IEEE NUCLEAR SCIENCE SYMPOSIUM and MEDICAL IMAGING CONFERENCE

welcome

Hawaii 2007

October 27 - November 3

Honolulu, Hawaii, USA

Hilton Hawaiian Village

Beach Resort & Spa

IEEE

NUCLEAR & PLASMA SCIENCES SOCIETY

www.nss-mic.org/2007

The 2007 IEEE Nuclear Science Symposium (NSS) and Medical Imaging Conference (MIC)

is sponsored by:

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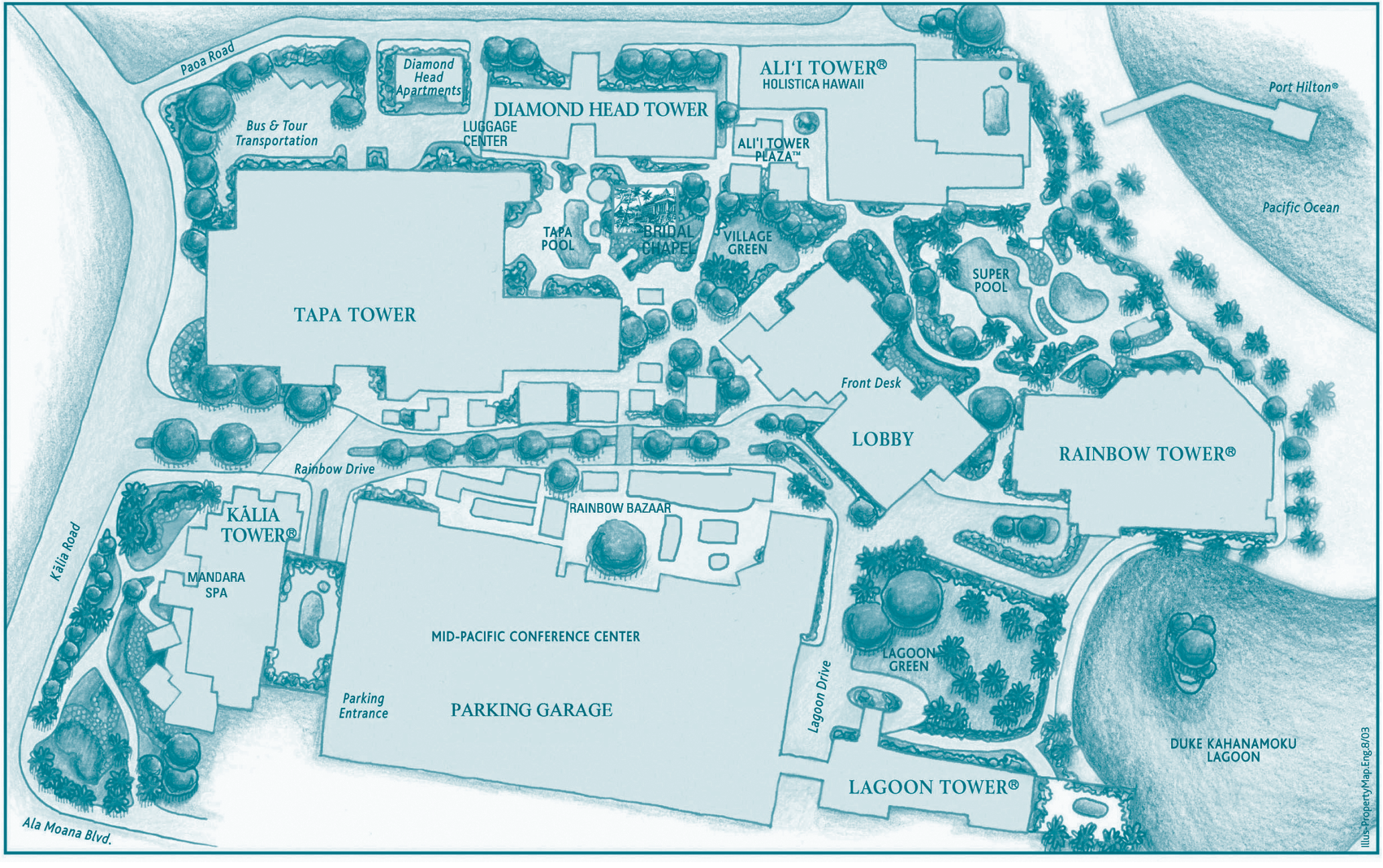

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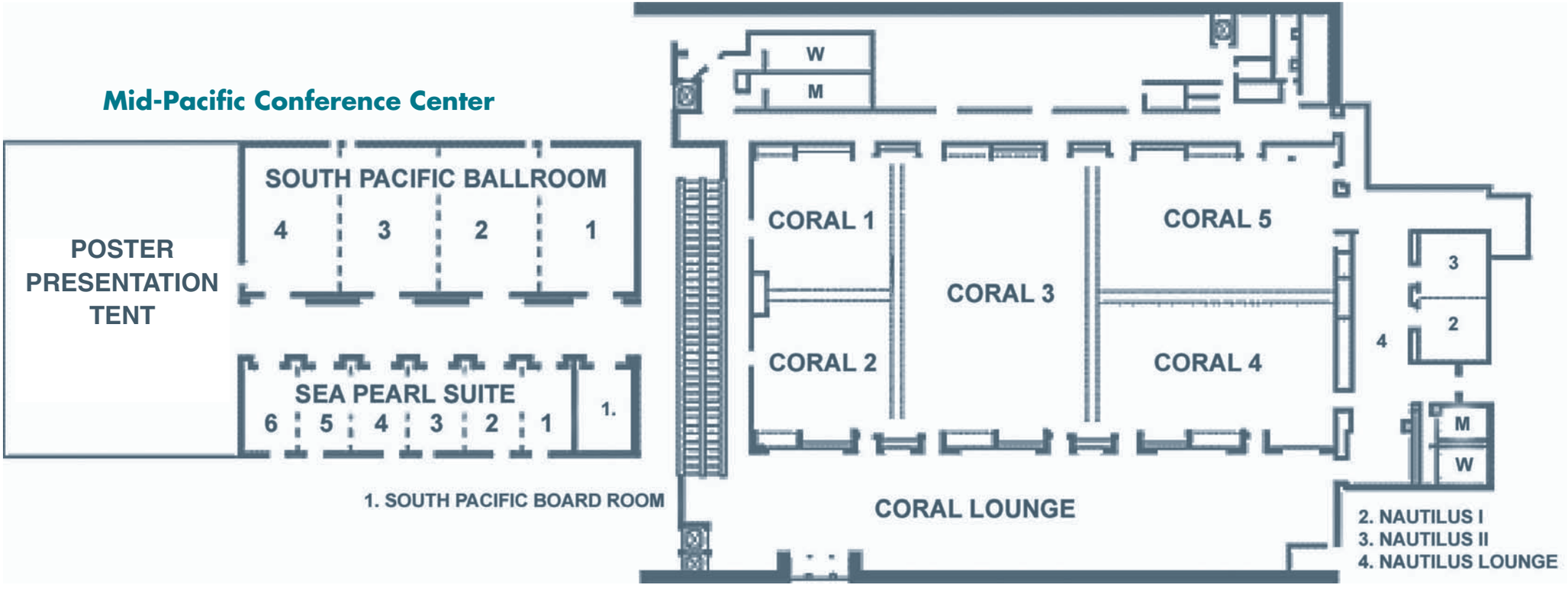
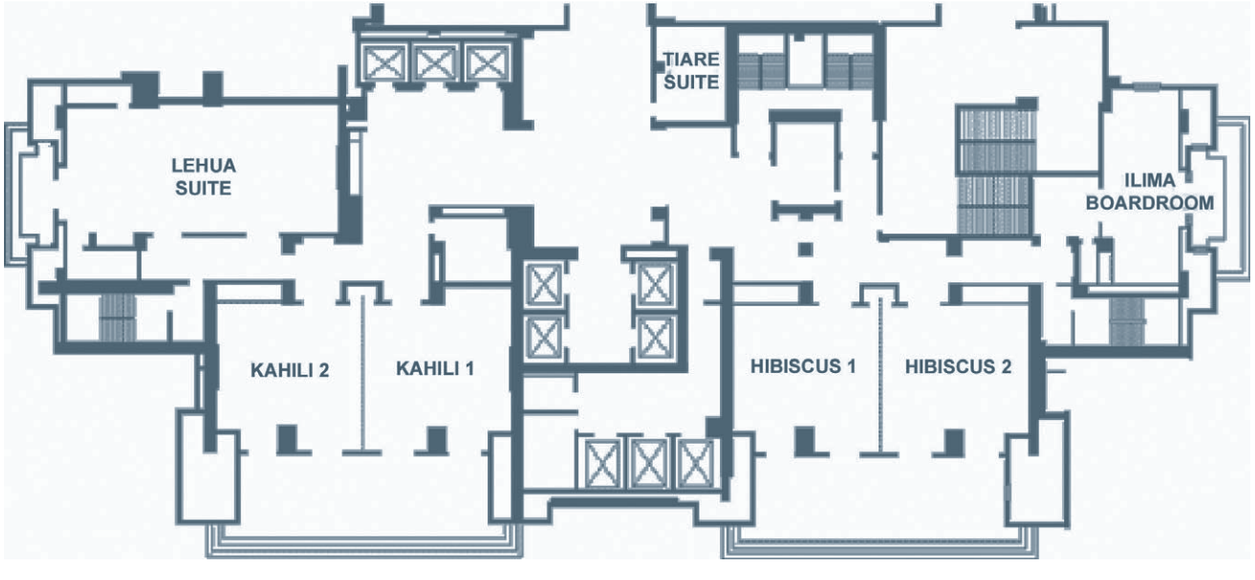
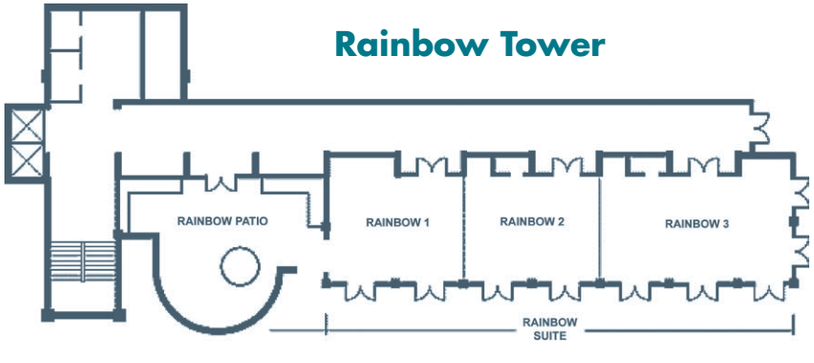




