Abella, G. Tapias, M. Desco
Hospital G. U. Gregorio Marañón, Spain

NM1-5 Assessment of a New CT System for Small Animals
S. Redondo, J. J. Vaquero, E. Lage, M. Abella, G. Tapias, M. Desco
Hospital G. U. Gregorio Marañón, Spain

NM1-6 The Medipix3 Prototype, a Pixel Readout Chip Working in Single Photon Counting Mode with Improved Spectrometric Performance
R. Ballabriga, M. Campbell, E. H. M. Heijne, X. Llopart, L. Tlustos
CERN, Switzerland

**NM2  NSS MIC Joint Session 2**

Tuesday, Oct. 31 15:30-17:30, Golden Ballroom

Session Chairs: William Moses, LBNL
Craig Woody, Brookhaven National Lab

NM2-1 Thick Silicon Strip Detectors for Small-Animal SPECT Imaging
S. Shokouhi¹, M. A. Fritz¹, L. R. Furenlid¹, T. E. Peterson¹
¹Vanderbilt University, USA; ²University of Arizona, USA

NM2-2 Internal-Gain CMOS APD Pixels for SPECT Imaging of Small Animals
J. F. Christian, C. J. Stapels, Radiation Monitoring Devices, Inc., USA; ²F. L. Augustine, Augustine Engineering, USA

NM2-3 Suppression of Afterglow in CsI(Tl) by Codoping with Eu2+: Fabrication of Microcolumnar Films for High-Resolution High-Speed Imaging
V. V. Nagarkar¹, V. Gaysinskiy¹, E. E. Ovechkina¹, S. R. Miller¹, C. Brecher², A. Lempicki², M. R. Squillante¹
¹RMD Inc., USA; ²ALEM Associates, USA
M01-5 Unified Algorithm for kV and MV X-Ray Scatter and Beam-Hardening Correction Using the Convolution-Superposition Method
Siemens Medical Solutions, USA, Inc., USA

M01-6 Noise Reduction Using a Theoretically-Exact Algorithm for Helical Cone-Beam Tomography
R. Venkataraman, E. Noo, University of Utah, USA; H. Kudo, University of Tsukuba, Japan

M01-7 Hyperfast Perspective Cone-Beam Backprojection
M. Kachelriess, M. Knaup, Institute of Medical Physics (IMP), Germany; O. Bockenbach, Mercury Computer Systems, Germany

M01-8 Iterative Method for Multiple-Image Radiography Parametric Image Estimation
J. G. Brankov, L. C. Cobo Rus
Illinois Institute of Technology, USA

M02 MIC Plenary
Wednesday, Nov. 1 10:30-12:20, Golden Ballroom
Session Chairs: John Aarsvold, Emory University & Atlanta Veterans Affairs Medical Center
Bruce Hasegawa, University of California, San Francisco

M02-1 Welcome from MIC Program Chairs & General Chair

M02-2 (invited) Systems Biology Approach for In Vivo Proteomic Mapping of Endothelia in Organs and Solid Tumors for Targeted Imaging and Therapy
J. Schnitzer, Sidney Kimmel Cancer Center, USA

M02-3 (invited) Molecular Imaging- The Path to Molecular Medicine
R. Nutt, Siemens Medical Solutions, Inc., USA

M03 Observer Analysis and Modelling
Wednesday, Nov. 1 13:30-15:00, Golden Ballroom
Session Chairs: Stephen Moore, Brigham & Women’s Hospital
Michael King, Univ of Mass Med School

M03-1 Effect of Object Variability in Observer Performance Studies for Image Quality Assessment
B. M. W. Tsui1, E. C. Frey2, L. Volokh2, K. L. Gilland1, C. Liu1, X. He1, S. Chen1
1The Johns Hopkins Medical Institutions, USA; 2GE Health Care, Israel

M03-2 A Multiclass Model Observer for Multislice-Multiview Images
H. C. Gifford, M. A. King, Univ Mass Medical School, USA

M03-3 Optimizing Sensitivity-Resolution Trade-off Using Generalized Detection/Discrimination Task and Three-Class ROC Analysis
L. Volokh, GE Healthcare Technologies, Johns Hopkins University, Israel; X. He, E. C. Frey, B. M. W. Tsui, Johns Hopkins Medical Institutions, USA

M03-4 Generalization Evaluation of Numerical Observers for Image Quality Assessment
J. G. Brankov, L. Wei, Y. Yang, M. N. Wernick
Illinois Institute of Technology, USA

M03-5 Human-Observer LROC Study of Lesion Detection in Ga-67 SPECT Images Reconstructed Using MAP with Anatomical Priors
A. Lehovich1, P. P. Bruyant2, H. C. Gifford3, G. Gindi3
1U. Mass Medical School, USA; 2Univ. Brest, France; 3SUNY Stony Brook, USA

M03-6 Aperture Optimization in Emission Imaging Using Optimal LROC Observers
P. Khurd, University of Pennsylvania, USA; A. Rangarajan, University of Florida, USA; G. R. Gindi, SUNY at Stony Brook, USA

M04 PET Reconstruction
Wednesday, Nov. 1 15:30-17:30, Golden Ballroom
Session Chairs: Paul Kinahan, University of Washington
Margaret Daube-Witherspoon, University of Pennsylvania

M04-1 Generalized 3D Kernel Computation Method and Its Application in PET-Insert System
D. Pal, J. A. O’Sullivan, H. Wu, Y. C. Tai
Washington University in St. Louis, USA

M04-2 Systematic and Distributed Time-of-Flight List Mode PET Reconstruction
W. Wang1, Z. Hu1, E. E. Gualtieri1, M. J. Parma1, E. S. Walsh1, D. Sebok1, Y.-L. Hsieh1, C.-H. Tung1, X. Song1, J. J. Griesmer1, J. A. Kolthammer1, L. M. Popescu2, M. Werner2, J. S. Karp2, D. Gagnon1
1Philips Medical Systems, USA; 2University of Pennsylvania, USA

M04-3 Accuracy of Time-of-Flight Kernel in TOF-PET Reconstruction
M. E. Daube-Witherspoon, S. Surti, S. Matej, M. Werner, J. S. Karp
University of Pennsylvania, USA

M04-4 Efficient 3D TOF PET Reconstruction Using View-Grouped Histo-Images
S. Matej, J. Jayanthi, S. Surti, J. S. Karp, G. Muehllehner
University of Pennsylvania, USA

M04-5 Image Noise Variance in 3D OSEM Reconstruction of Clinical Time-of-Flight PET
C. C. Watson
Siemens Medical Solutions Molecular Imaging, USA

M04-6 A Method to Include Single Photon Events in Image Reconstruction for a 1 mm Resolution PET System Built with Advanced 3-D Positioning Detectors
G. Chinn1, A. M. K. Foudray1,2, C. S. Levin1
1Stanford University, USA; 2UCSD, USA

M04-7 Accurately Positioning and Incorporating Large-Angle Tissue-Scattered Photons into PET Image Reconstruction
G. Chinn1, A. M. K. Foudray1,2, C. S. Levin1
1Stanford University, USA; 2UCSD, USA

M04-8 Iterative Kinetic Parameter Estimation Within Fully 4D Image Reconstruction
A. L. Reader, J. C. Matthews, The University of Manchester, UK; I. Buvat, INSERM, France
MR1 MIC RTSD Joint Session

Wednesday, Nov. 1 15:30-17:30, Hampton & Windsor Rooms
Session Chairs: Kanai Shah, RMD
Lars Furenlid, University of Arizona

MR1-1 (invited) MICROGAMI: a Versatile Gamma Camera Based on CdZnTe Detectors with an Orthogonal Capacitive Strip Technology
L. Verger, F. Mathy, O. Monnet, G. Montemont
CEA-Recherche Technologique, FRANCE

MR1-2 Evaluation of a Large Pixelated Cadmium Zinc Telluride Detector for Small Animal Radionuclide Imaging
E. W. Izaguirre1, M. Sun2, T. VandeHei1, Y. Huang3, T. Funk1, J. Li3, K. Parnham3, B. Patt1, B. H. Hasegawa1
1University of California San Francisco, USA; 2Gamma Medica Ideas, USA; 3University of Shanghai for Science and Technology, P.R. China

MR1-3 Dual-Isotope SPECT Imaging of Mice with Semiconductor CZT
D. J. Wagenaar1, J. Zhang1, T. Kazules1, T. VandeHei1, M. Szawlowski2, E. Bolle3, B. E. Patt1
1Gamma Medica-Ideas, Inc., USA; 2Gamma Medica-Ideas, Inc., Norway

MR1-4 Design of a Small-Animal SPECT System with a Stationary CZT Detector Ring

MR1-5 CdTe Orthogonal Strip Detector for Small Animal PET
H. Kim1, L. Cirignano1, P. Dokhale3, P. Bennett1, J. R. Stickel2, G. S. Mitchell2, S. R. Cherry2, M. Squiriante1, K. Shah1
1RMD, USA; 2University of California, USA

MR1-6 CZT Gamma Camera for Scintimammography
L. M. Blevis1, M. K. O’Connor2, E. Shai1, Y. Malinovich1
1General Electric Healthcare, Israel; 2Mayo Clinic, USA

MR1-7 New Hand-Held Preoperative Gamma Camera Based on CZT Pixelized Detectors for Sentinel Node Observation
C. Scheibeg, A. Zumbiehl, Hôpital Cardiovasculaire Biophysique, France; J. Chamborn, M. Friedrich, M. Sowinska, P. Siffert, EURORAD, France

MR1-8 (invited) A CZT Pixilated Detector: Advantages, Drawbacks and Solutions
U. El-Hanany, Orbotech Medical Solutions, Israel

M05 Modeling and Image Analysis

Thursday, Nov. 2 08:00-10:00, Golden Ballroom
Session Chairs: Gene Gindi, SUNY at Stony Brook
Sung-Cheng (Henry) Huang, UCLA David Geffen School of Medicine

M05-1 Modeling Spatial Smoothness in Fully 3-D SPECT Image Reconstruction Using Multiresolution B-Splines
B. W. Reutter1, A. Sitek1, R. Bouthchko2, E. H. Botvinick2, G. T. Gullberg1, R. H. Huesman1
1Lawrence Berkeley National Laboratory, USA; 2University of California, USA

M05-2 Theoretical Comparison of Motion Correction Techniques for PET Image Reconstruction
E. Asma, R. Manjeshwar, General Electric Global Research, USA; K. Thieleman, General Electric Healthcare, UK

M05-3 Implementation and Evaluation of a 3D PET Single Scatter Simulation with TOF Modeling
M. E. Werner, S. Surti, J. S. Karp
University of Pennsylvania, USA

M05-4 Comparison Between TOF and Non-TOF PET Using a Scan Statistic Numerical Observer
L. M. Popescu, R. M. Lewit
University of Pennsylvania, USA

M05-5 Analysis of Region of Interest Quantification for PET Image Reconstruction with Selective Regularization
S. Ahn, R. M. Leahy, University of Southern California, USA

M05-6 Unbiased Quantification of Tomographic Data by Projecting Continuous Regions-of-Interest
D. Schottlander1, T. Kadir2, J. Declerck2, M. Brady1
1University of Oxford, UK; 2Siemens Molecular Imaging Limited, UK

M05-7 Validation of the Active Shape Model (ASM) for Automatic Brain Region Segmentation
V. Boronikolas1, M. Michaelides1, J. Zhou1, G.-J. Wang1, S. Blackband3, S. C. Grant1, D. Metaxas1, N. Volkow1, P. K. Thanos4,5
1Brookhaven National Laboratory, USA; 2Rutgers University, USA; 3University of Florida, McKnight Brain Institute, USA; 4Dept. of Health and Human Services, USA; 5SUNY Stony Brook, USA

M05-8 Spatially Penalized Methods for Linear Parametric Imaging
G. Wang, J. Qi, University of California, USA

M06 MIC Poster 1

Thursday, Nov. 2 10:30-12:00, Atlas Ballroom
Session Chairs: Kenneth Wong, Georgetown University
Enrique Izaguirre, University of California San Francisco
David Gilland, University of Florida

M. Bhattacharya
West Bengal University of Technology, Dept. of Computer Science and Engg, Roorkee, India

M06-7 PEM-PET Image Reconstruction in a Clinically- Relevant Time Frame
M. F. Smith, Thomas Jefferson National Accelerator Facility, USA; R. R. Rayman, West Virginia University, USA

M06-10 Characterization of Imaging Performance of the Positron Emission Mammography System
D. Beylin, P. Stepnov, D. Narayanan, E. Anashkin, V. Zavarzin
Naviscan PET Systems, Inc., USA

M06-13 Evaluation of the Conical Scanning Scheme for SPECT Applications
V. Y. Pedash, A. V. Gektin, O. V. Dyomin, Institute for scintillation materials NAS of Ukraine, Ukraine; V. L. Gayshan, ScintiTech, Inc., USA
M06-16 Gamma Camera Imaging of Permanent Breast Seed Implantation (GIPSI)
A. Ravi1, C. B. Caldwell1,2, B. Keller1, A. Reznicek1, J.-P. Pignol1,2
1University of Toronto, Canada; 2Sunnybrook Hospital, Canada

M06-19 Development of Triple GEM Structure for Medical Imaging
E. N. Tsyganov1, P. P. Antich1, A. F. Buzulutskov2, R. W. Parkey1, S. Y. Selionine1
1The University of Texas Southwestern Medical Center at Dallas, USA; 2Budker Institute of Nuclear Physics (BINP), Russia

M06-23 Multi-Energy, Single-Isotope Pinhole Imaging Using Stacked Detectors
B. S. McDonald1, S. Shokouhi3, H. H. Barrett2, T. E. Peterson1
1Vanderbilt University, USA; 2University of Arizona, USA

M06-26 Design of Multi-Slit and Multi-Pinhole Collimators for a Small-Animal SPECT System with a Stationary CZT Detector Ring
J. W. Hugg1, F. P. Jansen, J. Uribe, R. M. Manjeswar1
GE Global Research, USA

M06-29 Second-Generation, Tri-Modality Pre-Clinical Imaging System
K. Parnham1, D. J. Wagenaar, J. Li, S. Chowdhury, B. E. Patt
Gamma Medica-Ideas, Inc., USA

M06-32 An Attenuation Correction System for a Dedicated Small FOV, Dual Head, Fixed-90°, Cardiac Gamma Camera Using Arrays of Gd-153 Line Sources
E. G. Hawman, M. Ray, R. Xu, H. Vija
Siemens Medical Solutions USA, Inc., USA

M06-35 Development of Rapid SPECT Acquisition Protocol for Myocardial Perfusion Imaging
A. H. Vija1, J. T. Chapman, E. G. Hawman, Siemens Medical Solutions USA, Inc., USA; 2University of Erlangen-Nuernberg, Germany

M06-38 Brain PET Partial-Volume Compensation Using Blurred Anatomical Labels
E. Bataille1, C. Comtat, S. Jan, F. Surco, R. Trebossen
CEA, DSV, DRM, SHFJ, France

M06-41 Development of MRI-Compatible Nuclear Medicine Imaging Detectors
D. J. Wagenaar1, M. Szawolski1, M. Kapusta1, K. Parnham1, G. Maehlum1, N. Pavlov3, J. A. Gjaerum2, K. Yoshioka1, B. E. Patt1
1Gamma Medica-Ideas, Inc., USA; 2Gamma Medica-Ideas, Inc., Norway

M06-43 Small Animal Positron Emission Tomography with Hyperpure Germanium Detectors
R. J. Cooper1, A. J. Boston, H. C. Boston, J. R. Cresswell, A. N. Grint, A. R. Mather, P. J. Nolan, D. P. Scraggs, G. Turk,
The University of Liverpool, UK; 2C. J. Hall, I. H. Lazarus, CCLRC Daresbury Laboratory, UK; 3A. Berry, T. Beveridge, J. Gillam,
R. Lewis, Monash University, Australia

M06-46 MRI Based Attenuation Correction for Combined PET/MR
J. B. Malone1, R. E. Ansorge, T. D. Fryer, G. B. Williams, T. A. Carpenter
University of Cambridge, UK

M06-49 Comparison of Position-Sensitive Versus Discrete Avalanche Photodiodes in a Continuous Crystal Gamma Camera
P. Després1, T. Funk1, W. C. Barber1, K. S. Shah1, B. H. Hasegawa1
1Physics Research Laboratory, University of California, San Francisco, USA; 2Radiation Monitoring Devices Inc., USA

M06-52 Experimental Measurement of Axial and Transaxial Resolutions of a Slit-Slat Collimator and Comparison to Theoretical Expectations
J. R. Novak1, S. D. Metzler1, R. Accorsi3, A. S. Ayan1, R. J. Jaszcak1,2
1University of Pennsylvania, USA; 2The Children's Hospital of Philadelphia, USA; 3Duke University Medical Center, USA; 4Duke University, USA

M06-55 Helical Path, Half-Cone-Beam Acquisition for SPECT Brain Imaging
R. J. Jaszcak1,2, K. L. Greer1, J. E. Bowsher1, S. D. Metzler1, R. Ter-Antonyan1, K. V. Bobkov1,4
1Duke University Medical Center, USA; 2Duke University, USA; 3University of Pennsylvania, USA; 4University of Michigan, USA

M06-58 Development of High Spatial Resolution Mini Gamma Cameras Based on Pixelated CsI(Tl) Scintillator and H9500 PSPMTs for Small Animal Imaging
S. Majewska, V. Popov, J. Proffitt, W. Hammond, B. Kross, A. Weisenberger, Jefferson Lab, USA; Y. Wang, B. Tsui, Johns Hopkins University, USA

M06-61 A Sensitivity Model for Multi-Pinhole SPECT
F. P. DiFilippo, Cleveland Clinic Foundation, USA

M06-65 Comparison of Singles-Mode Transmission Imaging on a microPET P4 Tomograph Using Co-57 and Ge-68 Sources
J. P. J. Carney1, C. M. Laymon, B. J. Lopresti1
University of Pittsburgh, USA

M06-68 Real Time Implementation of a Wiener Filter Based Crystal Identification Algorithm for Photon Counting CT Imaging
N. Viscogliosi, P. Bérard, J. Riendeau, R. Lecomte, R. Fontaine
Université de Sherbrooke, Canada

M06-71 Maximizing the Useful Field of View of the MicroPET: Feasibility of Imaging Large Animals
S. Naidoo1, W. Lehnert, P. Kench, S. R. Meikle
University of Sydney, Australia

M06-74 Software Development Framework Supporting Multimodal Tomographic Imaging
M. Emri1, G. Opposit1, S. A. Kiz1, L. Tron1, P. Veres1, A. Panyik1, I. Valasty1, J. Imrek2, J. Molnar2, D. Novak2, A. Kerek1, L. Balkay1
1University of Debrecen, Hungary; 2Hungarian Academy of Sciences, Hungary; 3Royal Institute of Technology, Sweden

M06-77 Inter-Crystal Scatter Identification for a Depth-Sensitive Detector Using Multi-Anode Outputs
E. Yoshida1, K. Kitamura1,2, Y. Kimura1, F. Nishikido1, K. Shibuya1, T. Yamaya1, H. Murayama1
1National Institute of Radiological Sciences, Japan; 2Shimadzu Corporation, Japan; 3Tokyo Metropolitan Institute of Gerontology, Japan

M06-80 A Low-Cost Ultrahigh-Resolution Detector Development Using PMT-Quadrant-Sharing Lutetium Crystals for Small Animal PET
R. A. Ramirez1, W.-H. Wong, S. Kim, H. Li, Y. Wang, H. Baghaei, Y. Zhang, S. Liu, J. Liu
University of Texas M.D. Anderson Cancer Center, USA.
M06-85 Wavelet Based Crystal Identification of Phoswich Detectors for Small-Animal PET
H. Semmaoui, N. Viscogliosi, R. Lecombe, R. Fontaine
Université de Sherbrooke, Canada

M06-88 Novel Silicon Photomultipliers for PET Application
G. Llosa, INFN - PISA, Italy
On behalf of the DASIPM collaboration- University and INFN Pisa-Bari-Bologna-Perugia-Trento and ITC-irst (Italy)

M06-91 A Dual Layer DOI GSO Block Detector for a Small Animal PET
S. Yamamoto, Kobe City College of Technology, Japan

M06-94 Design of a Gamma Detector with Submillimeter Spatial Resolution and High Efficiency for Small Animal Molecular Imaging Applications
E. Cisbani, F. Cusanno, F. Garibaldi, M. L. Magliozzi, S. Torrioli, Italian National Institute of Health, Italy; S. Majewski, Thomas Jefferson National Accelerator Laboratory, USA; B. M. W. Tsui, Johns Hopkins University, USA

M06-97 Extending the GATE software for simulating the performance characteristics of the miniPET scanner
1 University of Debrecen, Hungary; 2 MEDISO Ltd, Hungary; 3 Institute of Nuclear Research of the Hungarian Academy of Sciences, Hungary; 4 Royal Institute of Technology, Sweden

M06-100 System Integration of the LabPETTM Small Animal PET Scanner
1Sherbrooke University, Canada; 2Advanced Molecular Imaging (AMI) Inc., Canada

M06-103 Effect of Number of Readout Channels on the Performance of a Continuous Miniature Crystal Element (cMiCE) Detector
R. S. Miyaoaka, T. Ling, T. K. Lewellen
University of Washington, USA

M06-107 A Healthy Volunteer FDG-PET Study on the Limit of the Spatial Resolution due to Annihilation Radiation Non-Collinearity
National Institute of Radiological Sciences, Japan

M06-110 Evaluation of Planar Tomography Using Large Area Planar Positron Imaging System
1 Institute of Nuclear Energy Research, Taiwan; 2Hamamatsu Photonics KK, Japan; 3 Thought Co., Taiwan

M06-113 Evaluation of an LYSO Based Multi-PMT Detector for Both Positron and Single Photon Imaging Usage
H. C. Liang, M. L. Jän, J. L. Su
1 Institute of Nuclear Energy Research, Taiwan, Taiwan; 2 Chung-Yuan Christian University, Taiwan

M06-116 Emission characteristics of Lu2xGd2(1-x)SiO5:Ce (LGSO) scintillator
Y. Kurata, T. Usui, S. Shimizu, N. Shimura, K. Kurashige, H. Ishibashi, Hitachi Chemical Co., Ltd. Yamazaki Works (Katsuta), Japan; H. Yamamoto, Tokyo University of Technology, Japan

M06-119 Low-Cost High-Resolution 3rd Generation PMT-Quadrant-Sharing (PQS) BGO Block Detector for Whole Body PET
S. Liu, G. Wong, H. Li, R. A. Ramirez, S. Kim, J. Liu, H. Baghaei, Y. Wang, Y. Zhang
The University of Texas, M. D. Anderson Cancer Center, USA

M06-122 The Road to the Common PET/CT Detector
A. Nassański, M. Moszyński, T. Szczęśniak, D. Wolski, T. Batsch
Soltan Institute for Nuclear Studies, Poland

M06-125 A high speed fully digital data acquisition system for Positron Emission Tomography
P. D. Olcott, A. Fallu-Bruger, C. S. Levin, F. Habte, W. K. Warburton
1 Stanford University, USA; 2 Xia, LLC, USA

M06-127 Quarter-Trio Mapping Electronics Readout Scheme for APD Block Detector in PET
N. Zhang, R. F. Grazioso, N. K. Doshi, J. L. Corbeil, M. J. Schmand Siemens Molecular Imaging, U.S.A.

M06-130 Evaluation of a Multi-Anode Microchannel Plate PMT for Time-of-Flight PET
W.-S. Choong, Lawrence Berkeley National Laboratory, USA

M06-133 Light Decay Time/gain Shift in a LaBr(3):Ce/LYSO:Ce Phoswich Detector
M. V. Green, J. Seidel, P. Choyke, W. Xi
National Cancer Institute/NIH, USA

C. L. Kim, GE Healthcare, USA

M06-139 Identification of Convolved Signals Resulting from Compton Scattering Within Single Pixels
D. P. Scraggs, A. Berry, T. Beveridge, A. Boston, H. Boston, R. Cooper, J. Cresswell, J. Gillam, A. Mathers, P. Nolan, C. Hall, I. Lazarus, R. Lewis
1 University of Liverpool, England; 2 Monash University, Australia; 3 CCLRC Daresbury, England

M06-142 Detailed Modelling of Pixelated CdZnTe Detectors for an Accurate Performance Characterization of a Multi-Modality Imaging System
P. Guerra, G. Kontaxakis, D. Visvikis, A. Santos, D. Darambar
1 Universidad Politecnica de Madrid, Spain; 2 National Institute of Health and Medical Research, France; 3 Royal Marsden/Institute of Cancer Research, United Kingdom

M06-145 Digital Timing in Positron Emission Tomography
P. Guerra, J. E. Ortuño, G. Kontaxakis, M. J. Ledesma, J. J. Vaquero, M. Desco, A. Santos
1 Universidad Politecnica de Madrid, Spain; 2 Hospital General Universitario Gregorio Maranon, Spain

M06-149 A Further Study of Timing with LSO on XP20D0 and XP20E0 for TOF PET
T. Szczęśniak, M. Moszyński, A. Nassański, Soltan Institute for Nuclear Studies, Poland; P. Lavoute, A. G. Dehaine, Photons, France
M06-152 PET Performance of the Gemini TF: a Time-of-Flight PET/CT Scanner
R. E. Muzic, J. L.1, J. A. Koltzhammer
1 Case Western Reserve University, USA; 2 University Hospitals of Cleveland, USA; 3 Philips Medical Systems, USA

M06-155 Single- and Dual-Energy Quantitative CT for Quantifying Adipose Tissue in Rodents Using a MicroCT System
F. A. Dilmanian1,2, V. Boronikolas1,2, Z. Zhong1,2, P. K. Thanos1,2, D. M. Connor1, M. Michaelides1, G.-J. Wang1, L. Li, A. Tatiparthi4, P. Salmon1, X. Liu3
1 Brookhaven National Laboratory, USA; 2 State University of NY at Stony Brook, USA; 3 College of Staten Island, USA; 4 Micro Photonics, USA; 5 SkyScan, Belgium

M06-158 Medical Dual-Energy Imaging of Bone Tissues Using ZnSe-Based Scintillator-Photodiode Detectors
B. V. Grinov1, V. D. Ryzhikov1, S. V. Naydenov1,2, A. D. Opolosin1, E. K. Lisetska1
1 Institute for Scintillation Materials, Ukraine; 2 Institute for Single Crystals, Ukraine

M06-161 Optimal Energy Threshold Arrangement in Photon-Counting Spectral X-Ray Imaging
E. Roessl, R. Proksa, Philips Research Europe, Germany

S. Lein1,2, Y. Huh1, S. O. Jin1, J. D. Park1, G. Cho2
1 KERI, South Korea; 2 KAIST, South Korea

M06-167 Characterization of Gd2O3:Eu Nano Phosphor for X-Ray Imaging Applications
J. W. Shin1, S. H. Cho1, J. K. Park1, S. S. Kang2, S. Y. Kim1, C. W. Choi1, S. H. Nam2
1 Radiation Image Lab., Korea; 2 Medical Imaging research center, Korea

M06-169 A Method to Determine the DQE for Photon Counting Pixel Detectors
Physikalisches Institut, Universitaet Erlangen-Nuernberg, Germany

M06-172 Quantitative Investigation of Printed X-Ray Photoconductors for Use in Medical Diagnostics
J. W. Shin1, S. S. Kang1, J. K. Park1, B. Y. Cha1, K. J. Kim1, D. W. Son1, S. H. Nam2
1 Radiation Image Lab., Korea; 2 Medical Imaging research center, Korea

M06-175 An Experimental Study on the Variation of MTF and NPS Caused by X-Ray Beam Conditions for Three Indirect Digital Radiographic Imagers
H. Jeon, G. Cho, Y. K. Chi, Korea Advanced Institute of Science and Technology, South Korea; M. J. Chung, Samsung Medical Center, South Korea; K. H. Kim, Chosun University, South Korea

M06-178 MTF Measurement and a Phantom Study for Scatter Correction in CBCT Using Primary Modulation
L. Zhu, J. Starman, R. Fahrig, Stanford University, USA

M06-181 ROI-Driven CT Trajectories
C. Penßel, W. A. Kalender, M. Kachelriess
Institute of Medical Physics, University of Erlangen-Nuremberg, Germany

M06-184 A New Multimodal and Quantitative Approach for in Vivo Small Animal Brain Studies: Combination of Nuclear Magnetic Resonance and the Beta-Microprobe
A. Desbree1, L. Rhav1, A. Dubois1, J.-B. Langlois2, J. Godart1, D. Grenier1, R. Mastrapolliot1, F. Pain1, L. Pinot1, T. Delzescaux1, L. Zimmer2, H. Gurden1, P. Laniece2
1 INMC, france; 2 CERMEP biomedical center, france; 3 UJIBP, france; 4 ANIMAGE, france; 5 LRMN, france

M06-187 A Comparison of Five Whole-Body PET Scanners by Scanning Hoffman Brain Phantom
H. Baghaei, O. R. Mawlawi, Y. Wang, H. Li, R. Ramirez, S. Kim, Y. Zhang, T. Pan, J. Liu, S. Liu, W. H. University of Texas M. D. Anderson Cancer Center, USA

M06-191 Detection of Beta Particles in a MicroFluidic Chip Using a Scintillator and CCD
UCLA, U.S.A.