Kalia Tower

Rainbow Tower



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WELCOME FROM THE CONFERENCE CHAIRS

Dear Colleagues:

Aloha! Welcome to this year's IEEE Nuclear Science Symposium and Medical Imaging Conference (NSS-MIC), which will be held at the Hilton Hawaiian Village Beach Resort and Spa, Honolulu, Hawaii, USA. We chose Hawaii for its location as a crossroad between the US mainland and the booming Asian-Pacific region. A major objective of this joint conference is to attract and welcome new members from countries in this region to the IEEE Nuclear and Plasma Sciences Society (NPSS), and to encourage more active involvement of the members from this region in the NPSS. We hope the conference will provide a unique opportunity to promote and foster closer interactions and collaborations between colleagues in nuclear science and medical imaging from the Asian-Pacific countries and all over the world, to further enhance its truly international character. In that spirit, we are pleased to hold a special session organized by our Asian-Pacific members.

Benjamin M. W. Tsui
General Chair

Ronald J. Jaszczak
Deputy General Chair

The NSS-MIC joint conference offers an outstanding opportunity for scientists and engineers interested or actively working in the fields of nuclear science, radiation instrumentation, software, and their applications, to meet and discuss ideas with colleagues from around the world. The joint conference presents state-of-the-art and up-to-the-minute scientific information through the regular oral and poster presentations. There will be a number of the usual topical short courses held before the meeting, and new refresher courses held during the meeting, to review current topics of special interest. There will also be a selection of special-interest workshops held in conjunction with the main conference.

Our scientific program chairs have organized an outstanding program of oral and poster presentations. Because of the unexpectedly large number of submissions (~850 for NSS and ~650 for MIC, for a total of ~1,500), the space limitations, and other considerations, we had to make the difficult choice to increase the rejection rate and to allow for multiple simultaneous sessions. The program chairs have successfully addressed these complex scheduling issues, and we believe that you will discover the same positive conference experience that you have enjoyed in the past.

An excellent commercial exhibit, featuring state-of-art products and services from a wide range of vendors, will take place during the main part of the meeting. Also, to encourage and foster interaction with your companions on this visit to the beautiful island of Oahu, our companion program co-chairs have arranged a comprehensive tour program. We are confident that you and your companions will find the selected activities varied, enjoyable and memorable.

The 2007 IEEE NSS-MIC joint meeting offers you a scientifically enlightening and socially appealing experience. We look forward to seeing all of you in Honolulu.

Benjamin M. W. Tsui
General Chair

Ronald J. Jaszczak
Deputy General Chair

PROGRAM OUTLINE

Saturday, October 27

NSS Short Course, South Pacific I & II
08:30 -17:00 **Radiation Detection and Measurement**

NSS Short Course, South Pacific III & IV
08:30 -17:00 **Nuclear Science for Homeland Security**

Sunday, October 28

NSS Short Course, South Pacific I & II
09:00 -10:35 **Radiation Detection and Measurement**

NSS Short Course, South Pacific III & IV
08:30 -17:00 **Integrated Circuit Front Ends for Nuclear Pulse Processing**

Workshop on New Developments in the Micro-Pattern Gaseous Detectors, Coral V
09:00 -10:35 **MP1: Time Projection Chamber Readout**
11:00 -12:40 **MP2: Gaseous Photon Detectors and Neutron Detector Applications**
13:45 -15:05 **MP3: Pixel Readout for Micro-Pattern Gas Detectors**
15:30 -17:30 **MP4: New MPGD Techniques: Production Processes**
17:45 -19:25 **MP5: New MPGD Techniques: Applications**

Monday, October 29

NSS Plenary Sessions, Coral IV & V
08:15 -10:00 **N01: NSS Plenary I**
10:30 -12:00 **N02: NSS Plenary II**

NSS Luncheon, Tapa Ballroom
12:00 -14:00

NSS Oral Sessions, Coral I
14:00 -15:30 **N03: Analog and Digital Circuits I: Electronics for Gamma and X-Ray Detectors**
16:00 -18:00 **N07: Solid State Tracking Detectors I**

NSS Oral Sessions, Coral II
14:00 -15:30 **N04: Astrophysics and Space Instrumentation I: Experiments I**
16:00 -18:00 **N08: Data Acquisition and Analysis Systems I**

NSS Oral Sessions, Coral IV
14:00 -15:30 **N05: High Energy and Nuclear Physics Instrumentation I: Cherenkov and Scintillator Detectors**
16:00 -18:00 **N09: High Energy and Nuclear Physics Instrumentation II: Electromagnetic Calorimeters**

NSS Oral Sessions, Coral V
14:00 -15:30 **N06: Photodetectors and Radiation Imaging I**
16:00 -18:00 **N10: Instrumentation for Homeland Security I: Neutron Detection**

NSS Refresher Course, Coral I
19:00 -19:45 **Improving Gaseous Detectors: Why and How**

MIC Short Course, Hibiscus
08:30 -17:00 **Physics and Design of Detectors for PET and SPECT**

MIC Short Course, Kahili
08:30 -17:00 **Molecular Biology for Imaging Scientists**

MIC Short Course, Lehua Suite
08:30 -17:00 **Programming & Medical Appl. Using Graphics Hardware**

Tuesday, October 30

NSS Refresher Course, Coral I
07:30 -08:15 **Digital Design with FPGAs: Examples and Resource Saving Tips**

NSS Oral Sessions, Coral I
08:30 -10:00 **N11: Computing and Software for Experiments I: HEP Software**

NSS Oral Sessions, Coral II
08:30 -10:00 **N12: Gaseous Detectors I**

NSS Oral Sessions, Coral IV
08:30 -10:00 **N13: High Energy and Nuclear Physics Instrumentation III: Hadron Calorimeters**

13:30 -15:30 **N16: Solid State Tracking Detectors II**

16:00 -18:00 **N18: New Solid State Detectors I: Si Detectors and Arrays**

NSS Oral Sessions, Coral V
08:30 -10:00 **N14: Neutron Imaging and Radiography**

13:30 -15:30 **N17: Instrumentation for Homeland Security II: Gamma-Ray Detection**

16:00 -18:00 **N19: Instrumentation for Homeland Security III**

NSS Poster Session, South Pacific I - V and Poster Tennt
10:30 -12:00 **N15: NSS Poster I**

MIC Short Course, Hibiscus
08:30 -17:00 **Statistical Methods for Image Reconstruction**

MIC Short Course, Kahili
08:30 -17:00 **Dynamic Imaging in Emission Computed Tomography**

MIC Short Course, Lehua Suite
08:30 -17:00 **Image Quality**

NSS-MIC Joint Sessions, Coral I & II
13:30 -15:30 **NM1: NSS-MIC Joint I**

16:00 -18:00 **NM2: NSS-MIC Joint II**

Industrial Technical Session #1, Sea Pearl Suite 4
13:00 -16:00

Asian-Pacific Program, Lehua Suite
17:30 -19:00 **Asian-Pacific Program 1**

Exhibitors Reception, Coral III
19:00 -21:00

Wednesday, October 31

NSS Refresher Course, Coral I
07:30 -08:20 **GEANT 4: A Simulation Tool for Multi-disciplinary Applications**

NSS Oral Sessions, Coral I
08:30 -10:00 **N20: Solid State Tracking Detectors III**

13:30 -15:30 **N25: Data Acquisition and Analysis Systems II**

16:00 -18:00 **N29: Analog and Digital Circuits II: Electronics for High Energy Physics Detectors**

NSS Oral Sessions, Coral II
08:30 -10:00 **N21: Gaseous Detectors II**

13:30 -15:30 **N26: High Energy and Nuclear Physics Instrumentation IV: Pixel Detectors**

16:00 -18:00 **N30: High Energy and Nuclear Physics Instrumentation V: Muon and Tracking Detectors**

NSS Oral Sessions, Hibiscus
08:30 -10:00 **N22: Astrophysics and Space Instrumentation II: Electronics and DAQ**

13:30 -15:30 **N27: New Solid State Detectors II: CdTe and CdZnTe Materials and Detectors**

16:00 -18:00 **N31: New Solid State Detectors III: Alternative Solid State Devices**

NSS Oral Sessions, Kahili
08:30 -10:00 **N23: Computing and Software for Experiments II: Grid Computing**

13:30 -15:30 **N28: Gaseous Detectors III**

16:00 -18:00 **N32: Computing and Software for Experiments III: Core Software Tools**

NSS Poster Session, South Pacific I - V and Poster Tent
10:30 -12:00 **N24: NSS Poster II**

MIC Refresher Course, Coral IV & V
07:30 -08:20 **Advances in X-ray Computed Tomography**

MIC Plenary Sessions, Coral IV & V
08:30 -10:00 **M01: MIC Plenary I**

10:30 -12:00 **M02: MIC Plenary II**

MIC Oral Sessions, Coral IV
13:30 -15:30 **M03: Instrumentation: Detectors with Depth of Interaction Capability**

16:00 -18:00 **M05: Instrumentation: Detectors**

MIC Oral Sessions, Coral V
13:30 -15:30 **M04: Reconstruction: X-ray CT**

16:00 -18:00 **M06: Reconstruction: Motion Effects and Compensation**

Industrial Technical Session #2, Sea Pearl Suite 4
10:00 -17:00

Special Session on Technology Transfer, Sea Pearl Suite 5 & 6
17:00 -19:00

Conference Reception
19:00 -21:00

Thursday, November 1

NSS Oral Sessions, Coral I

08:30 -10:00 **N33: Photodetectors and Radiation Imaging II**

10:30 -12:00 **N37: Scintillators and Scintillation Detectors I: Detector Principles**

13:30 -15:30 **N41: Photodetectors and Radiation Imaging III: SiPM**

16:00 -18:00 **N45: Scintillators and Scintillation Detectors II: New Materials**

NSS Oral Sessions, Coral II

08:30 -10:00 **N34: Nuclear Measurements and Monitoring Techniques I**

10:30 -12:00 **N38: Nuclear Measurements and Monitoring Techniques II**

13:30 -15:30 **N42: High Energy and Nuclear Physics Instrumentation VI: Neutrino and Dark Matter Detectors**

16:00 -18:00 **N46: High Energy and Nuclear Physics Instrumentation VII: Nuclear Physics Instrumentation**

NSS Oral Sessions, Hibiscus

08:30 -10:00 **N35: Trigger and Front-End Systems I**

10:30 -12:00 **N39: Environmental Health and Safety Instrumentation**

13:30 -15:30 **N43: Trigger and Front-End Systems II**

16:00 -18:00 **N47: Astrophysics and Space Instrumentation III: Sensors**

NSS Oral Sessions, Kahili

08:30 -10:00 **N36: Computing and Software for Experiments IV: Montecarlo Simulation I**

10:30 -12:00 **N40: Computing and Software for Experiments V: Montecarlo Simulation II**

13:30 -15:30 **N44: Radiation Damage Effects I**

16:00 -18:00 **N48: Radiation Damage Effects II**

MIC Refresher Course, Coral IV

07:30 -08:20 **Advances in Photodetectors for Medical Imaging Applications**

MIC Oral Sessions, Coral IV

08:30 -10:00 **M07: X-Ray CT Instrumentation and Methods**

10:30 -12:00 **M09: X-Ray Imaging Instrumentation and Methods**

13:30 -15:30 **M11: Small Animal Imaging and Imagers: MicroSPECT**

MIC Oral Sessions, Coral V

08:30 -10:00 **M08: Reconstruction: PET Time-of-Flight and Attenuation Compensation**

10:30 -12:00 **M10: Reconstruction: Iterative Methods**

13:30 -15:30 **M12: Reconstruction: PET Algorithms and Evaluation**

MIC Poster Sessions, South Pacific I - V and Poster Tent

16:00 -18:00 **M13: MIC Poster I**

Industrial Technical Session #3, Sea Pearl Suite 4

10:00 -12:00

Asian-Pacific Program, Lehua Suite

17:00 -19:00 **Asian-Pacific Program 2**

Radiation Instrumentation Technical Committee Annual Open Meeting, Sea Pearl Suite 6

16:00 - 17:00

Friday, November 2

NSS Oral Sessions, Coral I

08:30 -10:00 **N49: Scintillators and Scintillation Detectors III: Properties**

10:30 -12:00 **N53: Photodetectors and Radiation Imaging IV**

13:30 -15:30 **N57: Scintillators and Scintillation Detectors IV: Fundamental Mechanisms**

NSS Oral Sessions, Coral II

08:30 -10:00 **N50: Instrumentation for Medical and Biological Research**

10:30 -12:00 **N54: Analog and Digital Circuits III: Electronics for Space-borne and Astronomical Detectors**

13:30 -15:30 **N58: Analog and Digital Circuits IV: Readout Circuits and Techniques**

NSS Oral Sessions, Hibiscus

08:30 -10:00 **N51: Accelerators and Beam Line Instrumentation**

10:30 -12:00 **N55: Synchrotron Radiation Instrumentation**

13:30 -15:30 **N59: Astrophysics and Space Instrumentation IV: Experiments II**

NSS Oral Sessions, Kahili

08:30 -10:00 **N52: Computing and Software for Experiments VI: Astroparticle and Space Science Software**

10:30 -12:00 **N56: Computing and Software for Experiments VII: Software for Detectors**

13:30 -15:30 **N60: Computing and Software for Experiments VIII: Medical Physics Software**

MIC Refresher Course, Coral IV

07:30 -08:20 **Advances in Scinitillators for Medical Imaging Applications**

MIC Oral Sessions, Coral IV

08:30 -10:00 **M14: Instrumentation: Applications of Solid State Photodetectors**

10:30 -12:00 **M16: ECT/MR Imagers and Imaging**

MIC Oral Sessions, Coral V

08:30 -10:00 **M15: Task Based Image Optimization and Evaluation**

10:30 -12:00 **M17: Dynamic Imaging**

MIC Poster Sessions, South Pacific I - V and Poster Tent

13:30 -15:30 **M18: MIC Poster II**

16:00 -18:00 **M19: MIC Poster III**

Workshop on Innovative Techniques for Hadrontherapy, Sea Pearl Suite
08:30 -16:45

Asian-Pacific Program, Lehua Suite
17:00 -18:30 **Asian-Pacific Program 3**

MIC Dinner
19:00 -21:00

Saturday, November 3

MIC Refresher Course, Coral IV
07:30 -08:20 **Advances in Analytic Tomographic Reconstruction**

MIC Oral Sessions, Coral IV
08:30 -10:00 **M20: Instrumentation: Application Specific Imagers**

10:30 -12:00 **M22: Instrumentation: System Design and Evaluation**

13:30 -15:30 **M24: Small Animal Imaging and Imagers: MicroPET**

MIC Oral Sessions, Coral V
08:30 -10:00 **M21: Reconstruction: Analytical and Theory**

10:30 -12:00 **M23: Reconstruction: Bayesian Methods**

13:30 -15:30 **M25: Reconstruction: SPECT**

MIC Poster Sessions, South Pacific I - V and Poster Tent
16:00 -18:00 **M26: MIC Poster IV**

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REGISTRATION INFORMATION

Christina G. Sanders
Registration Chair

Pre-registration is advisable to save time and money, and to ensure your registration package will be available for collection when you arrive. The preferred registration method is through the conference web site, as it places your details directly into our database, and where you can pay by Visa, MasterCard, American Express or Discover through our secure web server. 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), with a check, money order or credit card information. Checks or money orders must be drawn on or paid through a US bank 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 October 12, 2007 to qualify for reduced registration, lunch, dinner and short course fees.

Electronic Registration (preferred):
Click on the Conference Registration link at http://www.nss-mic.org/2007 and follow the instructions.

By Mail or Fax:
Send form and payment (made out to IEEE 2007 NSS/MIC) to:

IEEE 2007 NSS/MIC
c/o TDMG Meetings Dept.
110 Painters Mill Road, Suite 36
Owings Mills, MD 21117 USA

Tel: 1 800 437 4589 (US and Canada only)
1 410 363 1300 (08:30-17:30 ET)

Fax: 1 410 559 0160 (attn: IEEE 2007 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 2007 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 Coral Lounge.

Friday, October 26	17:00–20:00
Saturday, October 27	07:00–09:30
	15:30–18:30
Sunday, October 28	07:00–09:30
	15:30–18:30
Monday, October 29	07:30–17:00
Tuesday, October 30	07:30–20:00
Wednesday, October 31	07:30–18:00
Thursday, November 1	07:30–17:00
Friday, November 2	07:30–12:00
	15:00–17:00
Saturday, November 3	07:30–09:00

Symposium Registration Fees

	By Oct. 12	On-Site
IEEE Member[1]	$500	$650
Non-IEEE Member	$650	$750
IEEE Student[1,2]	$200	$300
Non-IEEE Student[2]	$300	$400
Retired/Unemployed IEEE Member[1]	$100	$150
One Day Only[3]	$200	$200
IEEE Life Member[1]	No charge	
Continuing Education Program Only	No charge	
Exhibits Only	No charge	

[1] IEEE member number required at registration.
[2] Proof of student status required at registration.
[3] Valid for one occurrence only – if more than one day, full registration will be charged.

Luncheon/Dinner Fees

	By Oct. 12	On-Site
NSS Luncheon (Mon., Oct. 29)	$40	$50
MIC Dinner (Fri., Nov. 2)	$70	$85

Cancellation and Refund Policy

You are not officially registered until we receive your completed registration form and payment. If your payment is not received by the October 12 deadline, your registration will be cancelled.

In order to process refunds, cancellations must be received in writing by October 19, 2007 (less a $25 cancellation fee). No refunds will be issued thereafter.