M06-194 From Human MRI to Microscopy: Co-registration of Human Brain Images to Postmortem Histological Sections
University of Southern California, USA

M06-197 A Power Law for Determining Renal Sufficiency Using Volume of Distribution and Weight from Bolus 99mTc-DTPA, Two Blood Sample, Pediatric Data
C. A. Wesołowski, Memorial University of Newfoundland, Canada; P. S. Babyn, The Hospital for Sick Children, Canada; R. C. Puettner, University of California, USA

M06-200 The Effects of Object Variability on the Channelized Hotelling Observer Performance in the Evaluation of R4SSH and PH Myocardial SPECT
C. Liu, B. M. W. Tsui
The Johns Hopkins Medical Institutions, USA

M06-203 Simulated PET acquisition with GATE using the moved NCAT- human torso phantom with cardiac and respiratory motion
N. Lang, M. Dawood, F. Büther, O. Schober, K. P. Schäfers
Department of Nuclear Medicine / University Hospital Münster, Germany

M06-206 GATE simulations for small animal SPECT/PET using voxelized phantoms and rotating-head detectors
N. Sakellios1, J. L. Rubio2, N. Karakatsanis1, G. Kontaxakis3, G. Loudos1, A. Santos3, K. Nikita3, S. Majewski3
1 National Technical University of Athens, Greece; 2 Univ. Politecnica de Madrid, Spain; 3 Thomas Jefferson National Accelerator Facility, US

M06-209 Monte Carlo Computations for Radiotherapy with the Use of Dedicated Processors
V. Fanti, R. Marzeddu, P. Randaccio, J. Spiga
Università di Cagliari e INFN sezione di Cagliari, Italy

M06-211 The Feasibility Study of Phosphor-Light Modulator for X-Ray Detector Application
J. W. Shin1, S. S. Kang1, B. Y. Cha1, J. K. Park1, S. H. Cho1, C. H. Lee1, S. H. Nam1, K. H. Lee4
1 Radiation Image Lab., Korea; 2 Medical Imaging research center, Korea; 3 Radiation detection & medical Imaging Lab., Korea; 4 Department of Surface engineering, Korea
M06-214 Incident Photon Direction Calculation Using Bayesian Estimation for Detector Systems with 3D Positioning Capability
A. M. K. Foudarz1,2, G. Chinn1, C. S. Levin1
1Stanford University, USA; 2University of California, San Diego, USA

M06-217 GRAY: Photon Ray Tracer for PET Applications
P. D. Olcott1, S. R. Buss2, G. Pratx1, C. K. Sramek1, C. S. Levin1
1Stanford University, USA; 2University of California at San Diego, USA

M06-220 Object Description for Increasing a Calculation Speed of the Photon Transportation in a Monte Carlo Method
T. Kurihara, K. Ogawa
Hosei University, Faculty of Engineering, Japan

M06-223 Design and Construction of a Prototype Rotation Modulation Collimator for Near-Field High-Energy Spectroscopic Gamma Imaging
A. C. Sharma, C. E. Floyd, B. P. Harrawood, A. J. Kapadia, J. E. Bender, C. R. Howell
Duke University, USA

M06-226 Micro-Polarimetry for Pre-Clinical Diagnostics of Pathological Changes in Human Tissues
N. Golnik, T. Palko, T. Sołtysiński
Warsaw University of Technology, Poland

M06-229 1H MRS and MRSI: Analysis of Acquisition Parameters and Improvement of Various Clinical Applications.
A. Karatopis1,2, O. Benekos1, E. Eustathopoulos1, K. Ioannis2, N. L. Kelekis1
1Medical school, University General Hospital “Attikon”, Greece; 2Technological Educational Institute of Athens, Greece

M06-233 Toward Time Resolved Cardiac CT Images with Patient Dose Reduction: Image-Based Motion Estimation
K. Taguchi1, W. P. Segars1, H. Kudo2, E. C. Frey1, E. K. Fishman1, B. M. W. Tsui1
1Johns Hopkins University, USA; 2University of Tsukuba, Japan

M06-236 A Toolbox to Extract STL Files from CT Data for Computer-Aided Detection
Pusan National University, South Korea

M06-239 Acquiring Localization of Permanent Radioactive Sources (I-125) in Prostate Brachytherapy
Y. Nyui, Tokyo Metropolitan Univ., Japan; K. Ogawa, Hosei Univ., Japan; E. Kunieda, Keio Univ., Japan

M06-242 Enhanced Feature Extraction in Planar Nuclear Medicine Using Pixon® Minimum-Complexity Image Processing
A. Yahil, ImageRecon LLC, USA; A. H. Vija, E. G. Hawman, Siemens Medical Solutions USA, Inc., USA

M06-245 An Edge Directed Image Interpolation Technique Based on Wavelet Preprocessing
E. P. Lam, Thales Raytheon Systems, USA

M06-248 Dynamic PET Image Segmentation Using Multi-Phase Level Set Method
J. Liao, J. Qi, University of California, USA

M06-251 Convolution-Based Forced Detection Monte Carlo Simulation Incorporating Septal Penetration Modeling
S. Liu, McMaster University, Canada; H. R. Khosravi, Tehran University of Medical Sciences, Iran; T. H. Farncombe, Hamilton Health Sciences, Canada

M06-253 An APD-Based Iterative Method for Simultaneous Technetium-99m/Iodine-123 SPECT Imaging
S. Shcherbinin, A. M. Celler, University of British Columbia, Canada; M. Trummer, T. D. Humphries, Simon Fraser University, Canada

M06-256 FDG PET Images Segmentation Using Morphological Watershed : a Phantom Study
P. Tylli1, G. Bonniaud1, E. Decencière2, J. Stawiaski2, D. Lefkopoulos1, M. Ricard1
1Institut Gustave-Rousy, France; 2Centre de Morphologie Mathématique, France

M06-259 Automated Detection of Myocardium Boundary in Rb-82 Pet Images Using a Wavelet Based Approach
Cardiovascular Imaging Technologies, USA

M06-262 Comparison of LROC and Traditional ROC Studies for Lesion-Detection Task
S. Chen1, L. Volokh2, C. Liu1, B. M. W. Tsui1
1Johns Hopkins Medical Institutions, US; 2GE Healthcare Technologies, Johns Hopkins Medical Institutions, Israel

M06-265 Non-Invasive Estimation of Potassium (39K) in Bovine Liver Using Neutron Stimulated Emission Computed Tomography (NSEC)
Duke University, USA

M06-268 Quantitative CT Characterization of Body Fluids with Spectral rhoZ Projection Method
B. J. Heismann, Siemens Medical, Germany; A. H. Mahnken, University Hospital Aachen, Germany

M06-271 A Hybrid Approach for Fusion of Medical Images and Their Performance Evaluation
S. R. Medapati, M. Yeasin, University of MEmphis, USA

M06-275 Evaluation of an Input Function Model That Incorporates the Injection Schedule in FDG-PET Studies
K.-P. Wong1, S.-C. Huang1, M. J. Fulham2
1University of California at Los Angeles, USA; 2Royal Prince Alfred Hospital, Australia

M06-278 Partial Volume Correction for Image-Generated Arterial Input Functions
D. Rodriguez Gutierrez, J. Chiverton, K. Wells, University of Surrey, UK; M. Partridge, Institute of Cancer Research and Royal Marsden NHS Trust, UK

M06-281 Automatic Control System of a Microfluidic Blood Sampler for Quantitative microPET Studies in Small Laboratory Animals
H.-D. Lin1, G. Sui1, C.-C. Lee2, R. W. Silverman1, G. Cole1, J. Leong1, S.-C. Huang1, M. E. Phelps1, H.-M. Wu1
1University of California in Los Angeles, Unite State; 2California Institute of Technology, Unite State

M06-284 A Quantitative Method for Assessing Performance of Cardiac Imaging Systems
J. T. Chapman, A. H. Vija, E. G. Hawman, Siemens Medical Solutions, USA; J. Zeintl, J. Hordegger, University of Erlangen- Nuremberg, Germany
M06-287 Partial Volume Correction Using Median Priors in Penalized-Likelihood Image Reconstruction Methods
A. Tod-Koprepek, M. Ahmed, University College London, UK

M06-290 Compensation for Rigid-Body Patient Motion During Reconstruction and Respiratory Motion Post-Reconstruction in Phase-Binned Slices
B. Feng, J. Dey, P. H. Hendrik, R. D. Beach, M. S. Smyczynski, K. Johnson, M. A. King
University of Massachusetts Medical School, U. S. A.

M06-293 Investigation of Equal Magnitude Respiratory Gating in Quantitative Myocardial SPECT
W. P. Segars, S. P. Mok, B. M. W. Tsui
Johns Hopkins University, USA

M06-295 Estimation and Correction of Rigid and Non-Rigid Respiration Motion of the Heart for SPECT
J. Dey, B. Feng, K. Johnson, R. D. Beach, P. H. Pretorius, M. A. King
University of Massachusetts Medical School, USA

M06-298 Wall Motion Estimation for Gated Cardiac Emission Tomography: Physical Phantom Evaluation
J. G. Parker, K. Seabolt, T. Harrington, S. Shukla, D. R. Gilland
1University of Florida, USA; 2Malcom Randall VA Medical Center, USA

M06-301 Left Ventricular Ejection Fraction on Gated 4 hr–Rest Tl-201 in Stress-Rest Thallium-201 SPECT: Comparison with Equilibrium Radionuclide Ventriculography
All India Institute of Medical Sciences, India

M06-304 Ultra Low Dose CT Attenuation Correction Maps for Emission Computed Tomography
H. D. Kadhem, J. R. Tena, D. Rodriguez, K. Wells, E. Lewis, University of Surrey, UK; M. Guy, Royal Surrey County Hospital, UK

M06-307 Simultaneous Dual Tracer PET Using Generalized Factor Analysis of Dynamic Sequences
G. El Fakhri, A. Sitek, B. Guérin
1Harvard Medical School and Brigham & Women’s Hospital, USA; 2Lawrence Berkeley National Laboratories, USA

M06-310 Evaluation of Optimal Scan Time by Bootstrap Approach for Quantitative Analysis in PET Receptor Study
National Institute of Radiological Sciences, JAPAN

M06-313 Performance of Matched Subspace Detectors for Dynamic FDG PET
Z. Li, Q. Li, X. Yu, P. S. Conti, R. M. Leahy
1Signal Image Processing Inst., USA; 2PET Imaging Science Center, USA

M06-317 Characterization of Spillover and Recovery Coefficients in the Gated Mouse Heart for Non-Invasive Extraction of Input Function in microPET Studies: Feasibility and Sensitivity Analysis
K. I. Shoohi, D. J. Rowland, R. Laforest, M. J. Welch
Washington University School of Medicine, USA

M06-320 Motion Correction of 3D PET/CT Data with Optical Flow Algorithms
M. Dwyer, F. Büther, N. Lang, X. Jiang, K. P. Schäfers
University of Münster, Germany

M06-323 System Matrix Modeling of Externally Tracked Motion
Johns Hopkins University, USA; 2University of British Columbia, Canada

M06-326 Challenges in Cardiac PET/CT: Common Artifacts and Possible Corrections
E. Büther, K. P. Schäfers, A. Brunegrafs, O. Schöber
Department of Nuclear Medicine, University Hospital of Münster, Germany

M06-329 Attenuation Correction of PET Scanning Based on MRT-Images
E. Rota Kops, P. Qin, M. Mueller-Veggin, H. Herzig
1Forschungszentrum Juelich, Germany; 2University of Applied Sciences Aachen, Germany

M06-332 3D Implementation of Scatter Estimation in 3D PET
M. Jatrou, R. M. Manjeshwar, S. G. Ross, K. Thielemens, C. W. Stearns
1GE Global Research Center, USA; 2GE Healthcare, USA;
3Hammersmith Imagenet, UK

M06-335 A Simple Method to Measure PET Scatter Fractions for Daily Quality Control
H. W. A. M. de Jong, M. Lubberink, H. Watabe, H. Iida, A. A. Lammersma
1VU University Medical Center, the Netherlands; 2National Cardiovascular Center, Japan

M06-337 A Rapid Iterative Monte-Carlo Based Scatter Correction Algorithm for 3D Rb-82 Myocardial Perfusion PET
J. A. Case, B. L. Hsu, J. S. Cullom, T. M. Bateman
Cardiovascular Imaging Technologies, USA

M06-340 Double Scatter Simulation Using the Polarized Klein-Nishina Formula
N. Dikaios, T. Spinks, K. Nikita, K. Thielemens
1Hammersmith Imagenet Ltd, UK; 2National Technical University of Athens, Greece

M06-343 Scatter Correction Requirements for Likelihood-Based Attenuation Artifact Correction in PET
C. M. Laymon, J. E. Bowsher, J. P. Carney, T. M. Blodgett
1University of Pittsburgh, 15213; 2Duke University, 27710

M06-346 Implementation of Histogram Based Soft-Tissue Segmentation for Single Spiral Transmission Scanning in Whole Body PET
T. Mizuta, K. Kitamura, A. Ishikawa, K. Tanaka, M. Amano
Medical Systems Division, Shimadzu Corporation, Japan

M06-349 Impact of X-Ray Scatter When Using CT-Based Attenuation Correction in PET: a Monte Carlo Investigation
H. Zaidi, M. R. Ay, Geneva University Hospital, Switzerland

M06-352 PET Motion Tracking with Radiative Fiducial Markers
C. A. Cardi, P. D. Acton, Thomas Jefferson University, USA

M06-355 Integrated PET/CT Guidance System for Oncologic Interventional Radiology
1Georgetown University, USA; 2Medstar Georgetown University Hospital, USA

M06-359 STIR: Software for Tomographic Image Reconstruction Release 2
K. Thielemens, S. Mustafovic, Hammersmith Imagenet Ltd, UK
M06-362 Improved PET Detection of Focal Brain Activity Using Subset-Dependent Relaxation ‘Dynamic’ Row-Action Maximum Likelihood Algorithm (DRAMAS)
B. L. Lewellen1, D. Cross1, S. Craft1, L. Baker1, T. Kosugi2, H. Okada1, T. K. Lewellen1, P. E. Kinahan1, S. Minoshima1
1University of Washington, USA; 2Hamamatsu Photonics, K.K., Japan

M06-365 Data Sampling in Multislice PET for Multi-Ring Scanner
Y. Grondin1,2, L. Desbat1, M. Defrise3, T. Rodet4, M. Desvignes1, S. Mancini1
1INPG, France; 2UJF, France; 3VUB, Belgium; 4Paris oursay, France

M06-368 Incorporation of Axial System Response in Iterative Reconstruction from Axially Compressed Data of Cylindrical Scanner Using on-the-Fly Computing
V. Y. Panin, F. Kehren, M. E. Casey
Siemens Medical Solutions, USA

M06-371 Parallelization and Runtime Prediction of the ListMode OSEM Algorithm for 3D PET Reconstruction
M. Schellmann, T. Kösters, S. Gorlatch
University Münster, Germany

M06-374 Fully 3-D List-Mode OSEM on Graphics Processing Units
G. Pratx, G. Chinn, P. D. Olcott, C. S. Levin
Stanford University, United States

M06-377 Randoms Mean Value Estimation with Exact Method for Ring PET Scanner
M. Chen, V. P. Panin, M. E. Casey
Siemens Molecular Imaging, USA

M06-379 Normalization in 3D PET: Dependence on the Activity Distribution of the Source
E. Vicente1, J. J. Vaquero1, S. España2, J. López-Herráiz1, J. M. Udías1, M. Desco1
1Hospital G U Gregorio Marañón, Spain; 2University Complutense, Spain

M06-382 Radiation Dose During CT Scan with PET/CT Clinical Protocols
H.-K. Son1, S. H. Lee2, S. Nam1, T.-S. Kim1, H. Jung1, H.-J. Kim1
1Yonsei University, Korea; 2NHIC Ilsan Hospital, Korea

M06-385 Multi-Resolution 3D-OSEM Reconstruction Technique for High Resolution Rotating-Head PET Scanners
J. E. Ortúñol, J. L. Rubio, P. Guerra, G. Kontaxakis, A. Santos
Universidad Politécnica de Madrid, Spain

M06-388 Simultaneous Estimation of Temporal Basis Functions and Fully 4D PET Images
A. J. Reader, The University of Manchester, UK; F. C. Sureau, C. Comtat, R. Tréboscen, CEA/DSV/DRM, France; I. Buvat, INSERM, France

M06-391 Data Processing Methods for a High-Throughput Brain Imaging PET Research Center
D. F. Wong, A. Rahim, A. H. Crabb, Johns Hopkins University School of Medicine, USA; C. B. Cavanaugh, IBM Corporation, USA; J. P. Jones, M. Sibomana, C. Michel, Z. Burbar, Siemens Medical Solutions Molecular Imaging, USA

M06-394 Analytical Geometric Model for Photon Coincidence Detection in 3D PET
R. de la Prieta, J. A. Hernández, E. Schiavi, N. Malpica
Universidad Rey Juan Carlos, Spain

M06-397 Quantitative Analysis of PET Reconstruction Techniques over a Wide Activity Range with 2D and 3D Acquisition Modes
S. D. Wollenweber, GE Healthcare, USA; S. C. Moore, G. El Fakhri, Brigham & Women’s Hospital and Harvard Medical School, USA

M06-401 Evaluation of 2D Iterative ROI Image Reconstruction with ML-EM method from Truncated Projections
L. Fu, J. Liao, J. Qi
University of California, Davis, U.S.A

M06-404 Fan-Beam Short Scan SPECT with Uniform Attenuation
Q. Huang1, J. You1, G. L. Zeng1
1University of Utah, USA; 2State University of New York, USA

M06-407 Consistency Condition and ML-EM Checkerboard Artifacts
J. You1,2, J. Wang1, Z. Liang1
1State University of New York at Stony Brook, USA; 2Cubic Imaging LLC, USA

M06-410 Fast Monte Carlo Simulation Based Joint Iterative Reconstruction for Simultaneous Tc-99m/I-123 Brain SPECT Imaging
J. Ouyang, G. El Fakhri, S. C. Moore, M. F. Kijewski
Harvard Medical School and Brigham and Women’s Hospital, U.S.A.

M06-413 Development of Image Reconstruction Method for a New Gamma-Ray 3D Camera (CPT Camera)
T. Shirahata, R. Kohara, T. Nakazawa, O. Miyazaki, Hitachi Medical Corporation, Japan; T. Tanimori, Kyoto University, Japan; K. Ogawa, Hosei University, Japan

M06-416 Quantitative Material Reconstruction in CT with Spectroscopic X-Ray Pixel Detectors
M. Firsching, D. Niederlöhrner, T. Michel, G. Anton
Friedrich-Alexander-Universität, Germany

M06-419 A Novel Approach for Reducing Metal Artifacts Due to Metallic Dental Implants
M. Yazdi1,2, L. Beaulieu1,3
1School of Engineering, Shiraz University, Iran; 2Centre de Recherche en Cancérologie, Canada; 3Université Laval, Canada

M06-421 Helical CT Reconstruction with Large Cone Angle
A. A. Zamyatin4, A. A. Katsevich5, M. D. Silver1, S. Nakaniishi6
4BiO-Imaging Research, Inc, USA; 5University of Central Florida, USA; 6Toshiba Medical Systems Corp., Japan

M06-424 Evaluation of a Fast 3D Reconstruction Algorithm for an Inverse-Geometry CT System
S. R. Mazin, N. J. Pelc, Stanford University, USA

M06-427 Proton Radiography Studies for Proton CT
H. F. Sadrozinski, Univ. of California Santa Cruz, USA
On behalf of the pCT Collaboration

M06-430 Fast Dynamic Image Reconstruction for Dynamic Gated Cardiac SPECT
M. Jin, Y. Yang, M. N. Wernick, Illinois Institute Of Technology, USA; M. A. King, University of Massachusetts Medical School, USA

M06-433 Iterative SPECT Reconstruction Using Matched Filtering for Improved Image Quality
J. Ye, X. Song, Z. Zhao, A. J. Da Silva, J. S. Wiener, L. Shao
Philips Medical Systems, USA

M06-436 Image Reconstruction from Truncated Data in SPECT with Uniform Attenuation
F. Noe1, M. Defrise2, J. D. Pack1,3, R. Clackdoyle4
M06-439 Quantitative Comparison of Binding Potential Derived from Dynamic Rat Brain PET Images Using 3-D MAP and 2-D FBP Reconstruction
D. E. Lee¹, D. Schottlander¹, D. L. Alexoff¹, P. Vaska¹
¹Brookhaven National Laboratory, USA; ²University of Oxford, UK

M06-443 Up-Sampling with Shift Method for Windmill Correction
A. A. Zamyatin, I. A. Hein, M. D. Silver, Bio-Imaging Research, Inc, USA; S. Nakanishi, Toshiba Medical Systems Corp., Japan

M06-446 Fan-Beam CT Image Reconstruction from Few-Views and Limited-Angular Scans
E. Y. Sidky, C.-M. Kao, X. Pan
University of Chicago, United States

M06-449 Resampling Density Values on R-Lines into Density Values on a Cartesian Grid
S. Zabic¹, S. Hoppe², F. Dennerlein³, G. Lauritsch³, F. Noo¹
¹University of Utah, USA; ²University of Erlangen/Nuremberg, Germany; ³Siemens AG, Germany

M06-452 An Extrapolation Method for Image Reconstruction from a Straight-Line Trajectory
H. Gao, L. Zhang, Z. Chen, Y. Xing, J. Cheng, Y. Li
Tsinghua University, P. R. China

M06-455 New Saddle Trajectories for CT
C. Bonitus, R. Proksa, T. Koehler
Philips Research Europe, Germany

M06-458 Cone-Beam Tomography with Linearly Distorted Source Trajectories
F. Dennerlein, F. Noo, University of Utah, USA; S. Hoppe, J. Hornegger, University of Erlangen/Nuremberg, Germany; G. Lauritsch, Siemens Medical Solutions, Germany

M06-461 Particle Initial Energy Choice in Proton Computed Tomography for Medical Purposes
H. R. Schelin, V. V. Denyak, S. A. Paschuk, R. Rocha, J. A. P. Setti, M. C. L. Klock, Federal University of Technology - Parana, Brazil; I. G. Evseev, O. I. Yevseyeva, Polytechnic Institute of the Rio de Janeiro State University, Brazil

M07 Small Animal Imaging
Thursday, Nov. 2 13:30-15:00, Golden Ballroom
Session Chairs: Yuan-Chuan Tai, Washington University in St. Louis; Freek Beekman, University Medical Center Utrecht

M07-1 Quantification of the Multiplexing Effect in Multi-Pinhole Small Animal SPECT
G. S. P. Mok, Y. Wang, B. M. W. Tsui
Johns Hopkins Medical Institutions, USA

M07-2 In Search of the Optimum Scanning Protocols for microCT Imaging Using Iodine-based contrast agent
H. Liang, Y. Yang, K. Yang, J. M. Boone, S. R. Cherry
University of California, Davis, USA

M07-3 A Prototype PET Scanner with DOI-Encoding Detectors
Y. Yang¹, Y. Wu¹, J. Qi¹, P. A. Dokhale², K. S. Shah², M. A. McClish², R. Farrell³, G. Entine³, S. R. Cherry¹
¹University of California at Davis, USA; ²Radiation Monitoring Devices Inc., USA

M07-4 A Prototype Micro-Insert for MicroPET F-220 and Its Initial Performance
H. Wu, D. Pal, M. Janecek, J. A. O’Sullivan, Y.-C. Tai
Washington University in St. Louis, USA

M07-5 On the Imaging of Very Weak Sources in an LSO PET Scanner
A. L. Goertzen¹,², J. Sulk², C. J. Thompson²
¹University of Manitoba, Canada; ²Montreal Neurological Institute, Canada

M07-6 Design and Calibration of a Small Animal PET Scanner Based on Continuous LYSO Crystals and PSMTs
J. M. Benloch¹, V. Carrilero¹, J. V. Catret¹, C. W. Lerche¹, F. Sanchez¹, N. Pavon¹, F. J. Garcia de Quiros¹, M. Gimenez¹, A. J. Gonzalez¹, J. Martinez², J. Modia¹, A. Sebastian², L. F. Vidal¹
¹I.E.I.C. (Instituto de Física Corpuscular), Spain; ²Universidad Politécnica de Valencia, Spain

M08 Multimodality Imaging
Thursday, Nov. 2 15:30-17:30, Golden Ballroom
Session Chairs: Sibylle Ziegler, Nuklearmedizin Klinikum rechts der Isar der TU München; Joel Karp, University of Pennsylvania

M08-1 QuickSilver: A Flexible, Extensible, and High-Speed Architecture for Multi-Modality Imaging
Siemens Molecular Imaging, USA

M08-2 Characteristics of the PET Component of a Dedicated Breast PET/CT Scanner Prototype
Y. Wu¹, K. Yang¹, L. Fu¹, V.-H. Tran¹, J. Qi¹, J. M. Boone², S. R. Cherry¹, R. D. Badawi³
¹UC Davis, USA; ²UC Davis Medical Center, USA; ³Thomas Jefferson National Accelerator Facility, USA

M08-3 A Machine Learning Approach for Determining the PET Attenuation Map from Magnetic Resonance Images
M. Hofmann¹,², F. Steinke¹, M. S. Judenhofer¹, C. D. Claussen¹, B. Schoellkopf¹, B. J. Pichler¹
¹University of Tübingen, Germany; ²Max-Planck Institute for Biological Cybernetics, Germany

M08-4 Preliminary Studies of a Simultaneous PET/MRI Scanner Based on the RatCAP Small Animal Tomograph
D. J. Schlyer¹, P. Vaska¹, D. Tomasí¹, C. Woody¹, S. Solis-Najera¹, J.-F. Pratte¹, S. Junnarkar¹, W. Rooney¹, S. Stoll¹, M. Puschke¹, S.-J. Park¹, Z. Master¹, S.-H. Maramraju¹, S. Southekal³, P. O’Connor³, V. Radela¹
¹Brookhaven National Laboratory, USA; ²Oregon Health Science Center, USA; ³SUNY Stony Brook, USA

M08-5 Development of a Combined microPET(R)-MR System
A. J. Lucas¹, R. C. Hawkes¹, R. E. Ansrige¹, B. G. Williams¹, R. E. Nutt¹, J. C. Clark¹, T. D. Fryer¹, T. A. Carpenter¹
¹University of Cambridge, UK; ²Siemens Molecular Imaging, USA

M08-6 APD Based PET System for Simultaneous Small Animal PET-MR-Imaging in a 7 Tesla Magnet
M. S. Judenhofer¹, S. B. Siegel¹, C. Catana³, B. K. Swann², D. F. Newport², W.-I. Jung², R. E. Nutt¹, S. R. Cherry¹, C. D. Claussen¹, B. J. Pichler¹
M08-7 Initial Performance Tests of a PSAPD-Based MRI Compatible PET Scanner
C. Catana1, Y. Wu1, M. S. Judenhofer2, J. Qi1, B. J. Pichler1, P. Dokhale1, K. S. Shah3, R. Farrell3, S. R. Cherry1
1University of California, Davis, USA; 2University of Tubingen, Germany; 3Radiation Monitoring Devices Inc., USA

M08-8 PET Performance of MR/PET Brain Insert Tomograph
Siemens Medical Solutions, USA

M09 PET and PET/CT
Friday, Nov. 3 08:00-10:00, Golden Ballroom
Session Chairs: Tom Lewellen, University of Washington
David Townsend, Department of Medicine, University of Tennessee, Knoxville

M09-1 Initial Results with LabPET, a Second-Generation APD-Based Digital PET Scanner for High-Performance Pre-Clinical Molecular Imaging
1Universite de Sherbrooke, Canada; 2University of Ottawa Heart Institute, Canada; 3Advanced Molecular Imaging (AMI) Inc., Canada; 4Brookhaven National Laboratory, USA

M09-2 Validation of the Raytest ClearPET(TM) on the Animage Platform
C. Pautrot1, O. Dietzel1, L. Magnier1, P. Sempere2, Roldan1, A. Wagner2, M. Janier1, V. Tarazona1, V. Popov3
1Raytest Germany; 2Animage Platform, France

M09-3 CdTe Strip Detector Performance for a High Resolution Small Animal PET System
G. S. Mitchell1, S. Sinha1, J. R. Stickel1, S. L. Bowen1, L. J. Cirignano1, P. Dokhale2, H. Kim2, K. S. Shah3, S. R. Cherry3
1University of California, Davis, USA; 2Radiation Monitoring Devices Inc., USA

M09-4 Design and Development of a High-Performance Readout Electronics for Time-of-Flight PET Systems
W.-S. Choong1, W. W. Moses2, B. T. Turko1, C. Q. Vu2, J.-F. Beche1, D. Doering3, Lawrence Berkeley National Laboratory, USA; M. Aykac1, M. E. Casey4, Siemens Medical Solutions, USA

M09-5 Tailoring PET Time Coincidence Window Using CT Morphological Information
M. Coniti5, Siemens Medical Solution, USA

M09-6 Optimizing Acquisition Parameters in TOF PET Scanners
S. Suri6, G. E. Fakhri7, J. S. Karp8
1University of Pennsylvania, USA; 2Harvard University, USA

M09-7 The Engineering and Initial Results of a Transformable Low-Cost Ultra-High Resolution PET Camera
H. Li1, W.-H. Wong1, H. Baghai2, Y. Wang3, Y. Zhang3, S. Kim4, R. Ramirez5, J. Liu6, S. Liu6, J. Uribe6
1University of Texas, M.D. Anderson Cancer Center, USA

M09-8 Prostate Imaging with the LBNL Prostate-Optimized Positron Emission Tomograph
J. S. Huber1, W.-S. Choong2, W. W. Moses1, J. Qi1, J. Hu1, G. C. Wang1, D. Wilson3, R. H. Huesman1, T. F. Budinger1
1Lawrence Berkeley National Lab, USA; 2University of California, Davis, USA

M10 MIC Awards
Friday, Nov. 3 10:30-12:00, Golden Ballroom
Session Chairs: John Aarsvold, Emory University & Atlanta Veterans Affairs Medical Center
Bruce Hasegawa, UC San Francisco

Student Travel Awards and IEEE Fellows
Presented by John Aarsvold, PhD

Edward J Hoffman Medical Imaging Scientist Award
Presented by Paul Kinahan, PhD

Young Investigator Medical Imaging Science Award
Presented by Paul Kinahan, PhD

M10-1 (11:15) Respiratory Motion Correction in 4D PET/CT: Comparison of Implementation Methodologies for Incorporation of Elastic Transformations in the Reconstruction System Matrix
F. Lamare1, M. J. Ledesma Carbayo2, A. J. Reader1, O. R. Mawlawi1, G. Kontaxakis2, A. Santos2, Y. Bizais2, C. Cheze-Le Rest2, D. Visvikis1
1U650 INSERM, Laboratoire du traitement de l’information medicale (LaTIM), Universite de Bretagne occidentale, France; 2ETSI Telecomunicacion Universidad Politecnica de Madrid, Spain; 3Department of Instrumentation and Analytical Science, UMIST, UK; 4University of Texas M.D. Anderson Cancer Center, United States

M10-2 Discrete Axial Rebinning for Time-of-Flight PET
M. Defrise, Dept. of Nuclear Medicine, Vrije Universiteit Brussel, Belgium; V. Panin, C. Michel, M. E. Casey, Siemens Medical Solutions, Molecular Imaging, USA

M10-3 Development and Initial Results of a Tomographic Dual-Modality Positron/Optical Small Animal Imager
L. Peter1, D. Unholz, R. B. Schulz, W. Semmler2, German Cancer Research Center, Germany

M11 MIC Poster 2
Friday, Nov. 3 13:30-15:00, Atlas Ballroom
Session Chairs: Philippe Despres, UC San Francisco
Yuni Dewaraja, University of Michigan
Lawrence MacDonald, University of Washington, Seattle

M11-2 Ganciclovir Induces the Metastasis of Breast Tumor Xenograft Expressing eGFP-HSV1tk Fusion Reporter Gene
K. M. Lin1,2, C.-H. Hsu3, J. L. Hsu3, C.-T. Chen2
1National Health Research Institutes, Taiwan; 2National Yang Ming University, Taiwan; 3National Tsing Hua University, Taiwan; 4University of Chicago, USA

M11-5 Development and Evaluation of High Performance Detectors and Readout for PEM/PET Breast Imager
S. Majewski1, R. Raylman1, W. Gunning1, W. Hammond1, B. Kross1, M. Smith1, V. Popov4, J. Proffitt4, A. Weisenberger4, R. Wojcik4, C. Zorn4
1Jefferson Lab, USA; 2West Virginia University, USA
M11-8 A Large Field of View Coincidence Imaging System Based on One-Dimensional Sharing Block Detectors
S. Yamamoto, Kobe City College of Technology, Japan; K. Matsumoto, M. Senda, Institute of Biomedical Research and Innovation, Japan

M11-11 A New Vision for X-ray Soft Tissue Imaging
M. O. Hasnah, Qatar University, Qatar; L. D. Chapman, University of Saskatchewan, Canada

M11-14 Initial Development of a Dual-Modality SPECT-CT System for Dedicated Mammmotomography
P. Madhav, D. J. Crotty, R. L. McKinley, M. P. Tornai
1Duke University Medical Center, USA; 2Duke University, USA

M11-17 A Pinhole Orbit for Sufficient SPECT Sampling of the Breast, Axilla, and Upper Chest
J. E. Bowsher, J. Roper, R. J. Jaszczaek
Duke University Medical Center, USA

M11-20 Dual Modality Surgical Guidance for Non-Palpable Breast Lesions
P. G. Judy, P. Raghunathan, M. B. Williams
University of Virginia, Charlottesville, USA

M11-22 Optics Optimization for a Solid State Gamma Camera Detector Module Based on CR Lower Bound Study
1Samsung Medical Center, Sungkyunkwan University School of Medicine, Korea; 2Siemens Medical Solutions, USA

M11-25 Design of a Multi-Pinhole Collimator in a Dual-Headed, Stationary Small-Animal SPECT
S. Shokouhi, B. S. McDonald, D. W. Wilson, T. E. Peterson
1Vanderbilt University, USA; 2University of Arizona, USA

M11-28 Dual-Modality Scanner for Small Animal Imaging
A. V. Stolin, D. J. Pole, R. Wojcik, M. B. Williams
1University of Virginia, USA; 2Ray Visions, Inc, USA

M11-31 Dimensioning A Versatile CdZnTe Small Field Of View Gamma-Camera With SINDBAD, A Mixed Analytical-Monte Carlo Simulation Tool
F. Mathy, L. Guerin, O. Monnet, L. Verger, CEA, FRANCE

University Medical Center Utrecht, the Netherlands

M11-37 Guard Ring Elimination in CdTe and CdZnTe Detectors
1DxRay Inc., USA; 2Interon AS, Norway; 3CERN, Switzerland

M11-40 Very High Resolution Small Animal PET Using Solid-State Detectors in a Strong Magnetic Field
1The Ohio State University, USA; 2CERN, Switzerland; 3University of Michigan, USA; 4IFIC/CSIC-UVEG, Spain; 5University of Ljubljana, Slovenia; 6Universita della Studi di Perugia, Italy

M11-44 Design of a Small Animal MRI-PET Imaging Insert
1West Virginia University, USA; 2Jefferson National Accelerator Facility, USA

M11-47 Monte Carlo Simulations of a Clinical Whole-Body MR-PET System
M. J. Martinez, I. Torres-Espallardo, R. Ladebeck, S. Nekolla, S. I. Ziegler
1Klinikum rechts der Isar der Technischen Universitaet Muenchen, Germany; 2Siemens AG, Medical Solutions, Germany

M11-50 Simulation Study on an Ultra-High Resolution SPECT with CdTe Detectors
K. Ogawa, M. Muraishi
Hosei University, Faculty of Engineering, Japan

M11-53 Development of a Semiconductor Gamma-Camera System with CdZnTe Detectors
K. Ogawa, A. Ohita, Hosei University, Faculty of Engineering, Japan; K. Shuto, N. Motomura, H. Kobayashi, Toshiba Medical Systems, Japan; S. Makino, Toshiba Corporation Power Systems Company, Japan; T. Nakahara, A. Kubo, Keio University, School of Medicine, Japan

M11-56 The NanoSPECT/CT: a High-Sensitivity Small-Animal SPECT/CT with Submillimeter Spatial Resolution
N. U. Schramm, C. Lackas, J. W. Hoppin, Research Center Juelich, Germany; F. Forrer, M. de Jong, Erasmus Medical Center, The Netherlands

M11-59 A Multi-Function Compact Small-Animal Imaging System Incorporating Multipinhole Standard and Helical SPECT and Parallel-Hole SPECT
L. Qian, E. L. Bradley, S. Majewski, V. Popov, M. S. Saha, M. F. Smith, A. G. Weisenberger, R. E. Welsh
1College of William and Mary, USA; 2Thomas Jefferson National Accelerator Facility, USA

M11-62 A Data Acquisition, Event Processing and Coincidence Determination Module for a Distributed Parallel Processing Architecture for PET and SPECT Imaging
Siemens Molecular Imaging, USA

M11-64 Performance Enhancement of the RatCAP Awake Rat Brain PET System
1Brookhaven National Laboratory, USA; 2Stony Brook University, USA; 3Long Island University, USA; 4University of Sherbrooke, Canada

M11-67 A New Highly Versatile Multi-Modality Small Animal Imaging Platform
S. S. Gleason, D. W. Austin, R. S. Beach, R. E. Nutt, M. J. Paulus, S. Yan
Siemens Medical Solutions, Inc., USA
M11-70 Imaging with the MADPET-II Small Animal PET Scanner: First Quantitative Results of the Spatial Resolution Using Depth of Interaction Information
V. C. Spanoudaki1, I. Torres-Expallardo1, M. Rafecas-Lopez2, M. C. Huysman1, D. P. McElroy1, S. I. Ziegler1
1Klinikum rechts der Isar, Technical University of Munich, Germany; 2Institute of Particle Physics - IFIC, Spain

M11-77 1mm FWHM of Small Animal PET by Using CdTe Detector Arrays
Y. Kikuchi1, K. Ishii1, H. Yamazaki2, S. Matsuyama1, G. Momose1, A. Ishizaki1, J. Kusaka1, T. Kudoh1
1Graduate School of Engineering, Tohoku University, Japan; 2Cyclotron and Radiosotope Center, Tohoku University, Japan

M11-79 A Neural Network Based Algorithm for Building Crystal Look-up Table of PET Block Detector
D. Hu, B. Atkins, M. Lenox, Siemens Medical Solutions, USA

M11-82 Small Animal PET Camera Design Based on 2-mm Straw Detectors
N. N. Shehad, A. Athanasiades, C. S. Martin, L. Sun, J. L. Lacy
Proportional Technologies, Inc., U.S.A.

M11-86 Coincidence Measurements with a 1mm Resolution 3-D Positioning Scintillation Detector for PET That Uses Light Multiplexing
F. Habte, P. D. Olcott, C. S. Levin
Stanford University, USA

M11-89 Characterization of Two Thin Position-Sensitive Avalanche Photodiodes on a Single Flex Circuit
A. M. K. Foudray1,2, R. Farrell1, P. D. Olcott1, K. S. Shah1, C. S. Levin1
1Stanford University, USA; 2University of California, San Diego, USA

M11-92 A Dual Layer GSO PET System for Small Animals
S. Yamamoto, Kobe City College of Technology, Japan; H. Mashino, Espec Techno Co., Ltd., Japan; H. Kudo, Tiukuda University, Japan; K. Matsumoto, M. Senda, Institute of Biomedical Research and Innovations, Japan

M11-95 Multi-Channel Waveform Sampling ASIC for Animal PET System
K. Shimazoe, Y. J. Yoel, H. Takahashi, T. Kajo, K. Minamikawa, K. Fujita, The University of Tokyo, JAPAN; H. Murayama, National Institute of Radiological Sciences, Japan

M11-98 A GATE Monte Carlo Simulation of Performance of a High-Sensitivity and High-Resolution LSO Based Small Animal PET Camera
H. Baghaei, Y. Zhang, H. Li, Y. Wang, R. Ramirez, S. Kim, J. Liu, S. Liu, W. H. Wong
University of Texas M. D. Anderson Cancer Center, USA

M11-101 Evaluation of the Spatial Resolution Improvement of the MicroPET R4 Scanner with Wobbling Bed
J. Suk1,2, C. J. Thompson1,2, A. Labuda1, A. Goertzen1,3
1McGill University, Canada; 2Montreal Neurological Institute, Canada; 3University of Manitoba, Canada

M11-104 Count Rate Performance and Dead Time in Singles Transmission Scanning for the microPET Focus 220 Scanner
W. Lehnert, S. R. Meikle, University of Sydney, Australia; D. Newport, Siemens Preclinical Solutions, USA

M11-106 Optimized List-Mode Acquisition and Data Processing Procedures for ACS2 Based PET Systems
J. Langner1, P. Bühler1, U. Just1, C. Pützsch1, J. van den Hoff1,2
1Institute of Radiopharmacy, Research Center Rossendorf, Germany; 2Technical University of Dresden, Germany

M11-109 Count-Rate Performance of the DSTE PET Scanner Using Partial Collimation
L. R. MacDonald1, R. E. Schmitz1, S. D. Wollenweber1, C. W. Stearns2, A. Ganin3, R. L. Harrison1, A. M. Alessio1, T. K. Lewellen1, P. E. Kinahan3
1University of Washington, USA; 2GE Healthcare Technologies, USA

M11-112 A Time-Based Front End Readout System for PET & CT
CERN, SWITZERLAND

M11-115 ISPA Front End Integrated Circuit for PET Application
V. Orsolini Cencelli, F. de Notaristefani, INFN, Italy; E. D’Abramo, A. Fabbri, L. Zerilli, Università degli Studi di Roma Tre, Italy

M11-118 A Bi-Exponential Timing Model for Calculating Scintillator Detector’s Intrinsic Timing Resolution
Y. Shao, State University of New York at Buffalo, USA

M11-121 Evaluation of a Micro-Channel Plate PMT in PET
F. Bauer1,2, M. Loope1, M. Schmand1, L. Eriksson1,2
1Siemens Medical Solutions, Molecular Imaging, USA; 2Stockholm University, Sweden

M11-124 Spatial Resolution in Position-Sensitive Monolithic Scintillation Detectors
D. J. van der Laan1, M. C. Maas1, D. R. Schaart1, P. Bruyndonckx2, C. Lemaître2, C. W. E. van Eijk1
1Delft University of Technology, The Netherlands; 2Vrije Universiteit Brussel, Belgium

M11-128 A Study of a Monolithic Detector in PET
M. Aykac, Siemens Molecular Imaging, U.S.

M11-131 DOI-Encoding Detector Using Wavelength Shifting (WLS) Fibers for a Laboratory PET Scanner
H. Du, Y. Yang, S. R. Cherry
University of California, Davis, USA

M11-134 Comparison of Nonlinear Position Estimators for Continuous Scintillator Detectors in PET
P. Bruyndonckx1, C. Lemaître1, D. Schaart2, M. Maas3, D. J. Van der Laan1, M. Krieger1, O. Devroede1, S. Tavernier1
1Vrije Universiteit Brussel, Belgium; 2Delft University of Technology, The Netherlands

M11-137 Evaluation of a Novel Rectangular Variable Field of View Whole Body Clinical PET System Design Using Monte Carlo Simulation
E. Habte, G. Pratx, C. S. Levin, Stanford University, USA

M11-140 Multi-Channel Readout ASIC for ToF-PET
P. Fischer, M. Rittzet, I. Peric, University of Mannheim,
M11-143 Influence of Crystal Material on the Performance of the HiRez 3D PET Scanner: a Monte-Carlo Study
C. J. Michel, L. Eriksson, H. Rothfuss, B. Bendriem, Siemens Medical Solutions, USA; D. Lazaro, I. Buvat, CHU Pitié Salpêtrière, France

M11-146 The jPET-D4: Performance Evaluation of Four-Layer DOI-PET Scanner Using the NEMA NU2-2001 Standard
E. Yoshida1, A. Kobayashi2, T. Yamaya3, M. Watanabe4, F. Nishikido1, K. Kitamura1, T. Hasegawa1, M. Fukushi1, H. Murayama1
1National Institute of Radiological Sciences, Japan; 2Tokyo Metropolitan University, Japan; 3Hamamatsu Photonics K.K., Japan; 4Shimadzu Co., Japan

W. F. Jones, E. Breeding, M. Conti, F. Kehren, M. E. Casey, Siemens Molecular Imaging, USA

M11-151 Future Instrumentation in Positron Emission Tomography
L. A. Eriksson1,2,3, D. Townsend1, M. Conti1, M. Eriksson1,
C. Bohm1, H. Rothfuss1, M. Schmand1, M. E. Casey2, B. Bendriem3
1Siemens Medical Solutions, Molecular Imaging, USA; 2Karolinska Institute, Sweden; 3University of Stockholm, Sweden; 4University of Tennessee Medical center, USA

M11-154 Development of a Cone-Beam Dental CT System
H. K. Kim, M. K. Cho, Pusan National University, South Korea; T. W. Kim, Value Added Technologies Co., Ltd., South Korea

M11-157 The Compound Refractive X-Ray Lens by High-Gravity Assisted Self-Assembly Method
J. Choi, Dankook University, South Korea

M11-160 Empirical Dual Energy Calibration for Cone-Beam Dual Energy Computed Tomography
M. Kachelriess, W. A. Kalender, Institute of Medical Physics (IMP), Germany

M11-163 Radiation Effects on Image Quality of CMOS Photodiode Array Detectors
M. K. Cho, H. K. Kim, M. H. Cheong, C. H. Lim, C.-S. Shon, Pusan National University, South Korea; T. Graeve, Rad-icon Imaging Corp., USA

M11-166 A New High Dynamic Range, High Speed, 2D-Tiled Detector for Cardiac CT
R. Luhta1, M. Chappo2, R. Goshen2, B. Harwood1, R. Mattson1, D. Salk3, H. Shpitzer2, C. Vrettos3
1Philips Medical Systems, USA; 2Philips Medical Systems, Israel

M11-170 Modeling of MTF and DQE for Arbitrary Scintillator Thicknesses
S. Zelakiewicz, J. Shaw, General Electric Research Center, USA

M11-173 A New Kind of X-Ray Detector for Imaging
E. Pachoud, CANBERRA France - Lingolsheim factory, FRANCE
On behalf of the CANBERRA France - Group AREVA

M11-176 A Multi-Element Detector System for Intelligent Imaging: I-ImaS
J. A. Griffiths1, C. Venanzi1, R. D. Speller1, G. J. Royle1, M. G. Metaxas1, C. Esbrand1, P. F. van der Stelt1, G. Li1, H. Verheij1, R. Turchetta1, A. Fant1, P. Gasiorek1, S. Theodoridis1, H. Georgiou1, D. Cavouras3, G. Hall1, M. Noy1, J. Jones1, J. Leaver1, D. Machin1, S. Greenwood1, M. Khaleeq2, J. Oxbury3, H. Schulerud4, F. Triantis1, A. Asimakis1, D. Bolanakis1, N. Manthos1, R. Longo1, A. Bergamaschi2
1University College London, U.K.; 2University of Trieste, Italy; 3Academic Centre for Dentistry, The Netherlands; 4Rutherford Appleton Laboratory, U.K.; 5University of Athens, Greece; 6Technological Educational Institute of Athens, Greece; 7Imperial College, U.K.; 8SINTEF, Norway; 9University of Ioannina, Greece

M11-179 Simulation Study on an Energy-Modulated X-Ray CT
K. Ogawa, M. Kishino, Hosei University, Faculty of Engineering, Japan; T. Yamakawa, Axion Japan Co Ltd, Japan

C.-M. Kao1, D. Yun2, Q. Xie1,3, C.-T. Chen1
1The University of Chicago, USA; 2Illinois Institute of Technology, USA; 3HuaZhong University of Science and Technology, China

M11-188 Positron Range Effects on the Spatial Resolution of RPC-PET
A. Blanco1, R. Ferreira Marques1,2, P. Fonte1,3
1LIP-Coimbra, Laboratório de instrumentação e Física Experimental de Partículas, Portugal; 2Departamento de Física, Universidade de Coimbra, Portugal; 3ISEC, Instituto Superior de Engenharia de Coimbra, Portugal

M11-190 ML/EM Reconstruction Algorithm for Cosmic Ray Muon Tomography
L. J. Schultz, K. N. Borozdin, A. M. Fraser, M. C. Galassi, N. W. Hengartner, A. V. Klimenko, C. L. Morris, C. C. Orum, M. J. Sossong, Los Alamos National Laboratory, USA

M11-193 Analysis of Gyrification in Fetal MR Brain Images Using 3-Dimensional Mean Curvature
H.-Y. Chen1,2, H.-H. Hu1,2, Y.-T. Wu1,2, W.-Y. Guo1,2
1National Yang-Ming University, Taiwan; 2Taipei Veterans General Hospital, Taiwan

M11-196 Spatial Resolution for Time-Resolved Optical Tomography in Slab Geometry
R. Ziegler, T. Kühler, T. Nielsen, Philips Research Europe, Germany; O. Steinkellner, D. Grosenick, H. Rinneberg, Physikalisch-Technische Bundesanstalt, Germany

M11-202 The Application of GATE and NCAT to Respiratory Motion Simulation in Allegro PET
J. He1, G. O’Keeffe1, G. Jones1, T. Saunders1, S. Gong1, M. Geso2, A. M. Scott1
1Austin Hospital, Australia; 2RMIT University, Australia

M11-205 Optimization of Gated Liver FDG PET with Non-Uniform Respiration
M. A. Shilov, E. C. Frey, P. W. Segars, J. Xu, B. M. W. Tsui, Johns Hopkins University, USA

M11-208 PeneloPET, a Monte Carlo PET Simulation Tool Based on PENELOPe: Features and Validation
S. España1, E. Vicente1, J. L. Herraz1, J. J. Vaquero1, M. Desco1, J. M. Udas1
1Universidad Complutense de Madrid, Spain; 2Hospital G. U. Gregorio Marañón, Spain
M11-212 Impact of Photon Transport Properties on the Detection Efficiency of Scintillator Arrays
S. Wirth, B. Heismann, Siemens Medical Solutions, Germany; W. Metzger, K. Pham-Gia, Siemens Corporate Technology, Germany

M11-215 Accurate and Fast Modeling of Detector Dead-Time in PET Using Variance Reduction
B. Guerin, Harvard University, University of Paris 6, USA; G. El Fakhri, Harvard Medical School, Brigham and Women's Hospital, USA

M11-218 Performance Evaluation of jPET-D4 with the Monte Carlo Code GATE
1Kitasato University, Japan; 2National Institute of Radiological Sciences, Japan; 3Tokyo Metropolitan University, Japan; 4Chiba University, Japan

M11-221 A Compton-scattering and a collimation model for gamma images enhancement
B. Nicolas, L. Verger, P. Grangeat, O. Monnet, J.-M. Dinten
CEA - Recherche Technologique (CEA/GRE), FRANCE

M11-224 Thermoacoustic Tomography - Attenuation Impact on Reconstructed Images
S. K. Patch, UW-Milwaukee, USA; M. Haltmeier, University of Innsbruck, Austria

M11-227 Digital Autoradiography Imaging Using CCD and CMOS Technology
J. Cabello, K. Wells, A. Bailey, I. Kitchen, University of Surrey, UK; A. Clark, J. Crooks, R. Halsall, M. Key-Charriere, S. Martin, M. Pryderch, R. Turchetta, Rutherford Appleton Laboratory, UK

M11-230 Classification of MR Brain Tissue Using Fuzzy Estimation
R. Parveen, A. Todde-Pokrepo
University College London, United Kingdom

M11-232 Blood Vessel Detection and Blood Flow Velocity Determination in Coronary Angiograms
N. D. Subramanian, D. Munirathnam, K. Natesan
Anna University, India

M11-235 Cardiac C-Arm CT: Efficient Motion Correction for 4D-FBP
M. Pruemmer1, L. Wigstroem2, J. Horneberger1, J. Boecke1, G. Lauritsch1, N. Strobel1, R. Fahrig2
1Institute of Pattern Recognition, Germany; 2Department of Radiology, USA; 3Siemens AG, Medical Solutions, Germany; 4Siemens AG, Medical Solutions, USA

M11-238 Sequential Contrast Enhancement of Portal Images: Study of the Influence on Image Quality and Clinical Usefulness
K. Koutroufios, University of Patras, Greece; S. Nikoletoopoulos, “Iaso” Hospital, Greece; A. Episkopakis, I. Kandarakis, Technological Educational Institute of Athens, Greece

M11-241 A Unified Segmentation Method for CT Image Segmentation with Contrast Agent
C.-H. Hsu1, H.-F. Lee1, K. M. Lin2, C.-T. Chen1, L.-T. Hsiao1, P.-C. Huang1, C. Wietholter2
1National Tsing Hua University, Taiwan; 2National Health Research Institutes, Taiwan; 3University of Chicago, USA; 4Chang Gung University, Taiwan

M11-244 ROC Analysis of Lesion Detectability in a Torso Phantom for PET Images from Two PET/CT Scanners
K. R. Bernstein, K. L. Matthews II, B. M. Smith, Louisiana State University, USA; L. S. Bujenovic, Our Lady of the Lake Regional Medical Center, USA

M11-247 A Surface Adaptive Region Growing Algorithm for Tumor Localization, Object Reconstruction and Shape Visualization
D. Y. Y. Yun1, S. Kwee2, H. Wei1, M. Coel2
1University of Hawaii and i. Solutions, inc., USA; 2Queen’s Medical Center, USA

M11-250 3D Robust Adaptive Region Growing for Segmenting [18F]fluoride Ion PET Images
T. Grenier1, C. Revol-Muller1, N. Costes2, M. Janier1, G. Gimenez1,2
1CREATIS, France; 2CERMEP, France

M11-254 A post-processing method for scatter and collimator blurring compensation using spatially variant point spread function
Y. Yan, G. L. Zeng, University of Utah, USA

M11-257 Comparison Between the ROI Based and Pixel Based Analysis for Neuroreceptor Studies Performed on the High Resolution Research Tomograph (HRRT)
V. Sossi1, S. Blinder1, K. Dinelle1, S. Lidstone1, K. Cheng1, A. Rahmim1, S. McCormick1, D. Doulet1, T. Ruth1
1University of British Columbia, Canada; 2John Hopkins, USA; 3Triumf, Canada

M11-260 Clinical Study of 2D and 3D Scan Time Reduction in Head / Neck Cancer with BGO Based PET /CT Using Statistical Image Analysis.
B. Sanghera1, J. Lowe1, G. Lowe1, D. Wellsted1, H. Hammer1, R. J. Chambers1, W. L. Wong1
1Mount Vernon Hospital, United Kingdom; 2University of Hertfordshire, United Kingdom; 3GE Healthcare Technologies, Austria

M11-263 Factors Influencing Lesion Detection in SPECT Lung Images
H. C. Gifford1, X. M. Zheng2, R. Licho1, P. B. Schneider1, P. H. Simkin1, M. A. King1
1Univ Mass Medical School, USA; 2Charles Sturt University, Australia

M11-266 3D Ant-Based Reconstruction of Bronchial and Vascular Tree in Lung Computed Tomography
C. S. Cristian1,2, INFN - Torin, Italy; 1Universita degli Studi di Torino, Italy
On behalf of the MAGIC-5 Collaboration

M11-269 Image Registration of Radiographic Images Using an Elastic Approach
A. B. Abiche1, E. Tohme1, T. El Chaer1, E. H. Karam1, Y. Hamam2, M. Bouchoucha3, F. Rocar1
1University of Balamand, Lebanon; 2ESIEE, France; 3University of ren Descartes, France

M11-272 Investigation of Calcified Coronary Plaque Tracking in Cardiac CT
M. T. King, M. L. Giger, X. Pan, University of Chicago, USA

M11-274 Kinetics of (R)-[11C]rolipram and (S)-[11C]rolipram in the Dog Heart: Investigation of Four Compartment Models
M. Lortie, J. DaSilva, M. Kenk, S. Thorn, R. Beanlands, R. deKemp
University of Ottawa Heart Institute, Canada
M11-277 Kinetic Modeling of FDG Uptake in Rat Tumors During Photodynamic Therapy
M. Bentourkia, V. Bérand, P. Boubacar, J. E. van Lier, R. Lecomte
Université de Sherbrooke, Canada

M11-280 A Public Domain Dynamic Mouse FDG MicroPET Image Data Set for Evaluation and Validation of Input Function Derivation Methods
S.-C. Huang, H.-M. Wu, D. Truong, M. Prins, X. Zhang, D. B. Stout, A. F. Chatziioannou, H. R. Schelbert
UCLA David Geffen School of Medicine, U.S.A.