Hotel Information

The conference is being held at the Hilton Hawaiian Village® Beach Resort & Spa in Honolulu, Hawaii, USA. The hotel offers a mix of exceptional resort accommodations and classic Hawaiian hospitality, all nestled on 22 beachfront acres. It fronts the widest stretch of white sand beach in Waikiki. The property includes a serene beachfront lagoon, lush tropical gardens with exotic wildlife and cascading waterfalls. From the hotel, you can see majestic views of Diamond Head and stunning seaside sunsets. On the hotel premises you will find 90 shops and boutiques and a diverse selection of international restaurants. The resort's beachfront Super Pool is the largest on the island, and on Friday night it becomes the stage for a celebration of Hawaiian culture and entertainment, ending with a spectacular Fireworks show!

For reservation, call Call 1-800-HILTONS or call hotel direct at (808) 949-4321 (mention conference name: IEEE Nuclear Science Symposium and Medical Imaging Conference and our conference attendee code AAE). The conference room rate is $173/day for the Garden View Category, $183/day for the Partial Ocean View Category and $199/day for the Ocean View Category. There is a $45.00 per person charge for each third and fourth adult in the room. Children 18 years of age and under, when sharing the room with a parent, will not be charged when utilizing existing bedding. A limited number of rooms are available at a government rate of $140 per day. Please use group code AAG while making reservation. Government ID is required at check in. These room rates are valid from October 25 through November 4, 2007. They are exclusive of applicable sales/

room tax, currently 11.41%, subject to change at any time. The quoted rates are guaranteed and no additional fees will be added to the guests' room bills unless personally authorized by the guest.

The reservation cut-off date is Tuesday, September 25, 2007. Reservations received after this date may be accepted by the Hotel on a space available basis at the conference rates.

The hotel address is:
2005 Kalia Road
Honolulu, Hawaii 96815
Tel: (808) 949-4321
Fax: (808) 951-5458

Please check conference website for other hotel accommadations.

IEEE Membership

An IEEE membership desk will be located close to the Registration Desk. Staff will be available to answer questions concerning the benefits of membership. By joining during the conference, non-member 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 close to the Registration Desk.

Speakers' Preparation Room (The Nautilus Suite)

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

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

The presentations can be in Microsoft PowerPoint™ or Adobe PDF format. Both Macintosh and Windows versions are supported and the computers will be loaded with the same versions of software as used in the presentation rooms.

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

Computer Access

The Nautilus Suite will be setup with computers and printers and technical support. The facility is intended for use by all attendees to carry out final editing of their presentations and papers and to retrieve e-mail. Microsoft Office 2003 will be loaded on all computers. In addition, wireless hotspots will be available in certain areas.

Web Site

Information for all up-to-date conference programs (NSS, MIC and Special Focus Workshops), short courses, and companion tours can be found at: http:// www.nss-mic.org/2007.

Parking

Hilton Hawaiian Village provides a six-level parking garage, conveniently accessible from all towers at the resort. Self-parking and valet parking are both available.

Hotel Guest Rates

- Daily Self-Parking Charge: $20.00*
- Validated Self-Parking Charge: $6.00* (For event functions only. Not valid for overnight function parking.)
- Valet Parking Charge: $25.00* ($1.00 Gratuity will be added)
- Validated Valet Parking Charge: $11.75* (For event functions only. Not valid for overnight function parking. $1.25 Gratuity will be added)

Maximum per Day $70.00 Lost Ticket $70.00

** Subject to Change*

Smoking Policy

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

Transportation

For air travel, the destination of the conference is the Honolulu International Airport (HNL), Honolulu, Hawaii, USA. The conference hotel, the Hilton Hawaiian Village® Beach Resort & Spa, is located in Waikiki, Honolulu, Hawaii. It can be reached by the following means.

By Car

From Honolulu International Airport, take H-1 Freeway East, to Honolulu. Once on the freeway, look for Waikiki directional signs and stay in the right lane. You will exit onto Nimitz Highway. Stay on Nimitz Highway, which will change into Ala Moana Blvd., for about 15 minutes. You will pass Ala Moana Shopping Center on your left, Ala Moana Beach Park on your right, go over a short bridge, then watch for the Hilton Hawaiian Village® sign on your right in about 2 blocks. Stay in the right lane. Turn right on Kalia Road (right after the sign - you'll see 3 bronze statues to your right as you round the corner). Go 200 feet, then turn right into our driveway.

By Airport Shuttle

From the airport. There is a shuttle, the Waikiki Express, that can take you from the airport to any hotel in Waikiki. It costs $9.00 one-way and $15.00 round trip. The shuttle service operates 24 hours. You can get more information at: http://www.hawaii.gov/dot/airports/hnl/hnl_ground_trans.htm

By Taxi

AMPCO Express (808-861-8294) is the managing contractor of the Airport's Open Taxi System at Honolulu International Airport. The state established this Airport Open Taxi Management system for taxi drivers from all taxi companies to be able to pick-up at the airport. Taxi Service is available on the center median fronting the terminal baggage claim areas. See the taxi dispatchers (green shirts with black lettering, and the wording "TAXI DISPATCHER") for service. The fare from the airport to Waikiki during non-rush hour periods is approximately $35.00-$40.00.

INDUSTRIAL PROGRAM

The IEEE NSS/MIC Industrial Program provides our conference attendees with ample opportunities to meet the different exhibitors onTuesday, Wednesday, and Thursday, 30 October to 1 November. The opening hours will follow the hours of the conference and will close from 13:00 to 14:00 for lunch. More than 40 companies from all around the world will be present to meet conference attendees and to demonstrate their latest products. These represent state-of-the-art in detectors, pulse processing instrumentation, imaging, software, and other associated areas. The exhibition area is located in the Coral Ballroom 3. This is between many of the sessions and the posters.

Ron Keyser
Exhibit Chair

The three-day exhibition is complemented by a series of seminars and technical presentations on Tuesday, Wednesday, and Thursday in Sea Pearl Suite #4, which will allow an in-depth exchange of information between attendees and exhibitors on existing products, future developments and needs. Sea Pearl Suite #4 is located above the Registration Desk in the area of the posters. 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 30, 12:00 – 21:00, with the Exhibitor Reception starting at 19:00

Wednesday, October 31, 09:00 – 18:00

Thursday, November 1, 09:00 – 16:00

Closed from 13:00 to 14:00 for lunch on Wednesday and Thursday.

A list of exhibitors as of August 3 is included at the end of this booklet. Check our website: http://www.nss-mic.org/2007 for up-to-date information. An Exhibitor Program brochure will be available at the meeting with full details of the exhibitors and the seminar program. Companies interested in participating should contact Ronald Keyser, Exhibits Chairman, at ronkeyser@ieee.org.

EXHIBITOR TECHNICAL SESSIONS

Room: Sea Pearl Suite #4
Tuesday, October 30, 2007

13:00 **Gamma Medica-Ideas**
To be determined

14:00 **Berkeley Nucleonics**
To be determined

15:00 **Orbotech Medical Solutions**
Solid State Room Temp CZT Pixilated detectors with integrated electronics

Wednesday, October 31, 2007

10:00 **Saint Gobain**
Recent advances of their scintillator BrilLanCeTM380 [LaBr3(Ce)] products

11:00 **ORTEC**
To be determined

12:00 **Hamamatsu**
To be determined

13:00 **Fibercryst**
High density single crystal fibers for Nuclear Science Instrumentation

14:00 **Aguila Technologies, Inc.**
Results of the Phase II SBIR program and the path to commercialization of the Directional Gamma Auto Spectrometer (DGAS).

15:00 **SensL Technologies**
Silicon Photomultipliers

16:00 **Integrated Detector Systems**
Results of cold dark matter detector experiment

Thursday, November 1, 2007

10:00 **SII NanoTechnology USA Inc.**
SDD (Silicon Drift Detector) for TEM, x-ray Mapping, and TXRF applications.

11:00 **SAES Getters S.p.A.**
Growth and Manufacturing of Large Size Ce:LuAP and Ce:LuYAP Crystals

PUBLICATIONS

Conference Record

The *Conference Record (CR)* is the official repository for manuscripts presented at the 2007 Nuclear Science Symposium and Medical Imaging Conference and will be published on CD-ROM, complimentary to all registered conference attendees. All CR manuscripts will be made available online at http://www.nss-mic.org/2007/ConferenceRecord before the CD-ROMs are mailed out.

The approved word processor templates, available in PDF, MS Word and LaTeX format can be downloaded from http://www.nss-mic.org/2007/publications/templates.htm.

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

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

- **Produce IEEE Xplore-compatible PDF file using PDF eXpress**

  The IEEE PDF eXpress service will be available for the NSS-MIC authors between Oct. 1 and Nov. 16, 2007. You need to enter nssmic07 as the conference ID, and set up an account on their system. You can upload your word processor file to the web site and have it converted to PDF. Shortly after your upload, an electronic proof in PDF format will be generated and emailed to you. You need to retrieve this IEEE Xplore-compatible file either from the PDF eXpress web site or from your email. You can also use this service to verify your own PDF file for Xplore-compatibility. Detailed instructions on the PDF eXpress service are available at http://www.nss-mic.org/2007/publications/PDFeXpress.html. PDF eXpress is NOT the final destination for your manuscript. You must submit your manuscript to the Guest Editor following the next step.

- **Submit the Xplore-compatible PDF file and the IEEE Copyright Form**

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

The deadline for the Conference Record manuscript submission is Nov. 16.

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

1. Paper (oral or poster) has been presented at the conference;
2. Manuscript conforms to the page layout requirements specified in the online templates;

3. PDF file is IEEE Xplore-compatible;
4. PDF file and the electronic copyright form are received no later than the Nov. 16 deadline;

For further information regarding the Conference Record, contact:

Guest Editor for the Conference Record

Bo Yu
Guest Editor

Bo Yu
Brookhaven National Laboratory
Phone: 1 631 344 5184
E-mail: yu@bnl.gov
Transactions on Nuclear Science (TNS)

At the conference, the Guest Editor will be available during the coffee and lunch break periods on Thursday and Friday in the Tiare Suite.

Transactions on Nuclear Science (TNS)

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

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

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Comparison of Requirements

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

	Conference Record (CR)	**Transactions on Nuclear Science (TNS)**
Page layout	Same as TNS, but without running headers and footers	Standard IEEE Transactions and Journal format
Copyright form	Required, electronic submission	Required, electronic submission
Deadline	Nov. 16, 2006	No
Peer reviewed	No	Yes
Color figures	Free and encouraged	At author's expense
Page Limit	8 (suggested)	8 (suggested)
Availability	Online immediately, CD out at end of 2007 to all attendees	Published throughout the year
Submission Site	http://www.nss-mic.org/2007/submissions	http://tns-ieee.manuscriptcentral.com

Transactions on Medical Imaging (TMI)

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

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

TMI Editor in Chief

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3508 GA Utrecht, The Netherlands

COMPANION PROGRAM

We welcome you to the Hawaiian Islands – some of the youngest geological formations in the world and the youngest state of the union. It is the birthplace of surfing and the hula, and former seat of a royal kingdom. Some say that Hawaii's most unique feature is its Aloha Spirit - the warmth of the people of Hawaii that wonderfully complements the islands' perfect temperatures.

Nancy Jaszczak
Program Co-chair

We hope that you will experience the 'Aloha Spirit' of Hawaii through our Companion Program. You will have an opportunity to explore the island of Oahu and experience its beauty and culture on the daily tours which are scheduled Sunday, October 28 through Saturday, November 3. Morning tour participants are invited to meet in the Rainbow Suite #1 for a continental breakfast prior to their tour. All tour participants will gather at the Bus Area of the Hilton Hawaiian Village where tour buses will depart and return at the times indicated for your tour.

Kathy Gullberg
Program Co-chair

Interested in a tour but our schedule does not fit yours? Stop by the Companion Program desk in the registration hall from 9 AM to 1 PM Saturday through Friday and see what can be arranged for you. We know that the meeting schedule is busy, so we will try to accommodate you. We hope your visit will be enhanced by the opportunity to experience the beauty of Hawaii through these activities.

Mahalo,

Your Companion Program Co-chairs:
Nancy Jaszczak (njj@spect.com) and
Kathy Gullberg (kathy.gullberg@gmail.com)

Tour Name	Date	Fee
Grand Circle Island Tour	Sunday, October 28	$52
Pearl Harbor/City Tour	Monday, October 29	$30
Kayak Adventure Tour	Tuesday, October 30	$72
Guided Kayak Tour	Tuesday, October 30	$114
Snorkel Adventure	Tuesday, October 30	$57
Hawaiian Waterfall Hiking	Wednesday, October 31	$44
Manoa Waterfall Hiking	Thursday, November 1	$44
Pearl Harbor/City Tour	Thursday, November 1	$30
Snorkel Adventure	Friday, November 2	$57
Waikele Outlet Shops	Friday, November 2	$25
Polynesian Cultural Center	Saturday, November 3	$74

DAILY TOURS ON OAHU

Tour # 1
Grand Circle Island Tour

Sunday, October 28, 7:15 am – 3:15pm
$52 per person

This deluxe tour of Oahu leaves from the Hilton Hawaiian Village and includes all of the "must see" highlights on a 120 mile trip around the island. On your journey you will see "the best of the best" of Oahu. From the lush, green mountains to the clear blue waters, across the pineapple fields, and beyond. There's no better way to experience the diversity of this beautiful island. The sights are accompanied by live narration from our friendly tour guides, so you'll get interesting cultural and historical information along the way - and don't be surprised if you find yourself laughing and singing songs! This tour is anything but boring. You'll go to the 1,186-foot Pali Lookout, where King Kamehameha the Great fought his last battle, for a view that will blow you away. Or it may feel like it anyway, with robust winds that often sweep through the mountain pass, so hold on to your hat! World-famous North Shore surfing beaches are also on the tour. You'll also catch sight of the familiar profile of the 750-foot Diamond Head volcano that has become a symbol for Hawaii throughout the years.

We will stop at Diamond Head lookout, Pali Lookout, Halona Point (Blow Hole), Hanauma Bay, and Byodo-In Temple. We will see the Helemano Plantation where we will stop for a no- host lunch and return to the Hilton Hawaiian Village by 3:15 PM.

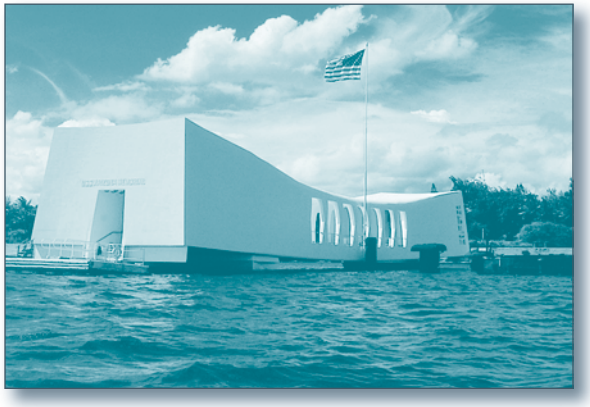
Tours #2 and #10
Pearl Harbor/Arizona Memorial/City Tour

Monday, October 29, 7:00 am – 11:15am and/or
Thursday, November 1, 7:00 am – 11:15am
$30 per person

A special look at Honolulu's history…View Pearl Harbor and board the USS Arizona Memorial. A "must-do" activity for anyone visiting Oahu, a visit to the Arizona Memorial in Pearl Harbor is one not to be forgotten. The memorial honors those whose lives were taken on December 7, 1941, when the Japanese attacked the U.S. Pacific Fleet. At the USS Arizona Memorial, you'll see footage of the Pearl Harbor attack and pay your respects to the hundreds of American servicemen entombed in the battleship below.

This tour includes a 23-minute documentary film, short boat trip and self-exploration of the USS Arizona Memorial. The Museum, museum shops and many self-guided exhibits are located throughout the Visitor Center and park Grounds. Memorial tour tickets and admission to the Visitor Center are free. Tickets are based on a first-come first-served basis (prior reservations are not taken), so our tour will leave the Hilton Hawaiian Village at 7:00 am. Due to increased security measures, no purse, backpack, fanny pack, diaper bag, camera bag, luggage or other items which offer concealment are allowed in the Visitor Center or on the Memorial. These can be secured on the tour bus. From Pearl Harbor, we will head to the rolling green hills of Punchbowl National Cemetery. Bursting with flowers, and as somber as it is beautiful, this famous site is where those who died in the Pacific naval war are buried.

To end on a lighter note, we will head downtown for a fully narrated tour of Honolulu's city highlights. We will see Iolani Palace (the home of Hawaiian nobility and royal heritage), Kawaiahao Church and Mission Houses, King Kamehameha Statue (a state landmark), State Capitol, and Washington Place.



Tours #3 and #4
Kayak Adventure Tour*

(This tour is limited to 20 people per tour)

Tuesday, October 30, 8:00 am – 4:00pm or
11:00am - 6:00pm
$72 per person

For those who want to get away from the hustle and bustle of Honolulu, we offer two departure times for our self-guided Kayak Adventure. Your adventure begins when you're picked up in a comfortable van for your trip to Kailua. You will make a quick stop to sign waivers and take part in a safety briefing with weather assessment, paddling map, and orientation of the paddling area. Next, you'll be escorted to Kailua Beach Park by an experienced staff member who will help unload your kayaks and give you a paddling lesson.

From there you will depart on a self-guided tour of the beautiful reef protected bay to enjoy your day of adventure in calm turquoise waters filled with endangered sea turtles and sea birds. After lunch on one of three islands (bird sanctuaries), you can go for a gentle walk to a secret cove, or if you feel adventurous, go kayak surfing! Then land your kayak on the pristine white sand beaches for swimming, hiking, snorkeling, and sunning. A lunch will be provided in a soft cooler and a dry-bag can be rented to bring a camera or other items. Upon your return to the Kailua Beach Park you will be picked up in the same location you were dropped off.

*Lunch includes a French-style sub-sandwich, chips, and a 20 oz drink. Please designate sandwich choice (Turkey, Ham, Tuna, or Tofu) on your registration form.

Tours #5 and #6
Guided Kayak Adventure Tour*

(This tour is limited to 20 people per tour)

Tuesday, October 30, 8:00 am – 4:00pm or
11:00 am – 6:00 pm
$114 per person

This paddling tour takes place on calm reef protected waters on Kailua Bay, Oahu. A trained Naturalist will guide you along this beautiful coastal area to several close offshore islets. Along the way, you will see Hawaii's most important resident, the Hawaiian Green Sea Turtle. Your guide, well-versed in Hawaiian history, marine life, and the island's geological formations, will tell stories and impart the kind of thought provoking information about Hawaii that visitors love.