M11-283 Estimation of Scatter and Attenuation Compensation Method Using Only Emission Data Acquired with a Triple Energy Window Setting in Myocardial SPECT
N. Motomura1, H. Maeda2, N. Yamaki3, A. Kinda1, S. Shirakawa2, K. Takeda3
1Toshiba Medical Systems, Japan; 2Fujita Health University, Japan; 3Mie University, Japan

M11-286 Quantitative Simultaneous In-111-WBC / Tc-99m-MDP Planar Imaging of the Foot
X. Zhu, M.-A. Park, S. C. Moore
Brigham & Women’s Hospital and Harvard Medical School, USA

M11-289 Cardiac Motion Estimation from Gated Emission Computed Tomography Images
J. Tang, W. P. Segars, B. M. W. Tsui
Johns Hopkins University, USA

M11-292 Splitting Frames Based on Hypothesis Testing for Patient Motion Compensation in SPECT
L. Ma1, B. Feng2, J. McNamara2, M. A. Gennert1, M. A. King2
1Worcester Polytechnic Institute, USA; 2University of Massachusetts Medical School, USA

M11-296 Estimation of 6-Degree-of-Freedom (6-DOF) Rigid-Body Patient Motion from Attenuation-Compensated Projection Data in Iterative Reconstruction
B. Feng, M. A. King
University of Massachusetts Medical School, U.S.A.

M11-299 Motion Estimation in Gated Cardiac Emission Tomography by Optical Flow Techniques
D. R. Gilland, B. A. Mair
University of Florida, U.S.A.

M11-302 Evaluation of 3D Monte-Carlo Based Scatter Correction for TI-201 Cardiac Perfusion SPECT
J. Xiao1, T. C. de Wit1, S. G. Staelens1, W. Zbijewski1, F. J. Beckman1
1Utrecht University Medical Center, The Netherlands; 2Ghent University, Belgium

M11-305 A Quantitative Study of the Minimal Data Requirement for Accurate Attenuation Correction for Cardiac SPECT Using Small Field-of-View Detectors
C. Bai, R. Conwell, DigiRad Corporation, USA

M11-308 Variation of Kinetic Model Parameters Due to Input Peak Distortions and Noise in Simulated 82Rb PET Perfusion Studies
C. Meyer, M. Weibrecht, D. Peligrad
Philips Research Laboratories, Germany

M11-311 Ensemble Learning - Independent Component Analysis Approach to Extract the Arterial Input Function from FDG-PET Images in Mice
Z. Fu, Vanderbilt University, U.S.A.; M. N. Tantawy, T. E. Peterson, Vanderbilt University Institute of Image Science, U.S.A.

M11-314 A LSO Beta Microprobe for Measuring Input Functions for Quantitative Small Animal PET

M11-316 Partial Volume Correction Using Continuous Wavelet Technique in Small Animal PET Imaging
L. Arhipoul, O. Sarrhini, M. Bentourkia
University of Sherbrooke, Canada

M11-319 Region of Interest Motion Compensation in PET Image Reconstruction
F. Qiao1, T. Pan2, J. W. Clark, Jr.1, O. R. Mawlawi1
1Rice University, USA; 2The University of Texas M. D. Anderson Cancer Center, USA

M11-322 Implementation of Retrospective Respiratory Motion Compensation under Deep Breathing in Spiral Transmission Scanning of 3D PET
A. Ishikawa, K. Kitamura, T. Mizuta, K. Tanaka, M. Amano, Y. Inoue
SHIMADZU Corporation, JAPAN

M11-325 Simulation-Based Assessment of the Impact of Contrast Medium on CT-Based Attenuation Correction in PET
M. R. Ay, H. Zaidi, Geneva University Hospital, Switzerland

M11-328 A Simulation Study of Respiratory-Motion and 4DCT-Attenuation Correction in Cardiac PET/CT
B. Lewden1, G. Wells1,2,3
1Lawson Health Research Institute, Canada; 2University of Western Ontario, Canada; 3St. Joseph’s Health Care, Canada

M11-331 Quantitative Image Reconstruction for the RatCAP PET Scanner
S. Southekal1,2, M. Purschke2, S.-J. Park2, S. Junnarkar2, J.-F. Pratte2, S. Stoll2, V. Boronikolas2, D. Lee2, D. J. Schlyer2, C. L. Woody3, P. Vaska2
1Stony Brook University, USA; 2Brookhaven National Laboratories, USA

M11-334 Geometric Model of Single Scatter in PET
S. Matej, The City University of New York, USA; S. Matej, R. M. Lewitt, University of Pennsylvania, USA

M11-338 The Quantitative Accuracy and Efficiency of the Dual Reconstruction Scheme Including a Practical Scatter/random Approximation in Dynamic PET Imaging
J.-C. (.	Cheng1, A. Rahim2, S. Blinder2, K. Dinelle1, V. Sossi1
1University of British Columbia, CANADA; 2Johns Hopkins University School of Medicine, USA; 3Pacific Parkinson’s Research Centre, CANADA

M11-341 A New, Dedicated, High Accuracy Multiple Order Scatter Model for 3D Whole Body PET
P. J. Markiewicz1,2, A. J. Reader1, M. Tamal1, P. J. Julyan2, D. L. Hastings2
1University of Manchester, United Kingdom; 2Christie Hospital NHS Trust, United Kingdom

M11-344 A Breath Control Device with EKG Monitoring (ABCDE) for Routine Imaging and Therapy
S. Chauvie1,2, G. Perno1, S. Peano2, A. Bianchi2, A. Biggi2
1INFN, Italy; 2S Croce e Carle Hospital, Italy
M11-347 Evaluation of CT Field of View Restoration for PET-CT Attenuation Correction
A. H. Lonn, J. Hsieh, M. L. Nyka, GE Healthcare, USA

M11-350 Monitoring of and Correction for Subject's Head Movement During High Resolution PET Studies
K. M. Woch, C. J. Thompson, J. Suk
McGill University, Canada

M11-353 Respiratory Gating of MicroPET and Clinical CT Studies Using List-mode Acquisition
Korea Institute of Radiological and Medical Science, Korea

M11-356 Evaluation of PET Tracer Binding Recovered by Partial Volume Correction Technique in Case of Hippocampic Atrophy
N. Costes, A. Reillhac, CERMEP - Imagerie du vivant, France

M11-358 New Sinogram Filter Design Utilizing Sinusoidal Trajectories
S. Peltonen, U. Ruotsalainen
Tampere University of Technology, Finland

M11-361 A Generalization of Green's One-Step-Late Algorithm for Penalized ML Reconstruction of PET Images
B. Mair, J. Zahnen, University of Florida, USA

M11-364 Experimental Evaluation of System Models for PET with Block Detectors
M. S. Tohme, J. Q. Qi, University of California, USA

M11-367 Parallel List-Mode Reconstruction and Calculation of the System Matrix for the High-Resolution ClearPET (TM) Neuro
P. Musmann1, U. Pietrzyk1,2, N. Schramm1, S. Weber1
1Forschungszentrum jülich GmbH, Germany; 2University of Wuppertal, Germany

M11-370 Fast 3D Iterative Reconstruction of PET Images Using PC Graphics Hardware
B. Bai, A. M. Smith, Siemens Molecular Imaging, USA

M11-373 Dynamic List-Mode Reconstruction of PET Data Based on the ML-EM Algorithm
B. Gundlich, P. Musmann, S. Weber Forschungszentrum jülich GmbH, Germany

M11-376 Accurate Estimation of Single Counts from Random Data in the Case of Axially Compressed Data
V. Y. Panin, Siemens Medical Solutions, USA

M11-380 Respiratory-Averaged CT for Attenuation Correction in Canine Cardiac PET Imaging
R. A. Cook1, G. Carnes1,2, T.-Y. Lee1,2,4, G. Wells1,2,4
1Lawson Health Research Institute, Canada; 2University of Western Ontario, Canada; 3Robarts Research Institute, Canada; 4St. Joseph’s Health Care, Canada

M11-383 Inter-Relationship of Resolution Model, Spatial Basis and Post-Smoothing in EM PET Reconstruction
H. Zhao, A. J. Reader
University of Manchester, United Kingdom, United Kingdom

M11-386 GATE Monte-Carlo Generated System Matrix for Iterative List-Mode EM Reconstruction of 3-D MOSAIC PET Data
C. Merheb1, A. J. Reader2, Y. Petegnief3, S. Nicol1, J. N. Talbot1,2, I. Buvat4
1PARIS VI, France; 2University of Manchester, United Kingdom; 3University of Erlangen-Nuremberg, Germany

M11-389 Comparison of Maximum-Likelihood List-Mode Reconstruction Algorithms in PET
R. Brinks1, C. Schretter1, C. Meyer1
1Philips Research, Germany; 2Universite Libre de Bruxelles, Belgium

M11-392 Fully 3D PET Iterative Reconstruction Using Distance-Driven Projectors and Native Scanner Geometry
R. M. Manjeswaria, S. G. Ross2, M. Iatrou1, C. W. Stearns2
1Global Research Center, General Electric, USA; 2General Electric Healthcare Technologies, USA

M11-395 An Efficient Algorithm for Targeted Reconstruction of Tomographic Data
C. W. Stearns1, R. M. Manjeswara, S. D. Wollenweber1
1GE Healthcare, USA; 2GE Global Research, USA

M11-398 Enhanced System Matrix Compression for Iterative PET Reconstruction Using Non-Cuboid, Rotationally Symmetric Voxel Formations
J. J. Scheins, H. Herzog, Institute of Medicine, Germany

M11-400 Polar Pixels for High Resolution Small Animal PET
C. Mora, M. Rafecas Instituto de Fisica Corpuscular (IFIC) - CSIC/ Universidad de Valencia, Spain

M11-403 An Inversion of the 180° Exponential Radon Transform
Q. Huang, G. L. Zeng, University of Utah, USA

M11-406 An Analytical Algorithm for Skew-Slit Imaging Geometry with Uniform Attenuation Correction in SPECT
Q. Tang, G. L. Zeng, University of Utah, USA

M11-409 CT Priors in SPECT/CT Wrist Imaging
E. Sabondjian1,2, R. G. Wells1,2,3
1Lawson Health Research Institute, Canada; 2The University of Western Ontario, Canada; 3St. Joseph’s Health Care, Canada

M11-412 Effect of Overlapping Projections on Reconstruction Image Quality in Multipinhole SPECT
K. Vunckx, J. Nuyts, K. U. Leuven, Belgium

M11-415 Quadratic Regularization Design for Iterative Reconstruction in 3D Multi-Slice Axial CT
H. R. Shi, J. A. Fessler, University of Michigan, USA

M11-418 A Maximum-Likelihood Iterative Algorithm for X-Ray CT Reconstruction
J. Xu, B. M. W. Tsui, Johns Hopkins University, USA

M11-422 Statistical Cone-Beam CT Image Reconstruction Using the Cell Broadband Engine
M. Knapp, W. A. Kalender, M. Kachelries University of Erlangen-Nuremberg, Germany

M11-425 Accelerated Line Search for Coordinate Descent Optimization
Z. Yu1, J.-B. Thibault, K. Sauer1, C. Bouman1, J. Hsieh2
1Purdue University, US; 2General Electric Healthcare, US; 3University of Notre Dame, US

M11-428 A Comparison Between Filtered Backprojection, Post-Smoothed Weighted Least Squares, and Penalized Weighted Least Squares for CT Reconstruction
M. Iatrou, B. DeMan, S. Basu, GE Global Research Center, USA
M11-431 Compensation for Patient and Detector Scatter and Crosstalk Contamination in in-111 SPECT Using Fast Monte Carlo-Based Iterative Reconstruction
Brigham and Women’s Hospital and Harvard Medical School, U.S.A.

M11-434 SPECT Image Quality and Quantification
H. Wieczorek
Philips Technology Research Laboratories, Germany

M11-437 Cone-Beam Imaging of Delta Functions
R. Clackdoyle1, L. Grezes-Besset2, L. Desbat2, C. Mennessier1, I. Bricault1
1Laboratoire TSI, CNRS-UMR5516, France; 2Laboratoire TIMC-IMAG, CNRS-UMR5525, France

M11-440 Reconstruction of a Dual-Head Small-Animal PET System: An SVD Study
Y. Dong, Illinois Institute of Technology, USA; C.-M. Kao, The University of Chicago, USA

M11-442 A Rebinning-Type Backprojection-Filtration Algorithm for Image Reconstruction in Helical Cone-Beam CT
L. Yu, D. Xia, Y. Zou, X. Pan
The University of Chicago, USA

M11-445 Cone-Beam Tomography from Short-Scan Circle-plus-Arc Data Measured on a C-Arm System
S. Hoppe1, F. Dennerlein2, G. Lauritsch3, J. Hornegger1, F. Noo1
1University of Erlangen-Nuremberg, Germany; 2University of Utah, USA; 3Siemens AG, Medical Solutions, Germany

M11-448 Metal Artifact Reduction in Helical Cone-Beam Computed Tomography
Tsinghua University, China

M11-451 Sampling Requirements for Circular Cone Beam Tomography
J. Brokish, InstaRecon, Inc., USA; Y. Bresler, University of Illinois, USA

M11-454 Two Finite Inverse Hilbert Transform Formulae for Local Tomography
G. L. Zeng1, J. You2, Q. Huang1
1University of Utah, USA; 2Visage Technology Inc., USA

M11-457 Circular CT in Combination with a Helical Segment
C. Bontus, P. Koken, T. Koehler
Philips Research Europe, Germany

M11-460 Circular Cone-Beam Micro-CT for Small Animal Imaging with Truncated Data
S. Cho, L. Yu, C. A. Pelizzari, X. Pan
The University of Chicago, USA

M12-2 A FBP Reconstruction Formula for 2D Tomography with Bilateral Truncation
R. Clackdoyle1,2, F. Noo1, M. S. Ould Mohamed1, C. Mennessier1
1Laboratoire TSI, CNRS-UMR5516, France; 2University of Utah, USA

M12-3 An Immediate After-Backprojection Filtering Method with Blob-Shaped Window Functions for Voxel-Based Iterative Reconstruction
B. Zhang, G. L. Zeng, University of Utah, U.S.A

M12-4 Accurate Image Reconstruction in Circular Cone-Beam CT
E. Y. Sidky, X. Pan, University of Chicago, United States

M12-5 Factorization of the Reconstruction Problem in Circular Cone-Beam Tomography and Its Use for Stability Analysis
F. Dennerlein, F. Noo, UCAIR, Dept. of Radiology, Univ. of Utah, USA; J. Hornegger, University of Erlangen/Nuremberg, Germany; G. Lauritsch, Siemens AG, Medical Solutions, Germany

M12-6 Calibration of the Circle-plus-Arc Trajectory
S. Hoppe1, F. Noo1, F. Dennerlein2, G. Lauritsch3, J. Hornegger1
1University of Erlangen-Nuremberg, Germany; 2University of Utah, USA; 3Siemens AG, Medical Solutions, Germany

M12-7 Sinogram-Domain Correction for Resolution Non-Uniformities Caused by Anode Angulation in CT
P. J. La Riviere, P. Vargas, The University of Chicago, USA

M12-8 Monotonic Iterative Reconstruction Algorithms for Targeted Reconstruction in Emission and Transmission Computed Tomography
P. J. La Riviere, The University of Chicago, USA

MIC Dinner
Friday, Nov. 3 18:00-22:00, SeaWorld

An evening of relaxation and collegial interaction, with dinner and entertainment is planned for the MIC Dinner at SeaWorld San Diego. Buses will leave promptly at 6 pm from the Atlas Foyer. This event, including dinner, will be held outdoors and dress is casual. Attendance is limited, so be sure to register early for the MIC dinner ($65 per person) as part of your conference registration. Please plan to join us for an enjoyable evening and dinner at this outstanding venue! (The MIC Dinner at SeaWorld is sponsored in part by a generous contribution by Siemens Molecular Imaging and Siemens Medical Solutions).

M13 SPECT and SPECT/CT
Saturday, Nov. 4 08:00-10:00, Golden Ballroom

M13-1 Data Readout and Processing Toolkit for Small-Size Gamma Cameras
V. Popov1,2, P. Degtiarenko1,2, I. Musatov3, M. Williams3
1Thomas Jefferson National Accelerator Facility, USA; 2Lintech Inc, USA; 3University of Virginia, USA

M13-2 Deriving the system matrix of a slit-hole micro-SPECT system using Monte Carlo simulation
K. Yang1, T. Ma2, V. G. Rathod1, Y. Shao1, S. Balakrishnan1, R. E. Carson1
1State University of New York at Buffalo, USA; 2Tsinghua University, China; 3Yale University, USA
M14-3 Development of High Performance Mini Gamma Cameras Based on LaBr3 Scintillator and H8500 and H9500 PSPMTs and Their Use in Small Animal Studies
W. Hammond, Y. Tekabe, L. Johnson, S. Majewski, V. Popov, B. Kross, R. Wojciek, A. G. Weisenberger, J. Proffitt
1Jefferson Laboratory, USA; 2Columbia Medical Center, USA; 3Ray Visions, USA

M14-3 A Small-Animal SPECT/CT System with a Stationary CZT Detector Ring and Rotating Multiple Slit or Pinhole Collimator

J. W. T. Heemskerk1,2, P. M. Linotte1,2, A. H. Westra1, W. Zbijewski1,2, K. M. Ligtvoet1, F. J. Beekman1,2
1University Medical Center Utrecht, the Netherlands; 2Rudolph Magnus Institute for Neuroscience, the Netherlands

M14-6 Quantitative Processing of Cardiac Dynamic Patient Data with Slow Camera Rotation
R. Bouchko1, A. Sitek1, J. Hu2, B. W. Reutter1, E. H. Botvinick3, G. T. Gullberg1
1Lawrence Berkeley National Laboratory, USA; 2TeraRecon, Inc., USA; 3University of California at San Francisco, USA

M14-7 High Countrate Second Detector for Compton Cameras
N. Clinthorne1, D. Burdette2, E. Chesi2, L. Han2, K. Honscheid2, S. Huh1, H. Kagan3, C. Lacasta4, G. Llosa4, M. Mikuz2, W. L. Rogers1, S. Smith2, A. Studen1, P. Weilhammer1,2,3,6
1University of Michigan, USA; 2Ohio State University, USA; 3CERN, Switzerland; 4IFIC/CSIC University of Valencia, Spain; 5Jozef Stefan Institute, University of Ljubljana, Slovenia; 6University of Perugia, INFN, Italy

M14-8 Theory of Adaptive SPECT Imaging
University of Arizona, USA

M14-9 A Study of the Application of MWPC-Based Positron Cameras for Breast Imaging
R. J. Ott, N. Evans, Institute of Cancer Research, UK; A. Jeavons, Oxford Positron Systems, UK

M14-12 A near Field Correction for Coded Aperture Imaging in Scintimammography
M. A. Alnafea, K. Wells, N. M. Spyrou, M. I. Saripan, University of Surrey, UK; M. Gyu, Royal Surrey County Hospital, UK

M14-15 3-D Contrast-Detail Analysis for Dedicated Emission Mammmotomography
S. J. Cutler, M. P. Tornai, Duke University, USA

M14-18 Optimization of the Acquisition Parameters for a SPET System Dedicated to Breast Imaging
N. Lanconelli, R. Campanini, E. Lampieri, Università di Bologna, Italy; R. Pani, M. N. Cinti, P. Bennati, Università La Sapienza, Italy; P. Randaccio, Università di Cagliari, Italy; P. Russo, Università Federico II, Italy; A. Del Guerra, Università di Pisa, Italy

M14-21 Evaluation of a CZT Intra-Operative Gamma Camera
L. M. Bleiva1, D. Kopelman1,2, M. Hashmonai1, G. Iosilevsky1, O. Israel1,2,3
1General Electric Healthcare, Israel; 2Technion, Israel Institute of Technology, Israel; 3Haemek Medical Center, Israel; 4Rambam Medical Center, Israel

M14-24 Feasibility Study of Multipinhole Collimators for High Resolution Small Animal Imaging
E. W. Izaguirre, M. Sun, B. H. Hasegawa
University of California San Francisco, USA

M14-27 Reconstruction of Phantom SPECT Scans Acquired with a Slit-Slat Collimator
S. D. Metzler1, A. S. Ayan1, R. Accors1, J. R. Novak1
1University of Pennsylvania, USA; 2Children’s Hospital of Philadelphia, USA

M14-30 Development of a Electron Tracking Compton Gamma-Ray Camera Using a Gas Micro-Tracking Device for Nuclear Medicine
S. Kabuki1, K. Hattori1, A. Kubo2, H. Kubo1, E. Kunieda2, K. Miuchi1, T. Nakahara1, H. Nishimura1, T. Tanimori1
1Kyoto university, Japan; 2Keio university, Japan

M14-33 Analytical Derivation and Experimental Verification of a Sensitivity Formula for Slit-Slat SPECT Collimation
R. Accorsi1, S. D. Metzler2, J. R. Novak2, A. S. Ayan1, R. J. Jaszcza1,2,3
1The Children’s Hospital of Philadelphia, USA; 2University of Pennsylvania, USA; 3Duke University Medical Center, USA; 4Duke University, USA

M14-36 A Compact High Performance Readout Electronics Solution for H9500 Hamamatsu 256 Multianode Photomultiplier Tube for Application in Gamma Cameras
V. Popov, S. Majewski
Thomas Jefferson National Accelerator Facility, USA

M14-39 Evaluation of Silicon Photomultipliers for Use as MR Compatible PET Detectors
D. P. McElroy1, A. Reznik1, V. Saveliev2, C. J. Thompson3, W. Zhao4, J. A. Rowlands1
1University of Toronto, Sunnybrook Health Sciences Centre, Canada; 2DESY, Germany; 3McGill University, Canada; 4State University of New York at Stonybrook, USA
M14-42 A Multi-Slice Dual Layer MR-Compatible Animal PET System
S. Yamamoto, Kobe City College of Technology, Japan; H. Mashino, Espec Techno Co., Ltd., Japan; S. Takamatsu, Nara Institute of Technology, Japan; K. Matsumoto, M. Senda, Institute of Biomedical Research and Innovation, Japan

M14-45 An MR Compatible LSO-PET Scanner for Molecular Imaging Studies
J. E. Mackewa1, S. F. Keevel1, W. A. Hallett1, P. Halsted1, R. A. Page1, M. T. Kelly1, S. C. Williams2, P. K. Marsden1
1Guy's, King's and St Thomas' school of medicine and dentistry, UK; 2Institute of Psychiatry, UK

M14-48 Depth of Interaction Decoding of a Continuous Crystal Detector
T. Ling, T. K. Lewellen, R. S. Miyaoka
University of Washington, USA

M14-69 Performance Measurements of the Siemens Inveon Small Animal PET Scanner
B. J. Kemp, Mayo Clinic, US; M. Lenox, D. F. Newport, S. Siegel, R. Nutt, Siemens Medical Solutions, US

M14-72 A Monte Carlo Simulation Study on Detector Arrangement for a Small Bore DOI-PET Scanner: jPET-DR
T. Kobayashi1, T. Yamaya1, H. Takahashi1, K. Kitamura1, T. Hasegawa1, H. Murayama2, M. Suga3
1Chiba university graduate school of Science and technology, Japan; 2The National Institute of Radiological Sciences, Japan; 3The Shimadzu Corporation, Japan; 4Kitaio University, Japan

M14-75 Region-Based Efficiency Correction for the High-Resolution Quad-HIDAC PET Scanner
L. Ortega Maynez1, A. J. Reader1, P. J. Julyan1, D. L. Hastings3
1The University of Manchester, UK; 2The University of Cd. Juarez., Chih. Mexico; 3North Western Medical Physics, UK

M14-78 Performance Comparison of Two DOI-GSO Block Detectors with Different Fabrication Methods
S. Yamamoto, Kobe City College of Technology, Japan; N. Shimura, H. Ishibashi, Hitachi Chemical, Japan

M14-81 Signal to Noise Ratio of Monolithic Scintillation Detectors for High Resolution PET
M. C. Maas1, D. J. (van der Laan)1, D. R. Schaart1, P. Bruyndonckx2, C. Lemaître2, C. W. E. van Eijk1
1Delft University of Technology, The Netherlands; 2Vrije Universiteit Brussel, Belgium

M14-84 Impact of Detector Defects on Image Quality and Quantification for the microPET Focus 220 Scanner
W. Lehner, S. R. Meikle, University of Sydney, Australia

M14-87 Development of an Improved Detector Module for miniPET-II
J. Imrek, G. Hegyesi, G. Kalinka, J. Molnar, D. Novak, I. Valastyan, J. Vehg, Institute of Nuclear Research of the Hungarian Academy of Sciences, Hungary; L. Balkay, M. Emri, A. Kis, L. Tron, University Medical School of Debrecen, Hungary; T. Bukki, MEDISO Ltd., Hungary, Z. Szabo, Institute of Experimental Physics, University of Debrecen, Hungary; A. Kerek, Royal Institute of Technology, Sweden

M14-90 Feasibility Test Performed with Silicon Photomultiplier as Gamma Ray Imaging Sensor
Samsung Medical Center, Sungkyunkwan University School of Medicine, South Korea

M14-93 Photon-Counting CT Performance Assessment of the LabPET™ Detector and Electronics for Molecular Imaging Applications
P. Bérard, J. Riendeau, C. M. Pepin, D. Rouleau, J. Cadorette, R. Fontaine, R. Lecomte
Université de Sherbrooke, Canada

M14-96 Spatial Resolution Measured by a Prototype System of Two 4-Layer DOI Detectors for jPET-DR
E. Nishikida1, T. Tsuda1, N. Inada1, E. Yoshida1, K. Takahashi1, K. Shibuya1, T. Yamaya1, K. Kitamura1, H. Murayama1
1National Institute of Radiological Sciences, Japan; 2Shimadzu Corporation, Japan

M14-99 First Imaging Results of a Dual-Head Small-Animal PET System
C.-M. Kao, C.-T. Chen, The University of Chicago, USA
M14-102 Feasibility Studies of a Hybrid microPET and SPECT System for Small Animal Imaging
Y. Shao1, R. Yao1, T. Ma2, J. C. Luisi1, K. Gao1, S. Balakrishnan1, H. Li1
1State University of New York at Buffalo, USA; 2Tinghua University, P.R. China

M14-105 Digital Coincidence Processing for the RatCAP Conscious Rat Brain PET Scanner
S. J. Park1, S. Southekal2, M. Purschke1, S. S. Junnarkar1, J.-F. Pratte1, V. Radeka1, P. O’Connor1, S. P. Stoll1, R. Lecomte1, R. Fontaine1, C. L. Woody1, D. J. Schlyer1, P. Vaska1
1Brookhaven National Lab., USA; 2Stony Brook University, USA; 3University of Sherbrooke, Canada

M14-106 Simulations of the Effect of Partial Collimation on Count Rates of an LSO PET System
R. E. Schmitz, P. E. Kinahan, R. L. Harrison, T. K. Lewellen
University of Washington, USA

M14-111 Dynode-Timing Method for PET Block-Detectors
E. Bauer1,2, N. Zhang1, M. Schmand1, M. Loope1, L. Eriksson1,2
1Siemens Medical Solutions, Molecular Imaging, USA; 2Stockholm University, Sweden

M14-114 Innovative Electronics Architecture for PET Imaging
P. E. Vert, J. Lecoq, G. Montarou, N. Pauna, B. Joly, M. Boutemeur, LPC, France; H. Mathez, R. Gaglione, IPNL, France; P. Le Dû, DAPNIA, France

M14-117 A Hybrid Parallel Plate Gas Counter for Medical Imaging
D. Domenici1, F. Anulli1, G. Bencivenni1, C. D’Ambrosio1, G. Bencivenni2, C. Morone2, F. Murta1
1LNF - INFN, Italy; 2Tor Vergata University, Italy

M14-120 A, B, C, (D), E Multiplexing Readout Concept for PET Block Detectors
N. Zhang, M. J. Schmand, N. K. Doshi
Siemens Medical Imaging, USA

M14-123 Implementation of a High-Rate USB Data Acquisition System for PET and SPECT Imaging
J. Proffitt1, W. Hammond1, S. Majewski1, V. Popov1, R. R. Raylman2, A. G. Weisenberger1
1Jefferson Lab, USA; 2West Virginia University, USA

M14-126 Noise Optimization and Monte Carlo Simulation of a PET Detector Based on Continuous LSO Crystal and Large-Area APDs
S. Krishnamoorthy, Stony Brook University, USA; S. Stoll, M. Purschke, J.-F. Pratte, C. L. Woody, D. J. Schlyer, P. O’Connor, P. Vaska, Brookhaven National Laboratory, USA

M14-129 Multichannel Readout Electronics for Flat Panel PSPMT
E. D’Abramo, Università di Roma Tre, Italy; F. de Notaristefani, V. Orsolinì Cencelli, INFN, Italy

M14-132 Design Consideration for Double-Sided Silicon Detectors Applicable to PET Imaging
A. Studen, N. H. Clinthorne, University of Michigan, USA

M14-135 Optimization of Crystal Arrangement on 8-Layer DOI PET Detector
N. Inadama1, H. Murayama1, T. Tsuda1, F. Nishikido1, K. Shibuya1, T. Yamaya1, E. Yoshida1, K. Takahashi1,2, A. Ohmura3
1National Institute of Radiological Sciences, Japan; 2Chiba university, Japan; 3Waseda university, Japan

M14-138 Design of a Modular and Efficient LabVIEW-Based Data Acquisition System for a Time of Flight PET Test-Bed
K. A. Wangerin, J. Uribe, F. P. Jansen, S. Dolinsky, A. Ivan, GE Global Research, USA; N. Haupt, GE Healthcare, USA

M14-141 A Compact PCI Based Event Routing Subsystem for PET and SPECT Data Acquisition
Siemens Molecular Imaging, USA

M14-144 Development and Evaluation of Detector Heads and Readout for a Mobile Cardiac Imager System
S. Majewski, W. Gunning, W. Hammond, B. Kross, M. Smith, V. Popov, J. Proffitt, A. Weisenberger, R. Wojcik, Jefferson Lab, USA; D. Gilland, University of Florida, USA

M14-147 Clinical Comparison of HiRez Vs Non-HiRez LSO Crystal Sampling for Lesion Detection and SUV Quantification
S. Hapdey1,2, S. Vauclin1,2, A. Manrique1,2, I. Buvat1, M. Fourcade1, O. de Dreuille1, I. Gardin1,2, P. Vera1,2
1Centre Henri Becquerel - CHU, France; 2Quant.I.F. Laboratory, France; 3Siemens Medical Solution Molecular Imaging France, France; 4UMR 678 Inserm UPMC, France; 5Hôpital Lapeyronie - Hôpital de Chaulieu, France

M14-150 Quantitative Experimental Comparison of HRRT Versus HR+ PET Brain Studies
F. H. P. van Velden, R. W. Kloet, H. W. de Jong, A. A. Lammertsma, R. Boellaard
VU University Medical Center, Netherlands

M14-153 A Large Volume PET Scanner for Low Dose Applications
B. W. Jakoby1,2, D. W. Townsend1, M. Sibomana3, C. Nahmias1, A. K. LeBlanc1, G. B. Daniel1
1University of Tennessee Medical Center, USA; 2Siemens Molecular Imaging, USA; 3College of Veterinary Medicine, University of Tennessee, USA

M14-156 Small Animal X-Ray Micro-CT with Zoom-in Imaging Capability
Kyung Hee University, Korea

M14-159 X-Ray Spectrum Optimization for CT Angiography, and for Dual Energy CT Detector
N. Weiss, A. Altman, S. Shenhav
Philips Medical Systems, Israel

M14-162 A High Brightness X-Ray Tube with Micrometer-Sized Focal Spot Based on CNT Emitters
S. H. Heo, A. Ihsan, S. O. Cho
Korea Advanced Institute of Science and Technology, South Korea

M14-165 Ultra-High Resolution X-Ray CT System with a CdTe Detector
J. Yoshitake, K. Ogawa
Hosei University, Faculty of Engineering, Japan

M14-168 Hyperfast Parallel-Beam Backprojection
M. Kachelriess, M. Knap, Institute of Medical Physics (IMP), Germany; O. Bockenbach, Mercury Computer Systems, Germany

M14-171 Potential of a Hybrid Scatter Estimation Model for Scatter Correction of Flat-Panel CT Data
V. Kyriakou, W. A. Kalender
Institute of Medical Physics, Germany

M14-174 Development and Optimization of Multislice CT Detectors
R. E. Schmitz, P. E. Kinahan, R. L. Harrison, T. K. Lewellen
University of Washington, USA
M14-174 Optical Determination of the Cross Talk of CT Detection Systems  
N. Wainer, O. Buchinsky, L. Gregorian, I. Uman  
Philips Medical Systems & Technologies Ltd, Israel

M14-177 Photon Counting X-Ray CT System with a Semiconductor Detector  
K. Kowase, K. Ogawa  
Hosei University, Faculty of Engineering, Japan

M14-180 A Proposed Cone Beam Version of Electron Beam CT  
H. Schomberg, Philips Research, Germany

M14-183 Performance Evaluation of a Prototype Micro-CT System  
The University of Chicago, USA

M14-186 Physical Performance and Clinical Workflow of a New LSO HI-REZ PET/CT Scanner  
B. W. Jakoby, Y. Bercier, C. C. Watson, V. Rappoport, J. W. Young, B. Bendriem, D. W. Townsend  
1University of Tennessee Medical Center, USA; 2Siemens Molecular Imaging, USA

M14-189 Automated Calibration Method for Parallax Corrected Positioning Algorithms in Monolithic Scintillators  
P. Bruyndonckx, C. Lemaître, D. Schaart, M. Maas, D. J. Van der Laan, M. Krieguer, D. Visvikis  
1Vrije Universiteit Brussel, Belgium; 2Delft University of Technology, The Netherlands

M14-192 Assessment of the activity distribution of metal radionuclides in plastic phantoms using µSPECT imaging and gamma counting  
1Brigham and Women’s Hospital, USA; 2Dana Farber-Brigham and Women’s Cancer Center, USA; 3Harvard Medical School, USA

M14-195 Texture Analysis of Skin Lesion Images for Early Melanoma Detection  
Z. Yang, X. Yuan, R. Jiamthapthaksin, N. Mullani, G. Zouridakis  
1University of Houston, United States; 2Translite LLC, United States

M14-198 Extraction and Reconstruction of Retinal Vascularity for Diabetic Retinopathy  
L. I. Izhari, A. F. M. Hani, P. A. Venkatachalam, University Technology of PETRONAS, Malaysia; T. V. N. Karunakar, General Hospital of Kuala Lumpur, Malaysia

M14-201 Accelerated SPECT Monte Carlo Simulation Using Multiple Projection Sampling and Convolution-Based Forced Detection  
S. Liu, McMaster University, Canada; H. R. Khosravi, Tehran University of Medical Sciences, Iran; T. H. Farncombe, Hamilton Health Sciences, Canada

M14-204 Evaluation of Different Random Estimation Methods for the MADPET-II Small Animal PET Scanner Using GATE  
L. Torres-Espallardo, M. Rafecas, V. C. Spanoudaki, D. P. McElroy, S. I. Ziegler  
1Klinikum rechts der Isar, Technical University of Munich, Germany; 2Institute of Particle Physics - IFIC, Spain; 3Sunnybrook and Women’s College Health Sciences Centre, Canada

M14-207 Design and Implementation of a Block Detector Simulation in SimSET  
R. L. Harrison, S. B. Gillispie, T. K. Lewellen  
University of Washington, USA

M14-210 Monte Carlo Spectral Analysis of Phosphor Screens for X-Ray Imaging  
C. H. Lim, H. K. Kim, M. K. Cho, M. H. Cheong, C.-S. Shon, Pusan National University, South Korea; H. Cho, Yonsei University, South Korea

M14-213 Impact of Scatter Modeling Error on 3D Maximum Likelihood Reconstruction in PET  
M. Tamal, A. J. Reader, P. J. Markiewicz, The University of Manchester, UK; P. J. Julyan, D. L. Hastings, Christie Hospital NHS Trust, UK

M14-216 Monte Carlo Database Production for Human Brain PET Imaging Using GATE  
S. Jan, C. Comtat, R. Trébossen  
CEA/DSV/DRM/SHFJ - Service hospitalier Frédéric Joliot, France

M14-219 RTNCAT (Real Time NCAT): Implementing Real Time Physiological Movement of Voxelized Phantoms in GATE  
P. Descourt, W. P. Segars, F. Lamare, L. Ferrer, B. Tsui, Y. Bizais, M. Bardies, D. Visvikis  
1U650 INSERM, Laboratoire du Traitement de l’Information Medicale, France; 2U601 INSERM, France; 3Department of Radiology, USA

M14-222 Image Registration Technique for 3-D Visualization of Brain Fiber Tracts from DTI  
D. Sanchez, M. Adjouadi, D. Sanchez  
Florida International University, USA

M14-225 Image Reconstruction from Sparse Data Samples in Echo-Planar Imaging  
S. J. LaRoque, E. Y. Sidky, X. Pan  
University of Chicago, USA

M14-228 Investigating the Cortical Development of Normal Fetal MR Brain Images Using Two-Dimensional Curvature Method  
1National Yang-Ming University, Taiwan; 2Taipei Veterans General Hospital, Taiwan

M14-231 Evaluation of 5-123I-Iodo-2'-Hydroxy-2'-Deoxyuridine ([123I]IaraU) as a Gene Probe  
1National Tsing Hua University, Taiwan; 2Institute of Nuclear Energy Research, Taiwan

M14-234 Geometrical Repeatability and Motion Blur Analysis of a New Multi-Projection X-Ray Imaging System  
A. Chawla, E. Samei, Duke University, USA

M14-237 Signal-to-Noise Monte-Carlo Analysis of Base Material Decomposed CT Projections  
B. J. Heissmann, Siemens Medical, Germany

M14-240 Simulation and Experimental Study of Multiple-Fibers per Voxel Detection by ICA in DTI Tractography  
M. Singh, C.-W. Wong, J.-W. Jeong  
University of Southern California, USA

M14-243 Quantifying Phase Analysis Parameters for Normal Cardiac Synchrony  
B. Dej, Carleton University, Canada; R. Wassenaar, Ottawa Hospital
M14-246 Fully Automated Software for Polar-Map Registration and Sampling from PET Images
R. Klein1,2, M. Lortie1, R. S. Beanlands1, R. A. deKemp1, A. Adler2
1University of Ottawa Heart Institute, Canada; 2University of Ottawa, Canada

M14-249 A Method for Automatic Extraction of Striatal Structures for PET Dose-Finding Studies
E. Wallius1, J. Tohka1, J. Hirvonen1, J. Hietala1, U. Ruotsalainen1
1Tampere University of Technology, Finland; 2Turku PET centre, Finland; 3University of Turku, Finland

M14-252 Efficient Model of the Collimator Blurring in Pinhole SPECT
A. Andrejev, M. Defrise, C. Vanhove
Vrije Universiteit Brussel, Belgium

M14-255 Iterative Reconstruction of Combined Voxelized Images and Volumes-of-Interest for SPECT Imaging
Y. Du, E. C. Frey, Johns Hopkins University, USA

M14-258 Comparison of Image Segmentation and Registration Based Methods for Analysis of Misaligned Dynamic H215O Cardiac PET Images
A. Justin1, J. Tohka1, J. Lötjönen2, U. Ruotsalainen1
1Institute Of Signal Processing, Finland; 2VTT Information Technology, Finland

M14-261 A Human Observer Study Comparing Parallel-Hole, Fan-Beam and Cone-Beam Collimation in 99mTc-Sestamibi Myocardial SPECT Defect Detection with a Heterogeneous Phantom Population
K. L. Gilland, B. M. W. Tsui, Johns Hopkins University, USA; G. T. Gullberg, E. O. Lawrence Berkeley National Laboratory, USA

M14-264 Images of Small Brain Phantom with Contrast Agents and Rat Kidney, Using 20, 30 and 40 keV Synchrotron X-Rays: Utilization of DEI and CT.
R. V. Donepudi, Sir.C.R.R. (A) College, India; Z. Zhong, Brookhaven National Laboratory, USA; T. Yuasa, T. Akatsuka, Yamagata University, Japan; T. Takeda, University of Tsukuba, Japan; G. Tromba, Elettra, Italy

M14-267 A Template Based Approach for Automatic Seed Detection in Post-Implant CT Images for Prostate Brachytherapy
M. Yazdi1,2, S. GhadarGhadr1, L. Beaulieu2,3
1School of Engineering, Shiraz University, Iran; 2Centre de Recherche en Cancérologie, Canada; 3Université Laval, Canada

M14-270 Multi-Modal and Multi-Temporal Image Registration in the Presence of Gross Outliers Using Feature Voxel-Weighted Normalized Mutual Information
Z. Gu, B. Qin, Shanghai Jiao Tong University, China

M14-273 Three-Dimensional Gated Reconstructed Images of the Coronary Arteries Based on Rotational Coronary Angiography: First in Human Results
B. Movassaghi1, J. Garcia2, M. Grass1, D. Schaefer1, V. Rasche1, O. Wink1, J. Y. Chen1, B. M. Groves2, J. C. Messenger1, J. D. Carroll2
1Philips Research Laboratories - North America, USA; 2University of Colorado Health Sciences Center, USA; 3Philips Research Laboratories Hamburg, Germany

M14-276 A Fast Method for Kinetic Parameter Estimation
L. S. Yetik, J. Qi, University of California at Davis, USA

M14-279 Wavelet Denoising of Dynamic PET Data: Application to the Parametric Imaging of Peripheral Benzodiazepine Receptor
Molecular Imaging Center, NIRS, JAPAN

M14-282 A Combined Noise Reduction and Partial Volume Estimation Method for Image Quantitation
J. P. Chiverton, K. Wells, Centre for Vision, Speech and Signal Processing, University of Surrey, UK; M. Partridge, Institute of Cancer Research and Royal Marsden NHS Trust, UK

M14-285 Location-Known-Exactly Human-Observer ROC Studies of Attenuation and Other Corrections for SPECT Lung Imaging
A. Lehoivich, H. C. Gifford, M. A. King
U. Mass Medical School, USA

M14-288 Calculation of Left Ventricular Ejection Fraction of Abnormal Hearts in SPECT
R. Bouchko, A. Sirek, B. W. Reutter, T. F. Budinger, G. T. Gullberg
Lawrence Berkeley National Laboratory, USA

M14-291 An Assessment of a Visual Tracking System (VTS) to Detect and Compensate for Patient Motion During SPECT: Calibration, Stability and Initial Results
J. E. McNamara1, P. P. Bruyant1, B. Feng1, A. Lehoivich1, J. Dey1, R. D. Beach1, M. Gennert1, M. A. King1
1University of Massachusetts Medical School, USA; 2Worcester Polytechnic Institute, USA

M14-294 Effect of Truncation in Quantitative Cardiac Imaging with Small Field-of-View Pinhole SPECT
T. Zeniya1, H. Watabe1, A. Sohlberg2, T. Inomata1, H. Kudo1, H. Iida1
1National Cardiovascular Center Research Institute, Japan; 2University of Tsukuba, Japan

M14-297 Error Evaluation for Camera Calibration
S. Gu1, J. McNamara2, M. Ward1, M. A. Gennert1, M. A. King2
1Worcester Polytechnic Institute, United States; 2University of Massachusetts Medical School, United States

M14-300 Evaluation of Spillover and Partial Volume Effect Compensation on Quantitative Accuracy in Cardiac SPECT Perfusion Imaging
P. H. Pretorius, M. A. King
University of Massachusetts Medical School, USA

M14-303 Quantifying the Effects of Acquisition Parameters in Cardiac SPECT Imaging and Comparison with Visual Observers
J. Zeintl1, J. T. Chapman2, A. H. Vija3, J. Hornegger1
1University of Erlangen, Germany; 2Siemens Medical Solutions USA, Inc., USA

M14-306 Body-Contour Acquisition Versus Circular Orbit Acquisition with Resolution Recovery in Cardiac SPECT
A. O. Sohliberg, H. Watabe, H. Iida
National Cardiovascular Center Research Institute, Japan

M14-309 The Current Status of a Non-Invasive Arterial Monitor under Development
G. R. Jones1, G. J. O’Keefe1, R. P. Rassool2, A. M. Scott3
1Austin Health, Australia; 2The University of Melbourne, Australia
M14-312 Non-Invasive and Selective Measurement of the Arterial Input Function Using a PET Wrist Scanner
A. M. Kriplani1,2, D. J. Schlyer3, P. Vaska2, V. Dzhordzhadze,2 S. P. Stoll2, S. S. Souhekal1,2, S. J. Park3, C. L. Woody3, S. Junnarkar2, J.-F. Pratte2
1Stanford University, USA; 2Brookhaven National Laboratory, USA

M14-315 Optimizing the quantitative in vivo imaging for longitudinal studies in rat brain using FDG and microPET
David Geffen School of Medicine, University of California, Los Angeles, USA

M14-318 Motion Correction for Respiratory Gated PET Images
N. C. Detorie, M. Dahlbom
University of California, Los Angeles, USA

M14-321 Lesion Detectability in Motion Compensated Image Reconstruction of Respiratory Gated PET/CT
K. Thielemans, Hammersmith Imanet Ltd, UK; R. Manjeshwar, X. Tao, E. Asma, GE Global Research, US

M14-324 Investigation of Subject Motion Encountered During a Typical Positron Emission Tomography Scan.
K. Dinelle1, S. Blinder2, J. C. Cheng3, S. Lidstone3, K. Buckley3, T. Ruth3, V. Sossi1
1University Of British Columbia, Canada; 2TRIUMF, Canada

M14-327 Attenuation-Emission Alignment in Cardiac PET/CT with Consistency Conditions
A. M. Alessio, P. Kinahan, G. Chen, K. Branch, J. Caldwell
University of Washington, USA

M14-330 An Attenuation Correction Method for Respiratory-Gated PET/CT Image
T. Yamazaki1, H. Ut1, H. Haneishi2, A. Hirayama2, T. Sato4, S. Nawano3
1Chiba university, Japan; 2GE Yokogawa Medical Systems, Japan; 3National Cancer Center, Japan

M14-333 Evaluation of an Energy-Based Method for Scatter Correction in Positron Emission Tomography
H.-T. Chen, C.-M. Kao, B. Penney, C.-T. Chen
The University of Chicago, USA

M14-336 Scatter Correction in PET Using the Transport Equation
T. Koesters, F. Natterer, F. Wuebbeling
University of Muenster, Germany

M14-339 An Analytical Scatter Correction for Singles-Mode Transmission Data in PET
E. Vandervoort1, S. Jan1, S. Vesna1
1University of British Columbia, Canada; 2Commissariat a l’Energie Atomique, France

M14-342 Simultaneous Attenuation and Scatter Correction in Small Animal PET Imaging
M. Bentourkia, O. Sarhini
Université de Sherbrooke, Canada

M14-345 CT-Based Attenuation Correction for PET Brain Imaging
S. J. Lokitz, R. E. Coleman, T. G. Turkington
Duke University Medical Center, USA

M14-348 Quantitative VOI-Based Analysis of Template-Guided Attenuation Correction in 3D Brain PET
M.-L. Montandon, H. Zaidi
Geneva University Hospital, Switzerland

M14-351 Accurate Motion Compensation Incorporating All Detected Events in the HRRT Scanner
A. Rahimim1, K. Dinelle, J.-C. Cheng, M. Shilov1, P. W. Segars1, O. G. Rousset1, B. M. W. Tsui1, D. F. Wong1, V. Sossi2
1John Hopkins University, USA; 2University of British Columbia, Canada

M14-354 Optimal Respiratory Gating Scheme in Listmode PET/CT: Motion Tracking Using a Video Camera
K. P. Schäfers, M. Dawood, F. Büther, N. Lang, M. Schäfers
University Hospital of Münster, Germany

M14-357 A Monte Carlo Study of Deconvolution Algorithms for Partial Volume Correction in Quantitative PET
J. Tohka, Tampere University of Technology, Finland; A. Reilhac, CERMEP, France

M14-360 A New Rebinning Algorithm for 3D PET Data
K. Erlandsson, R. van Heertum, J. J. Mann
Columbia University, USA

M14-363 On the Impact of Arc Correction and Axial Resampling in Inverse Fourier Rebinning
S. Cho, Q. Li, S. Ahn, R. M. Leahy
University of Southern California, USA

M14-366 A Method for System Matrix Construction and Processing for Reconstruction of In-Beam PET Data
G. Shakirin1, P. Crespo1, W. Enghardt1,2
1Institute of Nuclear and Hadron Physics, Forschungszentrum Rossendorf, Germany; 2University Hospital and Medical Faculty C.G. Carus, Technische Universität Dresden, Germany

M14-369 Simulation-Based Evaluation of Iterative Reconstructions in Dynamic [18F]MPPF PET Studies
S. Tomei1, A. Reilhac1, I. Buvat2, C. Michel3, G. Gimenez3, N. Costes3
1CERMEP - imagerie du vivant, France; 2U678 INSERM, France; 3CPS-PET system, USA

M14-372 Fast Forward Projection and Backward Projection Algorithm Using SIMD
J. K. Hong1, S. T. Chung1, Y. D. Son2,3, H. G. Lee4, H. K. Kim5, Z. H. Cho2,3
1Korea Polytechnic University, South Korea; 2Gachon Medical School, South Korea; 3University of California, Irvine, USA

M14-375 Influence of Outside Field of View Activity on the Quality of High Resolution Research Tomograph (HRRT) Brain Studies
R. W. Kloet, H. W. de Jong, F. van Velden, A. A. Lammerstma, R. Boellaard
VU University Medical Center, Netherlands

M14-378 Normalization Approaches for the MADPET-II Small Animal PET Scanner
L. Torres-Espallardo1, V. C. Spanoudaki1, M. Rafca2, M. C. Huisman1, S. I. Ziegler1
1Klinikum rechts der Isar, Technical University of Munich, Germany; 2Institute of Particle Physics - IFIC, Spain
M14-381 Probability Based Positron Range Modeling in Inhomogeneous Medium for PET
Y. Wan1, Q. Xie1,2, C. Hu1, S. Wan1
1Huazhong University of Science and Technology, China; 2The University of Chicago, America
M14-384 Multi-Scale Selection of the Stopping Criterion for MLEM Reconstructions in PET
N. B. Bissantz1, B. A. Mair2, A. Munk1
1University of Goettingen, Germany; 2University of Florida, US
M14-387 Noise Study in Monte Carlo Estimated System Matrix for OPET
F. R. Rannou, University of Santiago de Chile, Chile; A. F. Chatziioannou, University of California, Los Angeles, USA
M14-390 First Human Brain Images of the jPET-D4 Using 3D OSEM with a Pre-Computed System Matrix
T. Yamaya1, Y. Yoshida1, K. Kitamura2, T. Obi1, K. Tanimoto1, K. Yoshikawa1, H. Ito1, H. Murayama1
1National Institute of Radiological Sciences, Japan; 2Shimadzu Co., Japan; 3Tokyo Institute of Technology, Japan
M14-393 MLEM Reconstructed Image Resolution from the LabPET Animal Scanner
T. Dumouchel1, V. Selivanov2, J. Cadorette2,3, R. Lecomte1, R. deKemp1
1University of Ottawa Heart Institute, Canada; 2Advanced Molecular Imaging Inc., Canada; 3Université de Sherbrooke, Canada
M14-396 Dynamic Load Balancing on Distributed Listmode Time-of-Flight Image Reconstruction
Philips Medical Systems, USA
M14-399 Adaptive Spatially Variant Optimization of a Temporal Spline Basis for Dynamic PET Reconstruction
J. Verhaeghe, R. Phlypo, S. Vandenberghs, S. Staelens, Y. D’Asseler, I. Lemahieu
Ghent University, Belgium
M14-402 Optimal and Robust Filter for PET Data Based on the System Response Matrix
J. L. Herrain1, S. España1, E. Vicente2, J. J. Vaquer2, M. Desco1, J. M. Udías1
1universidad Complutense de Madrid, Spain; 2Hospital GU Gregorio Mariano, Spain
M14-405 A Radon Space Spline Interpolation Method for Circular Orbit Cone Beam Reconstruction
E. Jing, G. L. Zeng, University of Utah, USA
M14-408 Targeted Fully 3D Monte Carlo Reconstruction in SPECT
Z. El Bitar1,2, Y. Petegniefr3, D. Hill4, V. Breton5, I. Buvar1
1U678 INSERM, UPMC, France; 2Laboratoire de Physique Corpusculaire, France; 3LIP, Hôpital Tenon, France; 4LIMOS, France
M14-411 New Ray-Driven System Matrix for Small-Animal Pinhole-SPECT with Detector Blur, Geometric Response and Edge Penetration Modeling
C. Wietzol1,2, I.-T. Hsiao3, C.-T. Chen1,3
1National Health Research Institute, Taiwan; 2Chang Gung University, Taiwan; 3University of Chicago, USA
M14-414 Level Set Reconstruction for Sparse Angularly Sampled Data
S. Yoon, A. R. Pineda, R. Fahrig
Stanford University, USA
M14-417 A Faster Ordered-Subset Convex Algorithm for Iterative Reconstruction
E. Quan, D. S. Lalush
North Carolina State University, United States
M14-420 Noise Properties in Helical Cone-Beam CT Images
D. Xia, E. Y. Sidky, L. Yu, X. Pan
The University of Chicago, USA
M14-423 Suppression of Metal Streak Artifacts in CT Using a MAP Reconstruction Procedure
C. Lemmens1, D. Faul2, J. Hamill2, S. Stroobants1, J. Nuys1
1KULeuven, Belgium; 2Siemens Medical Solutions, USA
M14-426 Sinogram Correction Methods Using Sinogram Decomposition
A. A. Zamyatin, Bio-Imaging Research, Inc, USA; S. Nakanishi, Toshiba Medical Systems, Japan
M14-429 A Method of Truncation Compensation for Pinhole Tomography
B. C. Yoder, D. S. Lalush
North Carolina State University, USA
M14-432 Fully 5D Reconstruction of Gated Dynamic Cardiac SPECT Images
M. Lin, Y. Yang, M. N. Wernick, ILLINOIS INSTITUTE OF TECHNOLOGY, USA; M. A. King, University of Massachusetts Medical School, USA
M14-435 Theory for Image Reconstruction from Divergent-Beam Projections in SPECT
F. Nuo1, J. D. Pack1,2
1University of Utah, USA; 2GE, USA
M14-438 One-Step Backprojection Algorithm for Computed Tomography
D. Hwang, L. Zeng, University of Utah, USA
M14-441 PET Reconstruction Using Generalized Natural Pixels and a Monte Carlo Generated System Matrix
Y. Chen1, S. Vandenberghs2, S. Staelens1, J. S. Glick1
1University of Massachusetts Medical School, USA; 2Ghent University, Belgium
M14-444 Fast Shear-like Divergent-Beam Backprojection Algorithms
A. K. George, Y. Bresler
Univ. of Illinois at Urbana-Champaign, USA
M14-447 A New FBP-Type Algorithm on Improving FDK Reconstruction for Z-Axially Untruncated Data from a Circular Orbit
L. Li, K. Kang, Z. Chen, L. Zhang, Y. Xing
Tsinghua University, China
M14-450 Extension of Pack and Noo's Cone-Beam Inversion Formula to a Wide Class of Trajectories
H. Yang, M. Li, K. Koizumi, Uni-Hite System Corporation, Japan; H. Kudo, University of Tsukuba, Japan
M14-453 A Generally Exact FBP-Type Algorithm on Synthesizing Stereogram from Cone-Beam Projections
L. Li, Z. Chen, Y. Xing, L. Zhang, K. Kang
Tsinghua University, China
M14-456 Closed Sinusoid Trajectory for C-Arm CT Imaging
H. Yang, M. Li, K. Koizumi, Uni-Hite System Corporation, Japan; H. Kudo, University of Tsukuba, Japan