You will be landing your safe and stable sit-on-top kayak on one of the two world famous beaches (Kailua or Lanikai) for some snorkeling with tropical fish and turtles. Your guide is also a master paddler and instructor so you will learn the fun and safe way to paddle your kayak. If you choose to, your guide will even teach you how to catch a few waves.

You'll also stop at several of close offshore islands for swimming and/or relaxing on white sandy beaches while sea and shore birds flock overhead and nest near-by. The windward coast of Oahu has over 12 varieties of seabirds inhabiting this flourishing coastline. While on the island you will gently trek to natural pools or a breath-taking cove. This will be a day enjoyed by all.

This package includes snorkeling gear (mask, snorkel, and fins), dry bag, padded backrest for your kayak, and round trip transportation from the Hilton Hawaiian Village.

*Lunch includes a French-style sub-sandwich, chips, and a 20 oz drink. Please designate sandwich choice (Turkey, Ham, Tuna, or Tofu) on your registration form.

Tours #7 and #13
Snorkel Adventure*

(This tour is limited to 50 people per tour)

Tuesday, October 30, 8:00 am – 4:00pm and/or
Friday, November 2, 8:00 am – 4:00pm
$57 per person

We will travel to the other side of the island and spend a day enjoying beautiful Kailua Beach. Go body boarding and snorkeling in an area where Sea Turtles abound. Tour includes snorkeling gear (mask, snorkel and fins), life jacket, Boogie Board, picnic lunch, and round trip transportation from Hilton Hawaiian Village.

*Lunch includes a French-style sub-sandwich, chips, and a 20 oz drink. Please designate sandwich choice (Turkey, Ham, Tuna, or Tofu) on your registration form.

Tours #8 and #9
Hawaiian Waterfall Hiking Adventure

(This tour is limited to 36 people per tour)

Wednesday, October 31, 8:00 am – 1:00pm or 2:00pm–7:00pm
$44 per person

Observe Hawaii's rainforest plants and birds as we walk into the lush Koolau mountains that rise above Kaneohe. Visit a secluded waterfall that spills into a rainforest pool. On this educational and fun hike you will learn about the Hawaiian's use of various plant species and the area's interesting environmental history. Excellent photographic opportunities! Please note that the trail can be sometimes wet and slippery. We will walk a distance of two miles with an elevation gain of 500 feet.

Observe Hawaii's spectacular rainforest plants and see several beautifully feathered tropical bird species. Excellent photo opportunities. Hike on Likeke Trail (trail length: 2 miles), visit a beautiful, secluded, cascading waterfall, explore a tropical jungle, and marvel at the majestic "Pali Cliffs," and see the Windward Coast from the Pali Look Out. This is a moderate hike involving some physical activity such as uneven/unpaved surfaces, climbing stairs, and mildly steep terrain. A nutritious snack and bottle of water is included.

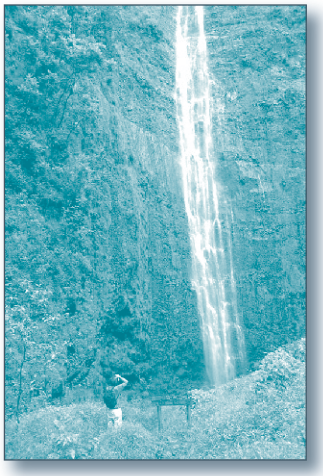
Tours #11 and #12
Manoa Waterfall Hiking Adventure

(This tour is limited to 12 people per tour)

Thursday, November 1, 8:00 am – 1:00pm or 2:00pm – 7:00pm
$44 per person

We will see Hawaii's lush rainforests, giant ferns, and cascading tropical waterfalls. This trail, a hidden treasure that was used by Spielberg while filming "The Lost World", leads to the tallest accessible waterfall on Oahu, deep within a prehistoric landscape.

This moderate two hour hike involves some physical activity such as uneven/unpaved surfaces, climbing stairs, and mildly steep terrain. A snack and a nutritious drink will be included in the tour.



Tour #14
Waikele Outlet Shopping Trip

Friday, November 2, 9:30am – 3:00pm
$25 per person

The outlet stores are located at Waikele Premium Outlets, where you'll find savings of 25% - 65% every day on items from an impressive collection of 50 designer and name-brand stores such as Banana Republic, Brooks Brothers, Coach, Polo Ralph Lauren, Armani Exchange, Adidas, Guess, LeSportSac, MaxMara, Off 5th Saks Fifth Avenue, and Tommy Hilfiger, to name a few. Waikele Premium Outlets is the only outlet center in the state of Hawaii.

Tour # 15
Polynesian Cultural Center

Saturday, November 3, 10:00am – 10:30pm
$74 per person

Hawaii's Polynesian Cultural Center, located about one hour's scenic drive from Waikiki, is the top paid Hawaiian attraction for a reason. The Polynesian native villages give visitors the rare chance to participate in the daily adventures of Hawaiian and other South Pacific cultures.

You'll be able to explore the seven island villages at your own pace. Be sure to make some time to enjoy the IMAX Theater, take a canoe tour and/or take the Laie tram tour. Don't miss the Pageant of Long Canoes show.

The highlight of your visit is sure to be "Horizons", the largest Polynesian revue of song and dance in the world, featuring over 100 native performers from all corners of the Pacific. Dressed in traditional native costume, these Polynesians share their history, traditions and spirit through song and dance the same way their ancestors did. Tour includes admission to all Villages (New Zealand, Tahiti, Fiji, Marquesas, Samoa, Tonga and Hawaii), a spectacular show ("Horizons!", with over 100 performers), Pageant of the Long Canoes, round trip transportation from Hilton Hawaiian Village via air-conditioned vehicle, and admission to the IMAX Theater (does not include meals).

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 to two days in length. Coffee and pastries will be available for participants of the short courses at 08:00 before the first lecture which will start at 08:30. Also, lunch, refreshments, lecture notes, textbook (where required), and a certificate of completion as part of the registration fee.

Stephen E. Derenzo
NSS Short Courses Program Chair
Email: sederenzo@lbl.gov
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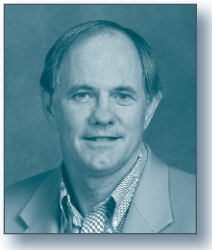
Fax: 1-510-486-4768
Lawrence Berkeley National Laboratory



Grant Gullberg
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Course Name	Date	IEEE Member	Non-Member
1. Radiation Detection and Measurement (2 days)†	Oct. 27-28	$425	$500
2. Nuclear Science for Homeland Security (1 day)	Oct. 27	$250	$300
3. Integrated Circuit Front Ends for Nuclear Pulse Processing (1 day)	Oct. 28	$250	$300
4. Programming & Medical Appl. Using Graphics Hardware (1 day)	Oct. 29	$250	$300
5. Physics and Design of Detectors for PET and SPECT (1 day)	Oct. 29	$250	$300
6. Molecular Biology for Imaging Scientists (1 day)	Oct. 29	$250	$300
7. Statistical Methods for Image Reconstruction (1 day)	Oct. 30	$250	$300
8. Dynamic Imaging in Emission Computed Tomography (1 day)	Oct. 30	$250	$300
9. Image Quality (1 day)† †	Oct. 30	$250	$300

Course fees are valid for registrations received by Oct. 12.
Add $50 per course for on-site registration.
† Textbook included. † † Textbook purchased on site.

Course 1. Radiation Detection and Measurement

This 2-day course provides an overall review of the basic principles that underlie the operation of the major types of instruments used in the detection and spectroscopy of charged particles, gamma rays, and other forms of ionizing radiation. Examples of both established applications and recent developments are drawn from areas including particle physics, nuclear medicine, homeland security, and general radiation spectroscopy. Emphasis is on understanding the fundamental processes that govern the operation of radiation detectors, rather than on operational details that are unique to specific commercial instruments. This course does not cover radiation dosimetry or health physics instrumentation. The level of presentation is best suited to those with some prior background in radiation measurements, but can also serve to introduce topics that may be outside their experience base. A copy of the textbook "Radiation Detection and Measurement", 3rd Edition, by G. Knoll and a set of course notes are provided to registrants.

Course Outline:

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

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

Stephen E. Derenzo is a Senior Scientist at the Lawrence Berkeley National Laboratory, Head of the Medical Imaging Technology Department in the Life Sciences Division, and Professor-in-Residence in the Electrical Engineering and Computer Science Department at UC Berkeley. He and his colleagues constructed two pioneering positron emission tomographs (PET) and developed advanced scintillation detectors for PET that provide high spatial resolution, depth-of-interaction information, and compact integrated circuit readout. For the past 19 years he has lead a search for new heavy scintillators and currently heads a project for the discovery of scintillation detector materials that uses automation to increase the rate of synthesis and characterization. He has authored or co-authored over 190 technical publications and seven patents. He has received two awards from the IEEE Nuclear and Plasma Sciences Society: the Merit Award in 1992 and the Radiation Instrumentation Outstanding Achievement Award in 2001. He became an IEEE Fellow in 2000.