M14-459 Monte Carlo Dosimetry in Cone-Beam Microtomography
A. Martinez-Davalos, M. Rodriguez-Villafuerte, J. M. Larraga-Gutierrez
Instituto de Fisica, UNAM, Mexico

M14-462 Exact Reconstruction for Dual Energy Computed Tomography Using an H-L Curve Method
G. Zhang, Z. Chen, L. Zhang, J. Chen
Tsinghua University, China

M15 Biological and Medical Applications
Saturday, Nov. 4 13:00-14:30, Golden Ballroom
Session Chairs: Aaron Brill, Vanderbilt University
Grant Gullberg, LBNL

M15-1 Ultra-Wideband Microwave-Induced Thermoacoustic Tomography of Human Tissues
T. Chunjing1,2, S. Tao1, Y. Wenhui1, W. Shizeng1
1Institute of Electrical Engineering, Chinese Academy of Sciences, China; 2Graduate School of the Chinese Academy of Sciences, China

M15-2 Lung Nodule Detection in Screening Computed Tomography
A. Retico1, P. Delogu1,2, M. E. Fantacci1,2, I. Gori1, P. Kasae1, A. Preite Martinez2, A. Tata1
1INFN Pisa, Italy; 2University of Pisa, Italy; 3Bracco Imaging S.p.A., Italy; 4INFN Cagliari, Italy; 5Centro Studi e Ricerche Enrico Fermi, Italy

M15-3 Dosimetry in 1131 Internal Emitter Therapy Using Voxel Dependent Integrated Time-Activities Derived from Multiple, Registered SPECT and CT Images
S. J. Wilderman, A. M. Avram, J. Kritzman, R. Ackerman, Y. K. Dewaraja
University of Michigan, USA

M15-4 Study of 11C-Acetoacetate Uptake by Rat Heart and Brain Using Small Animal PET Imaging
M. Bentourkia, S. Tremblay, J. Rousseau, R. Lecomte, S. Cunnane
Université de Sherbrooke, Canada

M15-5 Non-Rigid Registration with Position Dependent Rigidity for Whole Body PET Follow-up Studies
K. De Moor, J. Nuyts, S. Stroobants, F. Maes, P. Dupont
K.U.Leuven, Belgium, Belgium

M15-6 Improved Clinical Parametric Imaging Using List-Mode Reconstruction via Resolution System Modeling
F. C. Sureau1,2, C. Comtat1, A. J. Reader1, C. Leroy1, M.-J. Santiago-Ribeiro2, I. Buvat1, R. Trebossen1
1CEA, France; 2Siemens Medical Solutions, France; 3University of Manchester, United Kingdom; 4INSERM-CEA, France; 5INSERM-UPMC, France

M16 Imaging Techniques and Advances
Saturday, Nov. 4 15:00-17:00, Golden Ballroom
Session Chairs: Anna Celler, Department of Radiology, University of British Columbia
Timothy Turkington, Duke University Medical Center

M16-1 Modified MLEM Algorithm for Artifact Suppression in CT
M. Oehler, T. M. Buzug, RheinAhrCampus Remagen, Germany

M16-2 Investigation of Optimal Tc-99m Injected Activity in Dual-isotope Myocardial Perfusion SPECT Imaging using 3-class ROC Analysis
X. He1, X. Wang1, X. Song2, E. C. Frey3
1Johns Hopkins Medical Institutions, MD; 2Philips Medical Systems, CA

M16-3 Constant-Activity-Rate Slow Bolus Infusions for Improved Quantification of Myocardial Blood Flow with 82Rb and 3D PET
R. deKemp, R. Klein, M. Lortie, R. Beanlands
University of Ottawa Heart Institute, Canada

M16-4 Simulation Study of Scatter Components for a MicroPET II-like Scanner
S. L. Bowen, Y. Yang, UC Davis, USA; R. D. Badawi, Department of Radiology, USA

M16-5 Monte Carlo Modeling of Cascade Gamma Rays in PET
X. Zhu, G. El Fakhri
Harvard Medical School and Brigham & Women’s Hospital, USA

M16-6 Rodent Brain Imaging with SPECT and CT
Y. Seo1, D.-W. Gao, T. Hashimoto, B. L. Franc, M. W. Dae, B. H. Hasegawa
University of California, San Francisco, USA

M16-7 Imaging Performance of An Integrative Ultra-High Resolution SPECT/CT System
L.-J. Meng1, C.-M. Kao1, D. Li1, S. Cho2, C. Pelizzari2, J. S. Souris3, X. Pan2, C.-T. Chen2
1University of Illinois at Urbana-Champaign, USA; 2The University of Chicago, USA

M16-8 Application of Crosstalk Concept to Assessment of Multi-Pinhole Collimator Designs in Small Animal SPECT Imaging
Y. Wang, B. M. Tsui
Johns Hopkins Medical Institutions, USA
It is our great pleasure to welcome you to the 15th International Workshop on Room-Temperature Semiconductor X-Ray and Gamma-Ray Detectors. This bi-annual conference represents the largest forum of 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 for 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 now relatively new to the subject area.

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

We have chosen to hold this meeting in conjunction with the IEEE NSS and MIC meetings for the purpose of encouraging information exchange between a much larger body of scientists and engineers who have an in-depth knowledge of detectors, instrumentation, nuclear science and technology, and medical imaging. A joint session with MIC is planned to help bring people together with common interests and offer the right environment for the creation of new and fruitful associations.

We would like to thank the speakers and attendees for their contributions, 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 working in the field.

RTSD Program Co-Chairs

Ralph B. James
Eugenio Perillo
R03  Pixel Detectors
Tuesday, Oct. 31 08:30-10:00, Hampton & Windsor Rooms
Session Chair: Larry Franks

R03-1 (08:30) Three-Dimensional Readout of CZT Detectors with the RENA-3 ASIC
J. L. Mattsson, R. T. Skelton, M. R. Pelling, S. Suchy, University of California, San Diego, USA; V. B. Caijpe, M. Clajus, S. Hayakawa, T. Tümer, Nova R&D, USA

R03-2 (08:45) Characterisation of Pixelated CdZnTe Detectors for Use in a Portable Gamma-Ray Spectrometer

R03-3 (09:00) Multi-Energy, Fast Counting Hybrid CZT Pixel Detector with Dedicated Readout Integrated Circuit
M. Clajus, V. Caijpe, S. Hayakawa, T. O. Tümer, NOVA R&D, Inc., USA; P. D. Willson, US Army, USA

R03-4 (09:15) Polaris II 3-D Position Sensitive HgI2 Detector Array System
Z. He, F. Zhang, D. Xu, B. W. Sturm, M. Rodrigues, Y. Zhu, S. Anderson, W. Wang, The University of Michigan, USA; L. van den Berg, L. Bastian, Constellation Technology Corp., USA

R03-5 (09:30) Performance of a Dual Layer Silicon Charge Detector (SCD) During CREAM Balloon Flights
1Ewha Womans University, Republic of Korea; 2University of Maryland, USA; 3Ohio State University, USA; 4University of Siena and INFN, Italy; 5Goddard Space Flight Center, USA; 6University of Minnesota, USA; 7Penn State University, USA; 8University of California, Irvine, USA; 9Northern Kentucky University, USA

R03-6 (09:45) Characterization of PILATUS II Detector Modules
P. Kraft, Paul Scherrer Institut, Switzerland

R04  Wide Band-gap Materials
Tuesday, Oct. 31 10:30-12:00, Hampton & Windsor Rooms
Session Chair: Paul Siffert, E-MRS

R04-1 (10:30, invited) Room-Temperature Replacement for Ge Detectors – Are We There Yet?
P. N. Luke, M. Anman, Lawrence Berkeley National Laboratory, USA

R04-2 (10:55, invited) (Cd,Mn)Te as a Material, Alternative to (Cd,Zn)Te, for X-Ray and γ-Ray Detectors
A. Myleckii1, M. Witkowska-Baran2, A. Burger1, M. Groza1, H. Jackson3, Y. Cui4, A. J. Szadkowski5, B. Witkowska1, W. Kaliszek1, R. Jakiela1
1Institute of Physics, Polish Academy of Sciences, Poland; 2Fisk University, USA

R04-3 (11:20) Improvements in Bismuth Tri-Iodide Platelets for Room Temperature X-Ray Detection
L. Fornaro, I. Aguiar, A. Noguera, M. Perez, M. RodriguezFaculty of Chemistry, Uruguay

R04-4 (11:35, invited) The State-of-Art in TLBr Detector Development
V. V. Gostilo1, A. Owens2, M. Shorohov1
1Baltic Scientific Instruments, Latvia; 2European Space Agency, The Netherlands

R05  Detectors for Homeland Security
Tuesday, Oct. 31 13:30-15:05, Hampton & Windsor Rooms
Session Chair: R. Leon Feinstein, DHS/DNDO

R05-1 (13:30, invited) The Role of Detection Technology in Nuclear Counter-Terrorism for Homeland Security
R. L. Feinstein, DHS/DNDO, USA

R05-2 (14:00, invited) Performance-Limiting Defects in CdZnTe Detectors
A. E. Bolotnikov1, G. S. Camarda1, G. A. Carini1, Y. Cui1, L. Li1, R. B. James1
1Brookhaven National Laboratory, USA; 2Yinnel Tech, Inc., USA

R05-3 (14:25, invited) High-Performance, Large-Volume THM CdZnTe Detectors for Medical Imaging and Homeland Security Applications
H. Chen, S. Awadalla, G. Bindley, Redlen Technologies, Canada; A. Bolotnikov, G. Camarda, G. Carini, R. B. James, Brookhaven National Laboratory, USA

R05-4 (14:50) Construction and Characterization of an Array of Large-Volume Coplanar Grid Cadmium Zinc Telluride (CZT) Detectors Utilizing ASIC Signal Processing
M. S. Wallace, R. M. Kippen, W. S. Murray Los Alamos National Laboratory, USA

R06  RTSD Poster Session
Tuesday, Oct. 31 15:30-17:30, Atlas Ballroom
Session Chair: Aleksey Bolotnikov, Brookhaven National Laboratory

R06-1 Characterization of CZT Crystals with Using of the Time-of-Flight Method
V. Ivanov, RITEC Ltd., Latvia

R06-2 A System for the Characterization and Testing of CdZnTe/ CdTe Pixel Detectors for X-ray and Gamma-ray Imaging
A. Arodzero, W. C. Barber, M. Q. Damron, N. E. Hartsough, J. S. Iwanczyk, DxRay, Inc., USA; N. Malakhov, E. Nygaard, Interon AS, Norway; D. Moraes, P. Weilhammer, P. Jarron, CERN, Switzerland
R06-3 Type Conversion of Polycrystalline CdZnTe Thick Films by Multiple Compensation
K. H. Kim, Samil-Pharm., Korea; J. H. Won, S. H. Cho, J. Suh, J. K. Hong, S. U. Kim, Korea University, Korea

R06-4 First Characterization Tests of CIEMAT Pixel CdZnTe Detectors
J. M. Perez, E. Aguayo, R. Gonzalez, O. Vela, CIEMAT, Spain

R06-5 Study of Charge Charging on CdTe/CZT Detectors with Segmented Electrodes
N. Auricchio1, E. Caroli2, G. Ventura2, A. Cola3, A. Donati2, W. Dusi2, A. Raulo4, E. Perillo3,5
1 Universita' di Ferrara, Italy; 2INAF/IASF-Bologna, Italy; 3CNR/IMM, Italy; 4 Universita' Federico II, Italy; 5 INFN, Italy

R06-6 Study of Detection Efficiency of 3D Position-Sensitive Pixelated CdZnTe Detectors
D. Xu, Z. He, F. Zhang, University of Michigan, USA

R06-7 Characterization of a New ASIC Readout for Pixel CZT Detectors for Hard X-Ray Astronomy
E. Caroli1, N. Auricchio1,2, B. Giuseppe3, S. Caccia3, A. Donati3, S. Del Sordo3, G. Ventura3
1 INAF/IASF-Bologna, Italy; 2 Universita' di Ferrara, Italy; 3 Politecnico di Milano, Italy; 4 INAF/IASF-Palermo, Italy

R06-8 Electrical Properties and X-Ray Sensitivity of Semi-Insulating CdZnTe: Pb Crystals
J. H. Won1, S. H. Cho1, J. H. Seo1, K. H. Kim2, S. U. Kim1
1 Korea University, Korea; 2 Samil-Pharm. Co., Korea

R06-9 Study of Thermal Treatment on Schottkey and Ohmic Contacts of CdZnTe Detector
KAERI, Republic of Korea

R06-10 Analysis of Coplanar Grid CdZnTe Detector Properties
B. W. Sturm, Z. He, University of Michigan, USA

R06-11 Analysis of Action of Guard Ring on Monolithic CZT
L. M. Blevins, General Electric Healthcare, Israel

R06-12 A new architecture for pixelated solid-state gamma camera used in nuclear medicine
L. Guerin, L. Verger, V. Rebuffel, O. Monnet
CEA - Recherche Technologique (CEA/GRE), FRANCE

R06-13 Investigations of the Performance of CdZnTe Detectors for Radiation Monitoring
A. Fauler1, J. Gregori1, A. Zwerger1, U. Stöhler1, M. Fiederle1
1 Freiburger Materialforschungszentrum FMF, Germany; 2 Bundesamt für Strahlenschutz, Germany

R06-14 A Compact Readout System for Frisch-Ring CdZnTe Detector Arrays
Y. Cui1, A. E. Bolotnikov, G. A. Carini, G. S. Camarda, G. De Geronimo, J. Fried, P. O'Connor, R. B. James, Brookhaven National Laboratory, USA; A. Karger, M. J. Harrison, D. S. McGregor, Kansas State University, USA

R06-15 Growth of Thick Films CdTe from the Vapor Phase
M. Fiederle, A. Ehler, R. Sorgenfrei, K.-H. Bachem
Albert-Ludwigs-Universität Freiburg, Germany

R06-16 Electrical properties of CdTe crystals, doped by Si
P. Fischuk1, R. Grill2, Y. Nykonyuk1, Z. Zakharuk1, R. Ivanchuk1, O. Panchuk1
1 Chernivtsi National University, Ukraine; 2 Charles University, Czech Republic; 3 National University of Water Management and Nature Resources Use, Ukraine

R06-17 Simulation of Photoelectric Transport in High Resistivity CdTe for X-Ray Detectors
J. Franc, R. Grill, J. Kubat, E. Belas, P. Moravec, P. Höschl
Institute of Physics, Charles University, Czech Republic

R06-18 Optimizing the Spectral Response of Coplanar-Grid Sensors
G. De Geronimo, G. Carini, J. Fried, Brookhaven National Laboratory, USA; S. A. Saldner, eV PRODUCTS, USA

R06-19 CdTe Detector Characteristics Around 30oC with Periodic Bias Reset Technique
T. Seino, I. Takahashi, Hitachi., Ltd., Japan

R06-20 CdTe Strip Detectors: a Numerical Study of Charge Collection Properties
A. Cola1, I. Farella1,2, G. Ventura1, E. Caroli1, N. Auricchio1,2, A. Raulo3, E. Perillo3
1 Institute of Microelectronics and Microsystems (IMM/CNR), Unit of Lecco, Italy; 2 Dept. of Innovation Engineering, University of Lecco, Italy; 3 Institute of Space Astrophysics and Cosmic Physics, National Institute for Astrophysics (IASF/INAF), Italy; 3 Dept. of Physics, University of Ferrara, Italy; 4 Dept. of Physics, University Federico II, and INFN, Italy

R06-21 Charge Collection Profile of Polycrystalline CdTe Detectors
N. Baijer, A. Brambilla, G. Feuillet, S. Renet
CEA - Recherche Technologique (CEA/GRE), FRANCE

R06-22 Composition Study of CdTe Charges Synthesized by the Travelling Heater Method
N. Audet, B. Levicharsky, 5N Plus Inc., Canada; A. Zappettini, M. Zha, IMEM-CNR, Italy

R06-23 Quantitative Measurement of the Substance using the X-ray Color Scanner with Multiple Energy Discrimination Capability
Y. Tomita1, S. Matsui, Y. Shirayanagi, Hamamatsu Photonics K.K., Japan; T. Aoki, Shizuoka University, Japan; Y. Hatanaka, Aichi University of Technology, Japan

R06-24 Analysis of Polarization Phenomenon and Deep Acceptor in CdTe Radiation Detector
H. Toyama1, A. Higa1, I. Owani1, S. Yamanoha1, M. Yamazato1, T. Maelama1, R. Ohno1, M. Toguchi1
1 University of the Ryukyu, Japan; 2 Acroval Co., Ltd., Japan

R06-25 Semiinsulating CdTe:In prepared by post-grown annealing at Te overpressure
E. Belas, R. Grill, P. Horodysky, R. Feš, J. Franc, P. Moravec, P. Höschl
Institute of Physics, Charles University, Czech Republic

R06-26 Electrophysical Characteristics of TlBr Crystals Grown in Various Mediums
N. B. Smirnov, I. S. Lisitsky, M. S. Kuznetsov, A. V. Govorkov, E. A. Kozhukhova
Institute of Rare Metals, Russia

R06-27 Improved Process for the Detector Grade TlBr Single Crystals
H. J. Siipila, Oxford Instruments Analytical Oy, Finland; V. Kozlov, M. Leslela, University of Helsinki, Finland

R06-28 Recent Progress in TlBr Radiation Detectors
Y. Dmitriev, H. Kim, W. Higgins, L. Cirignano, P. Dokhale, P. Wong, Tuesday
K. Shah  
RMD, USA

R06-29 Temperature Dependence of Spectroscopic Performance of Thallium Bromide X- and Gamma-Ray Detectors  
T. Onodera, K. Hitomi, T. Shoji  
Tobu Institute of Technology, Japan

R06-30 Growth of Ce-Doped LSO Single Crystals by Stockbarger-Bridgman Modified Crystallization Method  
N. Basharuli, Moscow Engineering Physics Institute (State University), Russia; M. Namtalishvili, A. Mikaberidze, P. Magalashvili, Z. Razmadze, M. Gabeskiria, T. Sanadze, Physical Crystallography Scientific-Technical Centre, Georgia

R06-31 Simulation Study on DOI-PET Module Design Using LSO and New SiPM  
C. H. Lee, G. Cho, H. D. Kim, H. S. Jeon, Korea advanced institute of science and technology, Korea; B. S. Kang, National Fusion Research Center, Korea

R06-32 Position-Sensitive Detector for PET Based on Multi-Channel APD and Scintillation Crystals LSO  
N. Basharuli¹, V. Belyaev¹, M. Namtalishvili², Z. Htett, Y. Myo Aung¹  
¹Moscow Engineering Physics Institute (State University), Russia; ²Scientific Technical Center of Physical Crystallography, Georgia

R06-33 Factorial Analysis of ICP etching of GaAs substrates for Thin-Film-Coated Neutron Detectors  
B. B. Rice, A. Streir, D. S. McGregor  
Kansas State University, United States

R06-34 A Spintronic High Purity Germanium Gamma-Ray Spectrometer  
G. S. Camarda¹, G. Tepper², S. Bandyopadhyay³, A. E. Bolotnikov⁴, G. A. Carini⁵, Y. Cui⁶, R. B. James¹  
¹Brookhaven National Lab, US; ²Virginia Commonwealth University, US

R06-35 Fabrication of a Large Number of Silicon PIN Diode Array Sensors for Atomic Number Measurements  
I. H. Park, J. A. Jeon, S. W. Nam, N. H. Park  
Ewha Womans University, Korea

R06-36 Development of Real-Time Monitoring System for Nuclear Material in Transport  
National Nuclear Management and Control Agency, Korea

R06-37 Application of PILATUS II Detector Modules for High Resolution X-Ray Imaging Crystal Spectrometers on the Alcator C-Mod Tokamak  
M. L. Bitter¹, C. Broennimann², E. F. Eikenberry³, K. W. Hill¹, A. Ince-Cushman¹, S. G. Lee⁴, J. E. Rice¹, S. Scott¹  
¹Princeton University, USA; ²Paul Scherrer Institut, Switzerland; ³Massachusetts Institute of Technology, USA; ⁴Korea Basic Science Institute, Korea

R06-38 Normal Vector Based Method to Correct the Deformations of the Homogeneous Regions in Medical Images  
X. Zhuang, L. Gu, Shanghai Jiao Tong Univ., China

R06-39 A New Method for the Fast Computation of the Gradient of the Entropy Based Registration Methods  
X. Zhuang, L. Gu, Shanghai Jiao Tong Univ., China

R07-01 (08:25) Crystal Growth and Characterization of Cd(1-X)Zn(x)Te for Room Temperature  
K. G. Lynn, G. Ciampi, K. A. Jones, C. E. Skrip  
Washington State University, USA

R07-02 (08:40) Quantitative Measurements of Micro-Defects in CdZnTe Crystals  
G. S. Camarda, A. E. Bolotnikov, G. A. Carini, Y. Cui, R. B. James  
Brookhaven National Lab, US

R07-03 (08:55, invited) Te Precipitates in CdZnTe (Zn=10%)  
Radiation-Detector Materials  
L. Li¹, M. Black¹, T. Orlova¹, A. Bolotnikov¹, G. Carini¹, A. Burger¹, R. B. James²  
¹Yinnel Tech, Inc., USA; ²Brookhaven National Laboratory, USA

R07-04 (09:20, invited) Photocurrent and Surface Photo-Voltage Spectroscopy Investigations of CdTe-Based Compounds  
A. Cavallini, A. Castaldini, D. Cavalcoli, B. Fraboni  
University of Bologna, Italy

R07-05 (09:45) Electrical Compensation and Charge Trapping in Semi-Insulating CdZnTe: Experiment Versus Static Model  
M. Prokesch, C. Széles  
eV PRODUCTS a division of II-VI Incorporated, USA

R08 Neutron Detectors

R08-01 (10:25, invited) Polycrystalline Boron Nitride Based Alpha and Neutron Detectors  
M. Schieber, M. Roth, A. Zuck, O. Khakhkan, The Hebrew University of Jerusalem, Israel; Z. B. Alfassi, Ben-Gurion University of the Neger, Israel

R08-02 (10:50) Development of Perforated Si Diodes for Neutron Detection  
W. J. McNeil, E. L. Patterson, B. B. Rice, T. C. Unruh, D. S. McGregor  
Kansas State University, USA

R09 RTSD Lunch/Cruise in San Diego Harbor

Wednesday, Nov. 1 08:25-10:00, Hampton & Windsor Rooms  
Session Chair: Michael Fiederle, Freiburger Materialforschungszentrum

R07 CZT III

Wednesday, Nov. 1 08:05-10:00, Hampton & Windsor Rooms  
Session Chair: Lars Furenlid, University of Arizona

R07 CZT III

Wednesday, Nov. 1 08:25-10:00, Hampton & Windsor Rooms  
Session Chair: Michael Fiederle, Freiburger Materialforschungszentrum

R07-1 (08:25) Crystal Growth and Characterization of Cd(1-X)Zn(x)Te for Room Temperature  
K. G. Lynn, G. Ciampi, K. A. Jones, C. E. Skrip  
Washington State University, USA

R07-2 (08:40) Quantitative Measurements of Micro-Defects in CdZnTe Crystals  
G. S. Camarda, A. E. Bolotnikov, G. A. Carini, Y. Cui, R. B. James  
Brookhaven National Lab, US

R07-3 (08:55, invited) Te Precipitates in CdZnTe (Zn=10%)  
Radiation-Detector Materials  
L. Li¹, M. Black¹, T. Orlova¹, A. Bolotnikov¹, G. Carini¹, A. Burger¹, R. B. James²  
¹Yinnel Tech, Inc., USA; ²Brookhaven National Laboratory, USA

R07-4 (09:20, invited) Photocurrent and Surface Photo-Voltage Spectroscopy Investigations of CdTe-Based Compounds  
A. Cavallini, A. Castaldini, D. Cavalcoli, B. Fraboni  
University of Bologna, Italy

R07-5 (09:45) Electrical Compensation and Charge Trapping in Semi-Insulating CdZnTe: Experiment Versus Static Model  
M. Prokesch, C. Széles  
eV PRODUCTS a division of II-VI Incorporated, USA

R08 Neutron Detectors

Wednesday, Nov. 1 10:25-11:05, Hampton & Windsor Rooms  
Session Chair: Douglas McGregor, Kansas State University

R08-01 (10:25, invited) Polycrystalline Boron Nitride Based Alpha and Neutron Detectors  
M. Schieber, M. Roth, A. Zuck, O. Khakhkan, The Hebrew University of Jerusalem, Israel; Z. B. Alfassi, Ben-Gurion University of the Neger, Israel

R08-02 (10:50) Development of Perforated Si Diodes for Neutron Detection  
W. J. McNeil, E. L. Patterson, B. B. Rice, T. C. Unruh, D. S. McGregor  
Kansas State University, USA

R09 RTSD Lunch/Cruise in San Diego Harbor

Wednesday, Nov. 1 11:20-14:30  
Buses depart from the Atlas Foyer at 11:20.