Eugene E. Haller is Professor of Materials Science at UC Berkeley and holds the Liao-Cho Innovation Endowed Chair and a joint appointment at the Lawrence Berkeley National Laboratory where he heads the Electronic Materials Program. He received his Ph.D. degree in nuclear and applied physics from the University of Basel, Switzerland for

surface studies of large volume p-i-n germanium diodes used as gamma-ray detectors. His research interests cover a wide spectrum of semiconductor topics including basic semiconductor physics, thin film and bulk crystal growth and advanced detectors for electromagnetic radiation ranging from the far-infrared to gamma rays. He has authored and co-authored over 800 scientific/technical publications. He is a fellow of the American Physical Society and AAAS, has won an Alexander von Humboldt U.S. Senior Scientist Award in 1986, two Miller Research Professorships in 1990 and 2001, the Max-Planck-Research Prize in 1994, the James McGroddy Prize for New Materials of the American Physical Society in March 1999 and the David Turnbull Lectureship Award of the Materials Research Society in 2005. He held visiting professorships at the Max-Planck-Institute for Solid State Research in Stuttgart, at the Imperial College in London, at the DLR (German Aerospace Corporation) in Berlin, at the Paul-Drude-Institute in Berlin and at the University of Münster, Münster, Germany. In 2004 he was a Distinguished Professor at Keio University in Japan. He is a member of the Editorial Advisory Board of the "Journal of Physics and Chemistry of Solids," of "Materials Science Foundations" and of the "Journal of Applied Physics Reviews."

Helmuth Spieler is a Senior Physicist in the Physics Division of Lawrence Berkeley National Laboratory. He received his Ph.D. in nuclear physics from the Technical University in Munich in 1974 and has worked in many areas of instrumentation, both as a user and a designer. Much of his instrumentation work has been on large-scale semiconductor detector systems and ASICs for high energy physics experiments at high-luminosity colliders. He has served on numerous review panels for major detectors in the U.S., Europe and Japan, both for ground and space-based experiments. He is internationally known for his tutorial courses on detectors and signal processing and is active in outreach projects with local high school science teachers. His current research centers on superconducting bolometer arrays for cosmic microwave background experiments (South Pole Telescope, APEX-SZ, PolarBear), radiation-resistant detectors and electronics for the Super LHC (ATLAS), and detector systems for nuclear non-proliferation monitoring. He is the author of the book Semiconductor Detector Systems published by Oxford University Press.

Glenn F. Knoll is Professor Emeritus of Nuclear Engineering and Radiological Sciences at the University of Michigan, maintaining an active schedule of participation in research, writing, and professional consulting. He joined the Michigan faculty in 1962, and served as Chairman of the Department of Nuclear Engineering from 1979 to 1990, and as Interim Dean of the College of Engineering in 1995-96. His research interests have centered on radiation measurements, nuclear instrumentation, and radiation imaging. He is author or co-author of over 200 technical publications, 7 patents, and 2 textbooks. In 1999 he was inducted to membership in the National Academy of Engineering. In 2000 he received the highest faculty award from the College of Engineering of the University of Michigan, the Stephen E. Attwood Award. He has served as consultant to over 30 industrial and governmental organizations in technical areas related to radiation measurements. He is a Fellow of IEEE, was selected for the 1996 IEEE/NPSS Merit Award, and in 2000 was a recipient of the Third Millennium Medal of the Society.

Course 2. Nuclear Science for Homeland Security

This one day course will introduce 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 and radiographical methods and their roles in homeland security will be described.

Dr. Anthony Peurrung has a BS degree in Electrical Engineering from Rice University and a Ph.D. degree in Physics from the University of California, Berkeley. His research has entailed contributions to a variety of fields within fundamental and applied physics including fluid mechanics, plasma physics, medical physics, separations science, environmental remediation, nuclear physics, and radiation detection methods and applications. Since 1994, Anthony has worked in the National Security Directorate of Pacific Northwest National Laboratory as a staff scientist, technical group manager, and 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 startup 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.

Dr. Glen Warren is a staff scientist at Pacific Northwest National Laboratory, working in the areas of active interrogation and applied radiation detection. His primary research interest is the application of nuclear resonance fluorescence and other active interrogation techniques to a variety of national and homeland security applications. In addition, Glen specializes in the modeling of complex radiation detectors and the analyses of the data resulting from these systems. Before joining PNNL in 2003, Glen's research was focused on the electromagnetic structure of the neutron by conducting experiments at electron scattering facilities such as the Thomas Jefferson National Accelerator Facility. Glen received a B.S. in Physics and Mathematics from the College of William and Mary, and his Ph.D. in Nuclear Physics from the Massachusetts Institute of Technology.

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**

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

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

Course 4. Programming and Medical Applications Using Graphics Hardware

This course is an introduction to programming and applications of graphics processing unit (GPU) in medical imaging. Driven by the computer game industry, the development of graphics hardware experienced tremendous growth in recent years. Due to parallel computational architecture as well as availability of GPU hardware implemented geometrical functions used frequently in data analysis and reconstruction, the GPU offers readily available fast computational resource that can be used in medical imaging applications. However, the GPU programming model is substantially different than standard Von Neumann architecture used for the programming of the CPUs. The course will introduce computational model of the GPU in the context of basic computer graphics and general purpose computing. Introduction to programming using C for Graphics (Cg) and GLSH will be given. In the second part of the course advanced topics including implementations of the tomographic reconstructions of the X-Ray computed tomography and list-mode emission tomography data will be presented. Applications of the GPU for fast analytical calculations of Compton Scatter fractions in emission tomography will also be discussed. Basic knowledge of C programming language is recommended.

Guillem Pratx, M.S. is a doctoral candidate in Electrical Engineering at Stanford University, conducting his dissertation research within a laboratory in the Molecular Imaging Program at Stanford (MIPS). His dissertation focus has been on the research and development of practical algorithms that exploit graphics processing units (GPU) for fast medical image reconstruction, focusing particularly on ultra-high resolution PET systems under development at Stanford. In support of his work he has received several fellowships, including the NVIDIA fellowship, the Society of Nuclear Medicine Bradley-Alavi student fellowship, and the Stanford Bio-X graduate student fellowship.

Sven Prevrhal, Ph.D. is a physicist and Assistant Adjunct Professor at the Department of Radiology, University of California, San Francisco. He received his Ph.D. in 1997 at the Technical University Vienna, Austria and is currently interested in the development of advanced tomographic reconstruction techniques for Computed Tomography to remove artifacts created by metallic hardware.

Arkadiusz Sitek, Ph.D. is a physicist at the Brigham and Women's Hospital in Boston and an Assistant Professor at the Harvard Medical School. He received his Ph.D. in Physics from the University of British Columbia in Vancouver, Canada in 1998. His main research interests are focused on alternative three-dimensional medical image representations and visualizations. Dr. Sitek is an expert C/C++ programmer with experience in programming of the GPU for medical applications.

Course 5. Physics and Design of 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. Furenlid was educated at the University of Arizona and the Georgia Institute of Technology. He is currently a 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.

Dr. 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. 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. Molecular Biology for Imaging Scientists

This course is intended as an introduction to fundamental concepts of Molecular Biology presented from the perspective of integrating imaging techniques with the emerging concepts of personalized medicine and systems biology. 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 and relevant examples will be emphasized during the Molecular Biology course. Moreover, this year, the course will attempt to illustrate fundamental concepts in Molecular Biology using specific examples of molecular mechanisms involved in the pathogenesis of human diseases in general and cancer in particular. Potential imaging applications to study such disease-causing mechanisms will also be discussed.

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)

Dr. Radu is an Assistant Professor in the Crump Institute for Molecular Imaging and the Department of Medical & Molecular Pharmacology at UCLA. Dr. Radu's research interest is directed towards applying molecular imaging approaches such as Positron Emission Tomography to monitor immune responses in cancer and autoimmune disorders. 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.

Course 7. Statistical Methods for Image Reconstruction

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

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

Larry Zeng, Ph.D., is a Professor in Utah Center for Advanced Imaging Research in the Department of Radiology at the University of Utah. He obtained his Ph.D. degree in Electrical Engineering from the University of New Mexico. He came to the University of Utah as a postdoctoral fellow and then joined the faculty in the Department of Radiology. His major research interests are in SPECT image reconstruction, for both analytical and iterative algorithm development. He also works on novel imaging geometries, such as rotating slat collimation and skew-slit collimation.

Johan Nuyts, Ph.D., is a professor at Katholieke Universiteit Leuven, at the department of Nuclear Medicine. He obtained his PhD in applied sciences at the same university. His major research interests are image reconstruction in SPECT, PET and CT, and nuclear medicine image analysis.

Bruno De Man, Ph.D., is a researcher in the CT and X-ray Laboratory at the GE Global Research Center in Niskayuna, NY. He obtained his Ph.D. degree in Electrical Engineering from the University of Leuven. His research interests include CT iterative reconstruction and novel CT architectures.

Course 8. Dynamic Imaging in Emission Tomography

Recent advances in medicine, molecular biology and genomic research create an enormous demand for accurate, quantitative and functional in-vivo information about physiology and metabolism on a molecular, cellular and organ level. This demand can be particularly well addressed by dynamic imaging techniques which use radioisotopes and investigate nuclear and/or molecular magnetic fields.

This full day course will present an overview of dynamic functional imaging, with a particular focus on emission tomography. We will discuss data acquisition and processing methods that are currently used in dynamic PET and SPECT studies in both clinical and research environments.

Important advances that have been achieved in this field in the last years rely heavily on modern mathematics and computer science methods to reconstruct, process, analyze and display dynamic data. Different data processing and analysis methods will be discussed, ranging from creation of time-activity curves (TAC's) to estimation of tracer kinetic parameters, determination of input functions to construction of full kinetic models of the investigated physiological processes. Computer-based demonstration of fitting of TACs to kinetic models using a variety of methods will be included.