MR11 MIC RTSD Joint Session

Wednesday, Nov. 1 15:30-17:30, Hampton & Windsor Rooms  
Session Chairs: Kanai Shah, RMD  
Lars Furenlid, University of Arizona

MR1-1 (invited) MICROGAMI: a Versatile Gamma Camera Based on CdZnTe Detectors with an Orthogonal Capacitive Strip Technology  
L. Verger, F. Mathy, O. Monnet, G. Montemont
R11-5 (09:45) Dynamic Lateral Polarization in CdZnTe under High Flux X-Ray Irradiation
S. A. Soldner, D. S. Bale, C. Szeles, eV PRODUCTS, USA

R12  CZT, CdTe and Mercury-Containing Compounds
Thursday, Nov. 2 10:30-12:00, Hampton & Windsor Rooms
Session Chair: Michael Schieber, Hebrew University of Jerusalem, Israel

R12-1 (10:30) Simulated Performance of CZT-Based Focal Plane Detectors for Gamma-Ray Lenses
A. Zaglauer1, C. B. Wunderer1, G. Weidenspointner2, E. Caroli1, R. da Silva3, S. E. Boggs4, P. von Ballmoos2, J. Knödelseder1
1University of California at Berkeley, USA; 2Centre d'Etudes Spatiales des Rayonnements, France; 3INAF/LASF-Bologna, Italy; 4Universidade de Coimbra, Portugal

R12-2 (10:45) Performance of the HEXIS CZT Module with RENA-3 ASIC Readout
University of California, San Diego, USA

R12-3 (11:00) Time Resolved IBIC Studies of Inclusions in CdTe:Cl
University of Surrey, UK

R12-4 (11:15) Comparison of Mercuric Bromide and Lead Bromide Layers as Photoconductors for Direct X-Ray Imaging Applications
L. Fornaro, N. Sen, M. Perez, A. Noguera, I. Aguiar
Faculty of Chemistry, Uruguay

R12-5 (11:30) Isothermal Currents in Some Red Mercuroic Iodide Single Crystals
S. L. Sharma
Indian Institute of Technology, Kharagpur, INDIA

R12-6 (11:45) Optimization of Single-Sided Charge-Sharing Strip Detectors
1Université de Montréal, Canada; 2University of New Hampshire, USA; 3College of the Holy Cross, USA

R13 Si, CZT and GaAs Detectors
Thursday, Nov. 2 13:30-14:55, Hampton & Windsor Rooms
Session Chair: Giuseppe Bertuccio, Politecnico di Milano

R13-1 (13:30, invited) 3D Silicon Radiation Sensors: Active Edges, Speed, Radiation Hardness
S. Parket, Univ. of Hawaii, USA

R13-2 (13:55) Simulation and Design of Orthogonal Capacitive Strip CdZnTe Detectors
G. Montéront, M.-C. Gentet, O. Monnet, J. Rustique, L. Verger
CEA-LETI, France

R13-3 (14:10) Three-Dimensional Position Sensitive CdZnTe Detector Array for PNNL
E. Zhang, Z. He, Y. Zhu, The University of Michigan, USA

R13-4 (14:25) Dynamics of Carriers in Coplanar Grid Detectors
A. G. Kozorezov1, A. Owens2, K. Wigmore1, A. Peacock1
1Lancaster University, UK; 2European Space Agency, ESTEC, The Netherlands

R11 Growth and Characterization
Thursday, Nov. 2 08:25-10:00, Hampton & Windsor Rooms
Session Chair: Kelvin Lynn, Washington State University

R11-1 (08:25) Structural Signatures for Identification of New Radiation Detection Materials
K. F. Ferris, B.-J. M. Webb-Robertson, J. F. Reyes Spindler, Pacific NW National Laboratory, USA; D. M. Jones, Proximate Technologies, LLC, USA

R11-2 (08:40) Effects of Different Orientation on CdZnTe Detectors
L. Zhang1, Y. Li2, Z. Deng3, W. Zhu3, J. Cai1, L. Xu1, L. Li3
1NUCTECH COMPANY LIMITED, China; 2Tsinghua University, China; 3Yinwell Tech Inc., USA

R11-3 (08:55, invited) Boron Oxide Encapsulated Vertical Bridgeman: a Method for Preventing Crystal-Crucible Contact in the CdZnTe Growth.
A. Zappettini, M. Zha, M. Pavesi, L. Zanotti, IMEM, Italy

R11-4 (09:20, invited) Search for a Correlation Between CdTe/CZT Detectors Performance and Materials Properties
M. Fiederle1, A. Fauler1, G. Hennard1, L. Mengus2, B. Schaub2, P. Sifert1, M. Sowinska2, A. Zwerger1
1FMI, Albert-Ludwigs-Universität, Germany; 2EURLRAD, France; 3Technomics Consultants, Switzerland
R14 CdTe

Thursday, Nov. 2 15:30-17:40, Hampton & Windsor Rooms
Session Chair: Anna Cavallini, University of Bologna, Dept. Physics

R14-1 (15:30) Electric Field Properties of CdTe Schottky Detectors
A. Cola, I. Farella, A. M. Mancini, A. Donati
1Institute of Microelectronics and Microsystems (IMM/CNR), Unit of Lecco, Italy; 2University of Lecco, Italy, 3Institute of Space Astrophysics and Cosmic Physics (IASF/INAF), Italy

R14-2 (15:45) Bi Doped and Bi:Yb Co-Doped CdTe
1Universidad Autónoma de Madrid, Spain; 2Albert-Ludwigs-Universität Freiburg, Germany; 3CNM-CSIC, Spain

R14-3 (16:00) Semi Insulating CdTe Crystals and Large Area Layers Co-Doped with Rare Elements
N. V. Sochinski, E. Saucedo, C. M. Ruiz, V. Bermúdez, A. Ruiz, M. Abellan, E. Diéguez
1Instituto de Microelectrónica de Madrid, Spain; 2Universidad Autónoma de Madrid, Spain

R14-4 (16:15) Dynamics of Point Defects in Tellurium-Enriched CdTe
1Charles University, Institute of Physics, Czech Republic; 2Chernivtsi National University, Ukraine

T. Nakashima, M. Okazaki, T. Aoki
Shizuoka University, Japan

R14-6 (16:45) Charge Sharing in Microstrip CdTe Detectors: Dependence on the Interaction Position
1University Federico II, Italy; 2INFN, Italy; 3INAF/IASF, Italy; 4CNR/IMM, Italy; 5Baltic Scientific Instruments, Latvia; 6EMRS, France; 7EURORAD, France

R14-7 (17:00) Pulse Deficit Correction Trigger for Planar CdTe Based Gamma-Ray Spectrometer
D. Fames, XRF Corporation, USA

R14-8 (17:15, invited) Characterization of CdTe/n'-Si Heterojunction Diodes for Nuclear Radiation Imaging Detectors
Nagoya Institute of Technology, Japan

R15 Low-Noise Electronics

Friday, Nov. 3 08:35-10:00, Hampton & Windsor Rooms
Session Chair: Zhong He, The University of Michigan

P. Seller, A. L. Hardie, L. L. Jones, CCLRC, Rutherford Appleton Laboratory, UK; A. J. Boston, S. V. Rigby, University of Liverpool, UK

G. Bertuccio, S. Caccia, Politecnico di Milano, Italy

R15-3 (09:15) Very Large Area Silicon Drift Detector Spectroscopic Performances
A. G. Vacchi, A. Rashevsky, G. Zampa, V. Bonvicini
INFN - Trieste Italy, Italy

R15-4 (09:30) Design and Performance of the X-123 Compact X-Ray and Gamma-Ray Spectroscopy System
R. H. Redus, A. Huber, J. Pantazis, T. Pantazis, D. Sperry
Amptek, Inc., USA

R15-5 (09:45) Pixel CdZnTe Detectors Based on New Designed ASIC
1NU TECH COMPANY LIMITED, China; 2Tsinghua University, China

R16 Detectors and Spectrometer Systems

Friday, Nov. 3 10:30-11:30, Hampton & Windsor Rooms
Session Chair: James Matteson, Center for Astrophysics and Space Sciences, University of California, San Diego

R16-1 (10:30) Development and Characterisation of Large La-Halide Gamma-Ray Scintillators for Future Planetary Missions

R16-2 (10:45) X-Ray Detection with Conjugated Polymer Devices
F. Boroumand, J. L. Keddie, P. J. Sellin, M. Zhu, University of Surrey, UK

R16-3 (11:00) Applications of Monte Carlo Method to Simulate Gamma-Ray Interaction in Si and Ge
Pacific Northwest National Laboratory, USA

R16-4 (11:15) Gamma Ray Spectroscopy with THM CdZnTe Detectors
H. Chen, S. Awadalla, G. Bindley, Redlen Technologies, Canada; A. Copete, J. Hong, J. Grindlay, Harvard University, USA; M. Amman, J. S. Lee, P. Luke, Lawrence Berkeley National Laboratory, USA
**SPECIAL FOCUS WORKSHOPS**

**Micro-Pattern Gas Detectors: High Energy Physics and Beyond**

Sunday October 29, 09:00 - 18:35, Garden Salon 1

Organizers: Paul Colas, SACLAY  
Archana Sharma, CERN  
Maxim Titov, Freiburg University/ITEP Moscow

The recent experience in the field of Micro-Pattern Gas Detectors (GEM, Micromegas and Capillary Plate Detectors) - for fast and precision tracking at current and future generation of particle accelerators, astrophysics research and medical applications, with a focus on design principles, performance, reliability and limitations - will be discussed. A special session with talks related to the pixel readout structures of Micro-Pattern Gas Detectors is organized.

The goal of the symposium is to provide a forum for interested experimentalists to review the progress in the field of Micro-Pattern Gas Detectors and to exchange recent experiences. Emphasis will be given to a critical discussions of problems and possible solutions.

**MP1 Plenary Session**

October 29, 2006 09:00-10:30

Session Chair: Maxim Titov, Freiburg University/DESY/ITEP

**MP1-1: Micromegas detector, recent advances and prospects**  
J. Giomataris, SACLAY, France

**MP1-2: Recent Advances in GEM Detectors**  
F. Sauli, INFN-Trieste and CERN, Switzerland

**MP2 MICROMEGAS detectors in current/future experiments**

October 29, 2006 10:50-12:10

Session Chair: Paul Colas, SACLAY, France

**MP2-1: Micromegas Type Neutron Detector for ADS System**  
J. Pancin¹, S. Andriamonje¹, S. Aunes¹, A. Giganon¹, Y. Giomataris¹, J. F. Lecollet², M. Riallot³, R. Rosa³  
¹CEA Saclay, France; ²CNRS/IN2P3, France; ³ENEA, Italy

**MP2-2: Micromegas in CAST and prospects**  
T. Geralis, Institute of Nuclear Physics, NCSR, France

**MP2-3: Micromegas: Large-Size High-Rate Trackers in COMPASS**  
CEA Saclay, France

**MP2-4: Micromegas: Large “bulk” Micromegas Detectors for TPC and Other HEP Applications**  

**MP3 GEM detectors in current/future experiments**

October 29, 2006 13:30-14:50

Session Chair: Archana Sharma, CERN

**MP3-1: Development and Use of a Radial TPC Using Cylindrical GEMs**  
H. C. Fienker, Jefferson Lab, U.S.A.

On behalf of the BoNuS Collaboration

**MP3-2: Performance of the LEGS TPC**  
C. E. Thorn, B. Yu, G. De Geronimo, J. Fried, A. Kandasamy, D. S. Makowiecki, G. S. Smith, V. Radeka, K. Ardashev, S. Hlobit, A. M. Sandorfi, Brookhaven National Laboratory, USA; B. E. Norum, K. Wang, University of Virginia, USA; J. C. Mahon, Ohio University, USA

**MP3-3: Detailed Performance Studies of a Large GEM-TPC Prototype**  
E. Radicioni, INFN, Italy

**MP3-4: A Study of Gain Stability and Charging Effects in GEM Foils**  
C. Woody, B. Azeoun, Brookhaven National Lab, USA; B. Surrow, F. Simon, Massachusetts Institute of Technology, USA; R. Majka, N. Smirnoff, Yale University, USA; F. Sauli, CERN, Switzerland; D. Cray, K. Kearney, G. Keeler, Tech Etch, USA; G. Karagorigia, Florida Institute of Technology, USA; P. Lynch, Bucknell University, USA

**MP4 GEM/Capillary Plate Detectors in current/future experiments**

October 29, 2006 15:15-16:15

Session Chair: Craig Woody, Brookhaven National Lab

**MP4-1: A Novel Idea for an Ultra-Light Cylindric GEM Based Vertex Detector**  
G. Bencivenni, F. Anulli, D. Domenici, I. Iacucca, F. Murta laboratories nazionali di frascati - INFN - Italy, Italy

**MP4-2: A New Spark Protected Gas Amplifier Imaging Detector**  
A. Di Mauro¹, P. Martinengo¹, E. Nappi¹², V. Peskov¹, L. Periale¹, P. Picchi¹², F. Pietropaolo¹²  
¹CERN, Switzerland; ²INFN, Italy

**MP4-3: Optical Readout of Glass Capillary Plate Gas Detector**  
F. Tokanai¹, H. Sakurai, S. Gunji, M. Kaneko, Yamagata University, Japan; T. Sumiyoshi, Tokyo Metropolitan University, Japan; T. Endo, Y. Fujita, T. Okada, T. Atsumi, H. Sugiyama, Hamamatsu Photonics K.K., Japan

**MP5 Pixel Readout for Micro-Pattern Gas Detectors**

October 29, 2006 16:30-18:35

Session Chair: Klaus Desch, Bonn University

**MP5-1: Simulated Performance of 3-DTI Gamma-Ray Telescope Concepts**  
P. F. Blaser¹, A. R. Centa¹², S. D. Hunter¹, G. A. de Nolfo², J. F. Krizmanic², S. Son¹, M. L. McConnell¹, J. M. Ryan¹  
¹University of New Hampshire, USA; ²NASA/Goddard Space Flight Center, USA

**MP5-2: The Performance of the Micro Time Projection Chamber Based on µ-PIC**  
H. Nishimura¹, K. Hattori¹, K. Tsuchiya¹, S. Kabuki¹, H. Kubo¹
K. Miuchi1, T. Nagayoshi2, Y. Okada1, R. Orito1, H. Sekiya4, A. Takada1, T. Tanimori1, K. Ueno1
1Kyoto University, Japan; 2Waseda University, Japan; 3Kobe University, Japan; 4University of Tokyo, Japan

MP5-3: Photoelectron Tracking with a Virtual Pixel TPC for Astronomical X-Ray Polarimetry
J. K. Black1, R. G. Baker2, P. Deines-Jones3, J. E. Hill1, J. Kahoda2
1Forbin Scientific, USA; 2NASA/Goddard Space Flight Center, USA; 3Universities Space Research Association, USA

MP5-4: Direct Reading of Charge Multipliers with a Self-Triggering CMOS Analog Chip with 105k Pixels at 50 Micron Pitch
R. Bellazzini, INFN Pisa, Italy

MP5-5: Discharge Protection and Ageing of Micromegas Pixel Detectors
H. V. D. Graaf, NIKHEF, Netherlands

MP5-6: An Integrated Micromegas Made by Means of Wafer Post Processing and a Prototype CMOS Pixel Readout Chip
M. Chefdeville, NIKHEF, Netherlands

MP5-7: Triple GEM setup with highly pixelated readout using MediPix2 chip
Freiburg University, Germany

Innovative Techniques for Hadron Therapy
Thursday, November 2, 08:00-12:30, Sheffield Room

Organizers: Patrick Le Dû (ledu@hep.saclay.cea.fr), CEA Saclay
Anatoly Rozenfeld, University of Wollongong
Stephen Peggs, Brookhaven National Laboratory

The treatment of non-operable and radio-resistant cancer tumors using particle beams like protons and light ions is becoming a medical reality. The number of clinical facilities is growing very rapidly around the world. After the first successful workshop organized during the 2003 IEEE NSS/MIC/RTSD conference in Portland, we propose this year to review the evolution of the medical technological ideas and instrumentation around this emerging topic. This is a perfect illustration of a merging nuclear and detectors experts with the medical imaging community. The goal of the workshop is to provide a forum for interested participants to discuss in a convivial way the progress in the field and to exchange recent experiences. The format of the workshop will consist of invited speakers, oral and posters presentations. The agenda will include:

- Hadrontherapy: a clinical introduction
- Survey of new facilities and projects around the world
- New machine concepts (FFAG, portable proton linac)
- Instrumentation for beam control and realtime dose monitoring
- In-beam PET systems
- Proton CT imaging
- Advanced dosimetry (micro and nano dosimetry)
- Modelling of the space radiation environment using ions
- Simulation using GEANT
- New ideas using antiprotons and neutrons.

Compton Scatter Imaging for Medicine, Astronomy and Industry
Thursday, November 2, 13:30 - 17:30, Sheffield Room

Organizers: Gary Royle, University College London
Tumay Tumer, Nova R&D

CS1 Compton Scatter Imaging 1
Thursday, Nov. 2 13:30-15:00
Session Chairs: Gary Royle, University College London
Tumay Tumer, NOVA R&D, Inc.

CS1-1 Advanced Compton Camera with the Ability in Electron Tracking Based on Micro Pixel Gas Detector for Medical Imaging
T. Tanahashi1, K. Hattori1, E. Kunieda2, A. Kubo2, H. Kubo2, K. Miuchi1, T. Nakahara1, H. Nishimura1, Y. Okada1, R. Orito3, H. Sekiya1, T. Shirahata1, A. Takada1, K. Tsukishita1, K. Ueno1
1Kyoto University, Japan; 2Keio University, Japan; 3Kobe University, Japan; 4Institute of Cosmic Ray Research, University of Tokyo, Japan; 5Hitachi Medical Corporation, Japan

CS1-2 Compton Electrons Tracking Within a Single Silicon Layer with Controlled-Drift Detectors
A. Castoldi1, A. Galimberti1, C. Guazzoni1, R. Hartmann3, L. Strüder1
1Politecnico di Milano, Italy; 2INFN, Italy; 3PNSensor GmbH, Germany; 4Max Planck Institut, Germany

CS1-3 Recent Achievements of Si/CdTe Semiconductor Compton Cameras
S. Watanabe1, S. Takeda1, M. Usiho1, H. Odaka1, S. Ishikawa1, T. Tanaka2, K. Nakazawa1, T. Takahashi1, H. Tajima1, Y. Fukazawa4, M. Nomachi1, M. Onishi1, Y. Kuroda2
1Japan Aerospace Exploration Agency, Japan; 2University of Tokyo, Japan; 3Stanford Linear Accelerator Center, USA; 4Hiroshima University, Japan; 5Osaka University, Japan; 6Mitsubishi Heavy Industries Ltd., Japan

CS1-4 3D Mapping of Radioactive Gamma-Ray Sources with a Compton Camera
L. Mihailescu, D. Chivers, K. Vetter
Lawrence Livermore National Laboratory, USA

CS1-5 Image Reconstruction for Advanced Compton Telescopes
A. Zaglauer, C. B. Wunderer, S. E. Boggs, University of California at Berkeley, USA; R. Andritschke, G. Kanbach, Max-Planck-Institut für Extraterrestrische Physik, Germany

CS1-6 Detective Quantum Efficiency and Deadtime Losses in Compton Imaging Systems
K. Nurdan, T. Conka Nurdan, A. H. Walenta, University of Siegen, Germany; A. B. Brill, Vanderbilt University, USA

CS2 Compton Scatter Imaging 2
Thursday, Nov. 2 15:30-17:30
Session Chairs: Gary Royle, University College London
Tumay Tumer, NOVA R&D, Inc.

CS2-1 Effects of Energy Resolution and Camera Geometry on Compton Camera Images
W. Ghogokari, R. D. Speller, G. J. Royle, J. Gabathuse, University College London, United Kingdom; I. H. Lazarus, CCLRC, Daresbury Laboratory, United Kingdom
to meet the members of the OpenGATE collaboration in charge of the development and the distribution of the code.

The agenda of the workshop will include:

- A general presentation of GATE and of the OpenGATE collaboration for newcomers
- Presentations of the latest developments in GATE
- Presentations of upcoming developments in GATE
- A discussion about the future of GATE
- A question and answer session with a panel of OpenGATE members

**Third Workshop on the Nuclear Radiology of Breast Cancer (NRBC)**

Saturday, November 4 (pm), and Sun. Nov. 5, Pacific Salon 1 & 2

Organizers: Raymond Raylman, rraylman@wvu.edu, 304-293-1973, Chief Organizer
Craig Levin, clevin@stanford.edu, 650-736-7211
Martin Tornai, martin.tornai@duke.edu, 919-684-7940

The goal of this one day and a half day workshop is to present an update on the technology and applications of dedicated nuclear radiology breast imaging systems. Specifically, the program will cover topics such as breast cancer biology, clinical state-of-the-art in radiology, potential diagnostic and treatment roles of nuclear medicine, existing and promising breast cancer radiotracers, clinical trial results with commercial nuclear emission cameras dedicated to breast imaging, international research groups working on improving nuclear breast cancer imaging, long term industrial outlook of dedicated breast imaging modalities, and research funding opportunities. The format of the workshop consists of a mix of invited speakers and presentations (oral and poster) selected from submitted abstracts.

**Overview of the Workshop Schedule.**

- The workshop will begin on the afternoon of November 4 after most of the MIC sessions have concluded and continue on November 5 for the whole day until approximately 5:00pm.
- There will be several oral presentations, as well as a poster session.
- A group dinner is to be held on the evening of November 4.
The process of organizing a conference of this nature begins several years in advance, and requires untold hours of volunteer time from dedicated individuals. The conference committee for the 2006 IEEE NSS/MIC/RTSD has worked extremely hard during those untold hours, and the committee members have been truly a delight to interact with. I acknowledge the efforts of the program chairs of the three main conferences, the special focus workshop organizers, and the short course chairs, who have assembled a vibrant scientific and technical program. A very large complement of reviewers has worked carefully over the summer to ensure a high quality of paper selection.

We are grateful for both institutional and commercial support that has been received, a key element that helps us to provide support for students and younger scientists to attend the conference.

I extend appreciation to the conference coordinator, the webmaster and the assistant to the general chair, all just a stone’s throw away from my office at BNL — they have kept a strong focus to our weekly planning meetings.

Finally, we also acknowledge you, the attendees, for supporting this conference every year and allowing it to grow in scope and international extent.

Graham C. Smith
General Chair
NSS/MIC Program Reviewers

John Aarsvold, Emory University, USA
Marcello Abbrescia, University of Bari, Italy
Roberto Accorsi, The Children’s Hospital of Philadelphia, USA
Paul Acton, Thomas Jefferson University, USA
Stephen Adler, Quantum Molecular Pharmaceuticals, USA
Adam Adler, University of Washington, USA
Alberto Aloisio, University of Naples and INFN, Italy
Katsuya Amako, KEK, Japan
Giovanni Ambrosi, INFN Sezione di Perugia, Italy
Mark Amman, LBNL, USA
Ladislav Andricek, MPI fuer Physik, Munich, Germany
Matteo Angarano, CAEN - Viareggio (Italy), Italy
Yasuho Arai, KEK, Japan
Frank Augustine, Augustine Engineering, USA
Rachel Avramidou, CERN, Switzerland
Ramsey Badawi, UC Davis Medical Center, USA
Chuanyong Bai, DigiRad Corporation, USA
Henry Band, University of Wisconsin, Madison, USA
Brad Barber, University of Arizona, USA
William Barber, DsRay Inc., USA
Jean-François Beche, LBNL, USA
Freck Beckman, University Medical Center Utrecht, Netherlands
Lucia Begalli, State University of Rio de Janeiro, Brazil
Bernard Bendriem, Siemens Molecular Imaging, USA
Sebastien Binet, LBNL, USA
Gregory Bizarri, Delft University of Technology, Netherlands
Ira Black, General Electric Healthcare, Israel
Christian Bohm, University of Stockholm, Sweden
Charles Bouman, Purdue University, USA
Jovan Brankov, Illinois Institute of Technology, USA
David Brasse, Institut Pluridisciplinaire Hubert Curien, France
Uwe Bratzer, CERN and TMU, Switzerland
Aaron Brill, Vanderbilt University, USA
Ian Brock, Bonn University, Germany
Peter Bruynooghe, Vrije Universiteit Brussel, Belgium
Thomas Budinger, UC Berkeley and LBNL, USA
Irene Buvis, U678 INSERM, Paris, France
Charles Byrne, University of Massachusetts Lowell, USA
Massimo Caccia, Università dell'Insudria, Italy
Daniel Camin, Dipartimento di Fisica and INFN, Milano, Italy
Mar Capeans, CERN, Switzerland
Alessandro Cardini, INFN Sezione di Cagliari, Italy
Jonathan Carney, University of Pittsburgh, USA
Richard Carson, Yale University, USA
James Case, Cardiovascular Imaging Technologies, USA
Michael Casey, Siemens Medical Solutions, USA
Ariella Cattai, CERN, Switzerland
Anna Celler, University of British Columbia, Canada
Arion Chatzioannou, UCLA Crump Institute, USA
Stephane Chauvie, Santa Croce e Carle Hospital, Italy
Chin-Tu Chen, The University of Chicago, USA
Giorgio Chiarelli, INFN Sez. di Pisa, Italy
Woon-Seng Choong, LBNL, USA
David Christian, Fermilab, USA
Radovan Chytracek, CERN, Switzerland
Carlo Civinini, INFN-Firenze, Italy
Rolf Clackdoyle, Laboratoire TSI, CNRS, France
Neal Clinhaorne, University of Michigan, USA
David Cockerill, Rutherford Appleton Laboratory, United Kingdom
Claude Comtat, French Atomic Energy Commission, France
Maurizio Conti, Siemens, USA
John Correa, Mass General Hospital/Harvard Medical School, USA
Gloria Corti, CERN, Switzerland
Francesco Cusanno, INFN sezione di Roma, Italy
Cinzia Da Via, Brunel University, United Kingdom
Magnus Dahlbom, UCLA, USA
Gian Franco Dalla Betta, University of Trento, Italy
Margaret Daube-Witherspoon, University of Pennsylvania, USA
Riccardo de Assmundis, INFN, Napoli, Italy
Hugo de Jong, VU University Medical Center, Netherlands
Christophe de la Taille, KUL Leuven, Belgium
Bruno De Man, GE Research, USA
Michel Defrise, Vrije Universiteit Brussel, Belgium
Alberto del Guerra, University of Pisa, Italy
Andrea Dell’Acqua, CERN, Switzerland
Stephen Derenzo, LBNL, USA
Laurent Desbat, Grenoble University, France
Philippe Desprès, UC, San Francisco, USA
Yuni Dewaraja, University of Michigan, USA
Anna Di Caccia, University Roma Sapienza & INFN Roma, Italy
Winicjusz Drozdowski, Delft University of Technology, Netherlands
Ralf Engels, FZ-Juelich, Germany
Lars Eriksson, Siemens Medical Solutions, USA
Kjell Erlandsson, Columbia University, USA
Lorenzo Fabris, LLNL, USA
Riccardo Fantechi, INFN - Sezione di Pisa, Italy
Troy Farncombe, McMaster University, Canada
Philippe Farhousat, CERN, Switzerland
Alessandro Ferretti, Torino University and INFN, Italy
Fernando Ferroni, Università di Roma La Sapienza & INFN Roma, Italy
Jeff Fessler, The University of Michigan, USA
Angela Foudray, Stanford University, USA
Richard Frei, University of Pennsylvania, USA
Eric Froy, Johns Hopkins University, USA
Tobias Funk, UC San Francisco, USA
Lars Furenlid, University of Arizona, USA
Daniel Gagnon, Philips Medical Systems Inc., USA
Igor Gaponenko, LBNL, USA
Franco Garibaldi, Istituto Superiore di Sanita’, Italy
Howard Gifford, UMass Medical School, USA
David Gilland, University of Florida, USA
Karen Gilland, Johns Hopkins Medical Institutes, USA
Gene Gindi, SUNY at Stony Brook, USA
Thomas Glanzman, SLAC, USA
Shaun Gleason, Siemens Medical Solutions, Inc., USA
Luciano Musa, CERN, Switzerland
Alfredo Musso, INFN-Torino, Italy
Raymond Muzic, Jr., Case Western Reserve University, USA
Vivek Nagarkar, RMD, Inc., USA
Eugenio Nappi, INFN Sezione di Bari, Italy
Filippo Nava, Dipartimento di Fisica Università di Modena e Reggio Emilia, Italy
Petteri Nieminen, ESA, Netherlands
Martin Nikl, Academy of Sciences of the Czech Republic, Czech Republic
Frederic Noo, University of Utah, USA
Rainer Novotny, University Gießen, Germany
Johan Nyuts, K.U.Leuven, Belgium
Michael O’Connor, Mayo Clinic, USA
John Oliver, Harvard University, USA
Richard Olsen, SNL, USA
Robert Ott, Royal Marsden Hospital, United Kingdom
Thomas Otto, CERN, Switzerland
Xiaochuan Pan, The University of Chicago, USA
Roberto Pani, University of Rome, Italy
Ioannis Papadopoulos, CERN, Switzerland
Sang-June Park, BNL, USA
Kevin Parnham, Gamma Medica - Ideas, USA
Sarah Patch, UW-Milwaukee, USA
Bill O’Brien Penney, University of Chicago, USA
Vladimir Peskov, CERN, Switzerland
Todd Peterson, Vanderbilt University, USA
Roberto Petti, CERN, Switzerland
Anthony Peurrung, PNNL, USA
Andreas Pfeiffer, CERN, Switzerland
Bernd Pichler, University of Tuebingen, Germany
Uwe Pietrzyk, FZ Juelich, Germany
Michael Pivovarovoff, LLNL, USA
Stanislav Pospisil, Czech Technical University in Prague, Czech Republic
Michela Prest, Universita’ dell’Insubria e INFN Milano, Italy
P. Pretorius, UMass Medical School, USA
Jinyi Qi, UC Davis, USA
Francisco Ramírez-Jiménez, Instituto Nacional de Investigaciones Nucleares, Mexico
Lodovico Ratti, University of Pavia, Italy
Raymond Rayman, West Virginia University, USA
Valerio Re, Università di Bergamo, Italy
Andrew Reader, University of Manchester, United Kingdom
Bryan Reutter, LBNL, USA
Angelo Rivetti, INFN Sezione di Torino, Italy
Leszek Rapelewski, CERN, Switzerland
Steven Ross, GE Healthcare, USA
Gary Royle, University College London, United Kingdom
Paolo Russo, Università di Napoli Federico II & INFN Napoli, Italy
Hartmut Sadrozinski, UC Santa Cruz, USA
Karel Safarik, CERN, Switzerland
Takashi Sasaki, KEK, Japan
Ken Sauer, University of Notre Dame, USA
Dennis Schaart, Delft University of Technology, Netherlands
Burkhard Schmidt, CERN, Switzerland
Ruth Schmitz, University of Washington, USA
Nils Schramm, Research Center Juelich, Germany
William Segars, Johns Hopkins University, USA
Jacques Seguinot, CERN, Switzerland
Tony Selbert, UC Davis, USA
Carolyn Seifert, PNNL, USA
Vitali Selivanov, Advanced Molecular Imaging (AMI) Inc., Canada
Youngho Seo, UC San Francisco, USA
Lingxiong Shao, Philips Medical Systems, USA
Lev Shkhtman, Budker Institute for Nuclear Physics, Russian Federation
Asher Shor, Soreq NRC, Israel
D Peter Siddons, BNL, USA
Manbir Singh, USC, USA
Arkadiusz Sitek, LBNL, USA
Graham Smith, BNL, USA
Mark Smith, TJNAF, USA
Edward Soares, Holy Cross College, USA
Yesna Sossi, University of British Columbia, Canada
Helmuth Spieler, LBNL, USA
Terry Spinks, General Electric, United Kingdom
Michael Squillante, RMD Inc., USA
Maya Stavrianakou, FNAL, Switzerland
Charles Stearns, GE Healthcare, USA
Jennifer Stickel, UC Davis Medical Center, USA
Lothar Strueder, MPI - Semiconductor Lab, Germany
Suleman Surti, University of Pennsylvania, USA
Piotr Szymanski, Soltan Institute for Nuclear Studies, Poland
Yuan-Chuan Tai, Washington University in St. Louis, USA
Hiroyasu Tajima, SLAC, USA
Hui Tan, XIA LLC, USA
Kevin Teo, UC San Francisco, USA
Kris Thielemans, Hammersmith Imanet, United Kingdom
Christopher Thompson, Montreal Neurological Institute, Canada
Andrew Todd-Pokropek, University College London, United Kingdom
Martin Tornai, Duke University Medical Center, USA
Francois Touchard, University of Aix-Marseille II, France
David Townsend, University of Tennessee, USA
Jan Troska, CERN, Switzerland
Benjamin Tsui, Johns Hopkins University, USA
Carolyn Tull, SH NanoTechnology USA, Inc., USA
Timothy Turkington, Duke University Medical Center, USA
Michela Uslenghi, INFN Iasf-Milano, Italy
John Valentine, LLNL, USA
Vladimiro Valkovic, Institute Ruder Boskovic, Croatia
Erik Vallazza, INFN Sezione di Trieste, Italy
Richard Van Berg, University of Pennsylvania, USA
Juan José Vaquero, Hospital GU Gregorio Marañón, Spain
Gary Varner, Univ. of Hawaii, USA
Paul Vaska, BNL, USA
Jerry Vávra, SLAC, USA
Jan Visschers, NIKHEF Amsterdam, The Netherlands
Dimitris Visvikis, U650 INSERM, France
Douglas Wagenaar, Gamma Medica Ideas, Inc., USA
Naor Wainer, Philips Medical Systems, Israel
Guobao Wang, UC Davis, USA
Glen Warren, PNNL, USA
Charles Watson, Siemens Medical Solutions Molecular Imaging, USA
Gordon Watts, University of Washington, USA
Simone Weber, FZ Juelich, Germany
Irvings Weinberg, Fast Imaging Company, USA
Andrew Weisenberger, TJNAF, USA
Andy Welch, University of Aberdeen, United Kingdom
Andy White, *University of Texas at Arlington, USA*
Klaus Wienhard, *MPI for Neurological Research, Germany*
Richard Wigmans, *Texas Tech University, USA*
Scott Wilderman, *University of Michigan, USA*
Crispin Williams, *INFN Bologna, Italy*
Mark Williams, *University of Virginia, USA*
Kenneth Wong, *Georgetown University, USA*
Craig Woody, *BNL, USA*
Seiichi Yamamoto, *Kobe City College of Technology, Japan*
Yongfeng Yang, *UC Davis, USA*
Jeffrey Yap, *Dana-Farber Cancer Institute, USA*
Habib Zaidi, *Geneva University Hospital, Switzerland*
Guido Zavattini, *University of Ferrara, Italy*
Wojtek Zbijewski, *UMC Utrecht, Netherlands*
Gengsheng Zeng, *University of Utah, USA*
Lei Zhu, *Stanford University, USA*
Ren-yuan Zhu, *Caltech, USA*
Sibylle Ziegler, *TU München, Germany*
Karl Ziemons, *FZ Juelich, Germany*
Robert Zimmerman, *Harvard Medical School, USA*
George Zubal, *Yale University, USA*

**RTSD Assistant Program Chairs**

Arnold Burger, *Fisk University, USA*
Aleksy Bolotnikov, *BNL, USA*
Uri El-Hanany, *Orbotech, Israel*
R. Leon Feinstein, *DHS/DNDO, USA*
Michael Fiederle, *University of Freiburg, Germany*
Petru Fochuk, *Chernivtsi National University, Ukraine*
Laura Fornaro, *University of Montevideo, Uruguay*
Larry Franks, *Consultant, USA*
Zhong He, *University of Michigan, USA*
James Howell, *DTRA, USA*
Glenn Knoll, *University of Michigan, USA*
Longxia Li, *Yinmel Tech, USA*
Paul Luke, *LBNL, USA*
Kevin Lynn, *Washington State University, USA*
Manoj Mahajan, *BNL, USA*
Teodor Milenov, *Bulgarian Academy of Sciences, Sofia, Bulgaria*
Andrzej Mycielski, *Institute of Physics, Poland*
Michael Schieber, *Hebrew University of Jerusalem, Israel*
Kanai Shah, *RMD, Inc., USA*
Bonnie Sherwood, *BNL, USA*
Paul Siffert, *Eurorad, France*
Caaba Szeles, *eV PRODUCTS, USA*
Maxim Titov, *University of Freiburg, Germany*
Loick Verger, *CEA-LETI, France*
Lan Zhang, *Nuctech, China*

**Conference Information and Promotion (CiP) Committee**

Reyes Alemany Fernandez, *LIP Lisboa, Spain/Portugal*
Alberto Aloisio, *INFN and Univ. Napoli, Italy*
Rachel Avramidou, *NTUA and CERN, Greece*
Johannes M. Bauer, *University of Mississippi, USA*
Christian Bohm, *University of Stockholm, Sweden*
Uwe Bratzler, *CERN and TMU, Switzerland*
Sudeep Chatterji, *University of Delhi and CERN, India*
Riccardo de Asmundis, *INFN Napoli, Italy*
Alberto Del Guerra, *INFN Pisa, Italy*
Pierre Delpierre, *IN2P3, France*
Ralf Engels, *Forschungszentrum Juelich, Germany*
Christian Fröjd, *Mid-Sweden University, Sweden*
Chikara Fukunaga, *Tokyo Metropolitan University, Japan*
Evangelos Gazis, *NTU Athens, Greece*
Roger Gearhart, *SLAC, USA*
Ingrid-Maria Gregor, *DESY, Germany*
Erik Heijne, *CERN, Switzerland*
Christoph Ilgner, *CERN and University of Dortmund, Switzerland*
Pier Giorgio Innocenti, *CERN, Switzerland*
Takahiko Kondo, *KEK, Japan*
Patrick Le Du, *CEA Saclay, France*
Dariusz Makowski, *Technical University of Lodz, Poland*
Dora Merelli, *CEA Saclay, France*
Teddy Milenov, *Bulgarian Academy of Sciences, Bulgaria*
Klaus Mueller, *FZ Juelich (emerit.), Germany*
Janina Oesling, *C-RAD Imaging AB, Sweden*
Jean-François Pratte, *BNL, USA*
Stanislav Pospisil, *Czech Technical University in Prague, Czech Republic*
Francisco Javier Ramírez Jiménez, *ININ, Mexico*
Anatoly Rosenfeld, *University of Wollongong, Australia*
Christina Sanders, *LLNL, USA*
Hui Tan, *X-Ray Instrumentation Associates, USA*
Maxim Titov, *Freburg University/ITEP Moscow, Germany*
Francesca Toglia, *Univ. Napoli, Italy*
Matthew S. Twomey, *University of Washington, USA*
George Tzanakos, *University of Athens, Greece*
Juan José Vaquero, *Hospital General Universitario Gregorio Marañón, Spain*
Ping Yeh, *National Taiwan University, Taiwan*
Alexander Zaitsev, *Institute for High Energy Physics Protvino, Russia*
**Conference Time Table (Sunday, October 29 through Wednesday, November 1)**

<table>
<thead>
<tr>
<th>Sunday</th>
<th>Sheffield</th>
<th>Hamptons</th>
<th>Windsor</th>
<th>Garden 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:30-12:00</td>
<td></td>
<td></td>
<td></td>
<td>MP2: Detector and Engineering Aspects</td>
</tr>
<tr>
<td>13:30-15:00</td>
<td></td>
<td></td>
<td></td>
<td>MP3: detectors and Radiation Imaging I</td>
</tr>
<tr>
<td>15:30-17:00</td>
<td></td>
<td></td>
<td></td>
<td>MP4: GEM/Capillary Plate Detectors</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Monday</th>
<th>Golden Ballroom</th>
<th>Pacific 1</th>
<th>Pacific 2</th>
<th>Pacific 3</th>
<th>California</th>
<th>Hampton &amp; Windsor</th>
<th>Garden 1</th>
<th>Garden 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>09:00-11:00</td>
<td>N01: NSS Plenary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12:00-14:00</td>
<td></td>
<td></td>
<td></td>
<td>NSS Luncheon</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14:00-15:30</td>
<td>N02: Computing in HEP Experiments</td>
<td>N03: Detectors and Electronics for the CNS</td>
<td>N04: Gas Detectors I</td>
<td>N05: Photodetectors &amp; Radiation Imaging I</td>
<td>R01: CPT I (13:00-15:00)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16:00-18:00</td>
<td>N06: Instrumentation for Homeland Security</td>
<td>N07: Core Software Tools</td>
<td>N08: Data Acquisition &amp; Analysis Systems I</td>
<td>N09: Radiation Damage Effects</td>
<td>R02: CPT II</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tuesday</th>
<th>Golden Ballroom</th>
<th>Pacific 1</th>
<th>Pacific 2</th>
<th>Pacific 3</th>
<th>California</th>
<th>Hampton &amp; Windsor</th>
<th>Atlas Ballroom</th>
<th>Garden 1</th>
<th>Garden 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30-10:00</td>
<td>N10: HEP &amp; NP Instrumentation I: Calorimetry</td>
<td>N11: Neutron Imaging and Radiography</td>
<td>N12: Nuclear Measurements and Monitoring Techniques I</td>
<td>N13: Analog and Digital Circuits I</td>
<td>R03: Pixel Detectors</td>
<td>SC4: Molecular Biology for Imaging Sciences (08:30-17:00)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:30-12:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19:00-21:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Exhibitors Reception</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wednesday</th>
<th>Golden Ballroom</th>
<th>Pacific 1</th>
<th>Pacific 2</th>
<th>Pacific 3</th>
<th>California</th>
<th>Hampton &amp; Windsor</th>
<th>Atlas Ballroom</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30-10:00</td>
<td>M01: X-Ray and CT (09:00-10:00)</td>
<td>N22: Software for Radiobiology and Radiotherapy</td>
<td>N23: HEP &amp; NP Instrumentation IV: New Detection Techniques</td>
<td>N24: Gas Detectors III</td>
<td>R07: CPT III (08:30-10:00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:30-12:00</td>
<td></td>
<td>N26: Data Analysis and Grid</td>
<td>N27: HEP &amp; NP Instrumentation V: Detector Commissioning and Engineering Aspects</td>
<td>N28: Nuclear Measurements and Monitoring Techniques II</td>
<td>R08: Neutron Detectors (10:30-11:00)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11:20-13:40</td>
<td></td>
<td></td>
<td></td>
<td>N29: Scintillators I - Plastics &amp; other scintillators</td>
<td>R09: RTSD Lunch/Cruise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13:30-15:00</td>
<td>M03: Observer Analysis and Modeling</td>
<td></td>
<td></td>
<td></td>
<td>R09: RTSD Lunch/Cruise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18:30-21:00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Conference Time Table (Sunday, October 29 through Wednesday, November 1)

<table>
<thead>
<tr>
<th>Day</th>
<th>Location</th>
<th>Pacific 1</th>
<th>Pacific 2</th>
<th>Pacific 3</th>
<th>California</th>
<th>Hampton &amp; Windsor</th>
<th>Garden 1</th>
<th>Garden 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sunday</strong></td>
<td><strong>Sheffield</strong></td>
<td>SC1: Interaction of Radiation with Matter: Theory and Practice</td>
<td>SC2: Integrated Circuit Front Ends for Nuclear Pulse Processing</td>
<td>SC3: Integrated Circuit Front Ends for Nuclear Pulse Processing</td>
<td>SC4: Molecular Biology for Imaging Scintillants</td>
<td>All NSS &amp; RTSD posters can be set up after 10:00 on Monday, and must be removed by 13:00 on Saturday.</td>
<td>SC5: Detectors for PET and SPECT</td>
<td>(09:30-17:00)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>08:30-10:00</td>
<td>09:00-10:30</td>
<td>10:00-10:30</td>
<td>09:30-17:00</td>
<td>SC6: Small Animal Imaging: Detectors and Technical Aspects</td>
<td>(08:30-17:00)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10:30-12:00</td>
<td>10:30-12:10</td>
<td>11:00-12:00</td>
<td>09:30-17:00</td>
<td>SC7: Image Quality</td>
<td>(08:30-17:00)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>13:00-15:00</td>
<td>12:00-12:30</td>
<td>13:30-15:30</td>
<td>10:30-17:00</td>
<td>09:00-10:00</td>
<td>(08:30-10:30)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15:30-17:00</td>
<td>14:00-15:30</td>
<td>15:00-17:00</td>
<td>10:30-12:00</td>
<td>10:30-12:00</td>
<td>(10:30-12:00)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>09:00-11:30</td>
<td>10:00-11:30</td>
<td>11:30-12:30</td>
<td>12:30-13:30</td>
<td>R01: CFT I</td>
<td>R02: CFT II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>12:00-14:00</td>
<td>12:00-14:00</td>
<td>13:00-14:30</td>
<td>14:00-15:30</td>
<td>N08: Digital Processing &amp; Analysis Systems I</td>
<td>N09: Radiation Damage Effects</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>14:00-16:00</td>
<td>14:00-15:30</td>
<td>15:00-16:30</td>
<td>16:00-17:30</td>
<td>N10: Data Acquisition &amp; Analysis Systems I</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>16:00-18:00</td>
<td>15:30-17:00</td>
<td>16:00-17:30</td>
<td>17:00-18:30</td>
<td>N11: Detector Commissioning, Monitoring and Engineering Aspects</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>17:00-19:30</td>
<td>16:00-18:30</td>
<td>18:00-19:30</td>
<td>19:00-21:00</td>
<td>N12: Physicists - Plastics</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>19:00-21:00</td>
<td>18:00-20:00</td>
<td>20:00-22:00</td>
<td>21:00-23:00</td>
<td>N13: General Poster</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>08:30-10:00</td>
<td>09:00-10:30</td>
<td>10:00-11:30</td>
<td>11:00-12:30</td>
<td>N02: Gas Detectors I</td>
<td>N03: Gas Detectors I</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10:30-12:00</td>
<td>10:30-11:30</td>
<td>11:30-13:00</td>
<td>12:00-13:30</td>
<td>N04: Gas Detectors I</td>
<td>N05: Gas Detectors I</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>13:00-15:00</td>
<td>12:00-13:30</td>
<td>13:30-15:00</td>
<td>14:00-15:30</td>
<td>N06: Gas Detectors II</td>
<td>N07: Gas Detectors II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15:30-17:00</td>
<td>13:30-15:00</td>
<td>14:30-16:30</td>
<td>15:00-16:30</td>
<td>N08: Gas Detectors II</td>
<td>N09: Gas Detectors II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>17:00-19:30</td>
<td>14:30-16:30</td>
<td>15:30-17:00</td>
<td>16:00-18:30</td>
<td>N10: Gas Detectors II</td>
<td>N11: Gas Detectors II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>19:00-21:00</td>
<td>15:30-18:00</td>
<td>16:00-19:00</td>
<td>17:00-20:00</td>
<td>N12: Gas Detectors II</td>
<td>N13: Gas Detectors II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>08:30-10:00</td>
<td>09:00-11:30</td>
<td>10:00-12:00</td>
<td>11:00-13:00</td>
<td>N20: Gas Detectors II</td>
<td>N21: Gas Detectors II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>10:30-12:00</td>
<td>11:00-12:30</td>
<td>12:00-14:00</td>
<td>13:00-15:00</td>
<td>N22: Gas Detectors II</td>
<td>N23: Gas Detectors II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>13:00-15:00</td>
<td>12:00-14:00</td>
<td>14:00-16:00</td>
<td>15:00-17:00</td>
<td>N24: Gas Detectors II</td>
<td>N25: Gas Detectors II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>15:30-17:00</td>
<td>13:30-15:00</td>
<td>15:00-17:00</td>
<td>16:00-18:00</td>
<td>N26: Gas Detectors II</td>
<td>N27: Gas Detectors II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>17:00-19:30</td>
<td>14:30-16:00</td>
<td>16:00-19:00</td>
<td>17:00-20:00</td>
<td>N28: Gas Detectors II</td>
<td>N29: Gas Detectors II</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>19:00-21:00</td>
<td>15:30-18:00</td>
<td>17:00-20:00</td>
<td>18:00-21:00</td>
<td>N30: Gas Detectors II</td>
<td>N31: Gas Detectors II</td>
<td></td>
</tr>
</tbody>
</table>

*With corporate support from the following: Digital eV PRODUCTS Hamamatsu ORTEC Siemens Molecular Imaging and Siemens Medical Solutions*
## Conference Time Table (Thursday, November 2 through Sunday, November 5)

<table>
<thead>
<tr>
<th>Type</th>
<th>Session 1</th>
<th>Session 2</th>
<th>Session 3</th>
<th>Session 4</th>
<th>Session 5</th>
<th>Session 6</th>
<th>Session 7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Thurs., Nov. 2</strong></td>
<td>8:30-10:00</td>
<td>10:30-12:00</td>
<td>1:30-3:00</td>
<td>3:30-5:00</td>
<td>6:00-7:30</td>
<td>8:30-9:30</td>
<td>10:00-11:00</td>
</tr>
<tr>
<td><strong>Fri., Nov. 3</strong></td>
<td>8:30-10:00</td>
<td>10:30-12:00</td>
<td>1:30-3:00</td>
<td>3:30-5:00</td>
<td>6:00-7:30</td>
<td>8:30-9:30</td>
<td>10:00-11:00</td>
</tr>
<tr>
<td><strong>Sat., Nov. 4</strong></td>
<td>8:30-10:00</td>
<td>10:30-12:00</td>
<td>1:30-3:00</td>
<td>3:30-5:00</td>
<td>6:00-7:30</td>
<td>8:30-9:30</td>
<td>10:00-11:00</td>
</tr>
</tbody>
</table>

## Fees Schedule

- **IEEE Members:** $200
- **Non-IEEE Members:** $250
- **Society Members:** $150

### Cancellation Policy

- 100% refund if cancellation received by October 13.
- 50% refund if cancellation received by October 20.
- No refunds after October 20.

---

### Registration Information

- **Last Name/First Name/Institution**
- **Name to Appear on Badge**
- **Organization**
- **Address**

### FEE SCHEDULE:

<table>
<thead>
<tr>
<th>Event</th>
<th>Member Fee</th>
<th>Non-Member Fee</th>
<th>Student Fee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Registration</td>
<td>$200</td>
<td>$250</td>
<td>$150</td>
</tr>
<tr>
<td>Luncheon/Dinner</td>
<td>$35</td>
<td>$42</td>
<td>$20</td>
</tr>
<tr>
<td>Tours</td>
<td>$70</td>
<td>$80</td>
<td>$40</td>
</tr>
<tr>
<td>NPS Luncheon (Mon., Oct. 30)</td>
<td>$35</td>
<td>$42</td>
<td>$20</td>
</tr>
<tr>
<td>BANQUETS</td>
<td>$70</td>
<td>$80</td>
<td>$40</td>
</tr>
<tr>
<td>NRBC Workshop</td>
<td>$125</td>
<td>$150</td>
<td>$70</td>
</tr>
<tr>
<td>Sailing aboard the Aolani Catamaran</td>
<td>$50</td>
<td>$60</td>
<td>$25</td>
</tr>
<tr>
<td>Sailing aboard the Aolani Catamaran</td>
<td>$70</td>
<td>$90</td>
<td>$40</td>
</tr>
<tr>
<td>Sailing aboard the Aolani Catamaran</td>
<td>$90</td>
<td>$110</td>
<td>$50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$300</td>
<td>$400</td>
<td>$200</td>
</tr>
</tbody>
</table>

---

### Conference Hotel

**Town and Country Hotel/Convention Center, San Diego, California • October 29 – November 4, 2006**

**410-363-1300 (8:30-17:30 ET) • 800-437-4589 (US/Canada only)**

**E-mail Address:** IEEE 2006 NSS/MIC * c/o TDMG Meetings Dept.

**110 Painters Mill Road, Suite 36 • Owings Mills, MD 21117 USA**

**FAX:** 410-727-7111 (for reservations only)

**WEB SITE:** www.nssmic2006.org

---

### Registration/Advance Registration

- Registration closes October 13 at 5:00 p.m. (EST/EDT time)

### Event Dates and Times

- **08:30-10:00**
  - Pacific 1 & 2
  - Pacific 2
  - Pacific 3
  - Hampton & Windsor
  - M30: Pediatric Molecular Imaging
  - M30: Pediatric Molecular Imaging
  - M30: Pediatric Molecular Imaging

- **10:30-12:00**
  - Pacific 1 & 2
  - Pacific 2
  - Pacific 3
  - Hampton & Windsor
  - M30: Pediatric Molecular Imaging
  - M30: Pediatric Molecular Imaging

- **13:00-15:00**
  - Pacific 1 & 2
  - Pacific 2
  - Pacific 3
  - Hampton & Windsor
  - M30: Pediatric Molecular Imaging
  - M30: Pediatric Molecular Imaging

- **15:30-17:30**
  - Pacific 1 & 2
  - Pacific 2
  - Pacific 3
  - Hampton & Windsor
  - M30: Pediatric Molecular Imaging

---

### Conference Program

- **1. REGISTRATION**
  - By Oct. 17

- **2. BANQUETS**
  - By Oct. 17

- **3. CONTINUING EDUCATION PROGRAM**
  - Early bird rates expire October 13.
  - NRBC Workshop: $125
  - Luncheon/Dinner: $35
  - Sailing aboard the Aolani Catamaran: $50
  - Sailing aboard the Aolani Catamaran: $70

- **4. TOURS & COMPANION PROGRAM**
  - Tour fees are valid for registrations received by October 13.

- **5. ACCOMMODATIONS**
  - Town and Country Hotel/Convention Center, San Diego, California • October 29 – November 4, 2006

---

### Other Information

- ** IEEE 2006 NSS/MIC* c/o TDMG Meetings Dept.**
  - 110 Painters Mill Road, Suite 36 • Owings Mills, MD 21117 USA
  - FAX: 410-727-7111 (for reservations only)
  - **E-mail Address:** IEEE 2006 NSS/MIC * c/o TDMG Meetings Dept.
  - **WEB SITE:** www.nssmic2006.org

---

### Conference Contact Information

- **Telephone:** 410-363-1300 (8:30-17:30 ET) • 800-437-4589 (US/Canada only)
- **E-mail Address:** IEEE 2006 NSS/MIC * c/o TDMG Meetings Dept.
- **WEB SITE:** www.nssmic2006.org

---

### Conference Hotel Contact Information

- **Telephone:** 410-363-1300 (8:30-17:30 ET) • 800-437-4589 (US/Canada only)
- **E-mail Address:** IEEE 2006 NSS/MIC * c/o TDMG Meetings Dept.
- **WEB SITE:** www.nssmic2006.org
Aloha, Colleagues,

The 2007 IEEE Nuclear Science Symposium (NSS) and Medical Imaging Conference (MIC) will be held in Honolulu, Hawaii October 28 to November 3. The venue is the Hilton Hawaiian Beach Resort & Spa that is situated on 22 oceanfront acres at the west end of Waikiki beach. It provides an ideal setting for our annual meeting with a great mix of ample conference space, first class accommodations, over 20 restaurants and lounges, several shopping arcades with over 90 shops, exotic wildlife and botanical gardens and classic Hawaiian hospitality. A trolley conveniently connects the hotel to other locations in Waikiki.

The Organizing Committee is planning on a joint conference that offers state-of-the-art and up-to-date scientific information through the regular oral and poster presentations. There will be a number of topical short courses before and refresher courses during the joint conference to review current topics of special interest. A commercial exhibition featuring the state-of-the-art products and services from a wide range of vendors will take place during the main part of the meeting.

A companion program will provide daily tours to the many attractions and activities in and around Honolulu and off Oahu island during the joint conference. The main attractions include Pearl Harbor, the Arizona Memorial, Diamond Head State Park, Hawaii's Bay Marine Preserve, Island Palace, the Bishop Museum and the National Memorial Cemetery of the Pacific (Punchbowl). Also, pre- and post-conference tours of the other Hawaiian islands, including the Big Island of Hawaii, Kauai and Maui are being planned.

We would like to extend a special invitation to our colleagues in the Asia-Pacific region to attend the joint conference. The meeting offers a great opportunity to connect with old friends and colleagues and to make new ones from different parts of the world and to exchange new knowledge and ideas in nuclear science and medical imaging.

On behalf of the organizing committee, I encourage you to make plans now to attend this exciting joint conference of the IEEE Nuclear and Plasma Sciences Society. I look forward to welcoming you to beautiful Honolulu, Hawaii.

Benjamin M. W. Tsui, General Chair
Johns Hopkins University
E-mail: nss-mic07@jhmi.edu
Phone: 1 443 287 4025