Organizer:

Anna Celler received her PhD (1980) in Nuclear Physics from the University of Warsaw, Poland. She is currently Associate Professor at the Department of Radiology and Associate Member of the Department of Physics and Astronomy, at University of British Columbia (Vancouver, Canada) and Department of Mathematics at Simon Fraser University (Burnaby, Canada). Her research interests include quantitative and dynamic nuclear medicine, dual-isotope studies, dosimetry for internal therapy, new medical imaging methods and general use of sophisticated mathematical methods in imaging. In parallel, she holds a clinical position of Senior Medical Physicist at the Vancouver Coastal Health Authority and is involved in everyday clinical activities of Nuclear Medicine departments of several Vancouver hospitals.

Instructors:

Stephen Bacharach received his Ph.D. in 1969 from Cornell University. He is currently Visiting Professor of Radiology, at the Center for Molecular and Functional Imaging, University of California, San Francisco. He recently retired from the National Institutes of Health, where he was Senior Tenured Scientist, in the Imaging Sciences Program. His principal interests have been in methods to extract quantitatively accurate physiologic information from nuclear images (PET, SPECT and planar). He has over 200 full publications and book chapters, many in the aforementioned area.

Richard E. Carson, Ph.D. received his PhD from UCLA in 1983 in Biomathematics. He is currently Professor of Biomedical Engineering and Diagnostic Radiology at Yale University and is Director of the Yale PET Center. His research interests have concentrated on three main areas: 1) New algorithms for image reconstruction with PET, 2) Development of mathematical models for novel radiopharmaceuticals, and 3) Studies of neuroreceptors in the human brain for the assessment of dynamic changes in neurotransmitters by analysis of PET tracer signals.

Grant Gullberg received his PhD in Biophysics from the University of California, Berkeley (1979). He is currently Senior Staff Scientist at Lawrence Berkeley National Laboratory and Adjunct Professor of Radiology and Bioengineering at the University of California San Francisco. His research interests involve the study of inverse problems with application to medicine and biology that involve the use of PET, SPECT, and MRI. His current research focuses on improving the imaging of cardiac function using finite element mechanical computer models, animal models, and human studies to develop better methods to image heart failure.

Henry Huang, D.Sc. is Professor in Molecular and Medical Pharmacology and Biomathematics at UCLA. He has been working on tracer kinetic modeling and quantification methods for PET for over 30 years. His recent research includes the derivation of input functions and the development of quantification methods for mouse PET imaging, virtual experimentation of mouse PET kinetics, and automation of quantification methods.

Course 9. Image Quality

This full-day course is intended to introduce the fundamentals of image quality in medical imaging to engineers and physicists with no experience in this field. The class begins with a short overview of the principles of image quality with an emphasis on the statistical nature of this topic. We then present an in-depth description of the stochastic properties of objects and images relevant to medical imaging, including representations for random objects, noise properties of imaging systems, and models for the statistics of reconstructed data sets. Basic units on image quality for classification and estimation tasks follow. The afternoon will include presentations on psychophysical experimental methods and approaches to the analysis of the resulting data from human observers as well as methods for computation of model observer performance. Finally, applications to nuclear medicine, including experimental results from a range of investigators and institutions, will be presented. A copy of *Foundations of Image Science*, by H.H. Barrett and K.J. Myers, John Wiley & Sons, Inc., 2004, can be purchased at the time of the course.

Organizers:

Matthew A. Kupinski, Ph.D., is an Assistant Professor of Optical Sciences and Radiology at the University of Arizona. He earned his Ph.D. from the University of Chicago in 2000 and joined the faculty at the University of Arizona in 2002. He has published numerous papers and book chapters on image quality and image science. His research interests include observer models, ideal-observer computations, and imaging hardware optimization.

Kyle J. Myers, Ph.D., received a bachelors degree in Mathematics and Physics from Occidental College in 1980, and a Ph.D. in Optical Sciences from the University of Arizona in 1985. Following a post-doc at the University of Arizona, she worked in the research labs of Corning Inc. Since 1987 she has worked for the Center for Devices and Radiological Health of the U.S. Food and Drug Administration, where she is currently the Director of the NIBIB/CDRH Laboratory for the Assessment of Medical Imaging Systems. Along with Harrison H. Barrett, she is the coauthor of Foundations of Imaging Science, published in 2004 and winner of the First Biennial J.W. Goodman Book Writing Award from OSA and SPIE.

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.

THE NUCLEAR SCIENCE SYMPOSIUM (NSS)

Welcome to the 2007 IEEE Nuclear Science Symposium (NSS)! The symposium this year promises to be remembered beyond the wonderful Hawaii venue. A record breaking 853 abstracts were received. To accommodate this submission, NSS authors were polled to express their preference on the program length and the parallel session numbers. The poll showed a majority favoring a five day NSS program with four parallel sessions. Accordingly, the NSS program this year has been expanded from Monday to Friday.

The symposium starts with two plenary sessions on Monday, October 29, with four distinguished speakers providing an overall picture of the large scale experiments in physical sciences that are either ongoing or being planned for the future. The NSS luncheon is also on Monday, with a feature presentation about the Thirty Meter Telescope project being planned for future astronomical observations.

The symposium offers an outstanding opportunity for scientists and engineers in the field of nuclear science to meet with their colleagues to present and discuss new and original work on the latest developments in technology and instrumentation. The symposium program this year consists of 388 oral papers and 444 poster papers. The oral papers are presented in 60 parallel sessions, including two popular NSS-MIC joint sessions on Tuesday afternoon. The poster papers are presented in two poster sessions scheduled on Tuesday and Wednesday morning. The daily program includes two 1.5 hour sessions in the morning (8:30 to 12:00) and two 2 hour sessions (13:30 to 18:00) in the afternoon.

Ren-Yuan Zhu
NSS Program Chair

The NSS Short Course program covers specialized topics, and provides excellent educational opportunities for young scientists in the field. This year's NSS program also features three refresher courses, devoted to detector hardware, electronics and software.

Liyuan Zhang
NSS Deputy Program Chair

We would like to take this opportunity to thank all authors and attendees for their contributions, which form the basis of this event. Thanks also to the 393 NSS reviewers, who contributed their valuable time to reading and assessing all of the submissions. Our special thanks go to the NSS Topic Conveners, who took on the responsibility of organizing the symposium program along the lines of the technical topics. Their devoted work guarantees a high quality symposium program this year.

Finally, we sincerely hope you enjoy the 2007 NSS, both professionally and socially, and are looking forward to meeting all of you in Hawaii.

Ren-Yuan Zhu
NSS Program Chair

Liyuan Zhang
NSS Deputy Program Chair

N01-2: The Large Hadron Collider Experiments: Status and Physics Prospects

Jim Virdee
Imperial College
London, U.K.

Abstract:

The general-purpose LHC detectors (ATLAS and CMS) will be the most important experiments in particle physics in the coming decade, and are very well placed to answer some of the fundamental questions about the nature of our universe. Amongst these questions are: what is the origin of mass, what constitutes dark matter, are there more than four dimensions, can we make progress towards a unified theory, etc. The LHC experiments are not just bigger versions of existing experiments. They are radically different. They have to operate in a very harsh environment. The proton-proton interaction rate is very high, requiring a detector with a very fast response and good time resolution, as well as good radiation tolerance. Data collection and transfer rates are also extremely high. Many novel technologies employed in these detectors are the result of an intensive R&D and prototyping programme carried out in collaboration with industry. The construction of the low-luminosity LHC detectors is almost completed, and the installation is very advanced. Commissioning with cosmic muons, with more and more complete detectors, is taking place. The experiments will start operating in Spring 2008 and preparations are being made for the analysis of data from the first physics run. This talk will outline the physics prospects, with an emphasis on what can be expected from data collected during the initial running. The current status of the LHC machine will be briefly outlined. The status of and the challenges faced by the LHC experiments, especially ATLAS and CMS, will be discussed.

Biography:

Tejinder Virdee is Professor of Physics at Imperial College, London, and Scientific Associate in the PH Department, CERN. He did his graduate studies at Imperial College on an experiment conducted at the Stanford Linear Accelerator Centre. He has been a Fellow and a Staff Scientist at CERN, Geneva. He has worked on an experiment studying deep inelastic Compton scattering of real photons off quarks, and on the UA1 proton-antiproton collider experiment, both at CERN. After the termination of UA1 in 1990, Dr. Virdee concentrated on the physics of, and experimentation at, the next generation of hadron colliders. He and a small group of colleagues have considered the performance of a detector based on a high field solenoid from the points of view of charged particle inner tracking, calorimetry, and muon detection. He is one of the founding members of the Compact Muon Solenoid Collaboration (CMS) at CERN-LHC. CMS is a worldwide experiment comprising over 2000 scientists and engineers from over 175 institutes in 40 countries. Dr. Virdee has been actively involved in all aspects of CMS, including its formation, the definition of the physics goals, checking performance against benchmark physics reactions, detector R&D, detector prototyping, construction and installation, and the preparations for the extraction of physics. Dr. Virdee is the Spokesperson for the CMS Collaboration, and was previously its Deputy Spokesperson from 1993 to 2006.

N01-3: The Physics and Detectors of the International Linear Collider

Jim Brau
University of Oregon, Eugene
Oregon, U.S.A.

Abstract:

Development of a precise theory of the electroweak interaction was a great achievement of Twentieth Century Physics. The next generation of colliders will address a deeper understanding of the underlying principles of Nature. The Large Hadron Collider (LHC) will soon begin operations at CERN, and confront the limits of theory at the Terascale. Anticipated new physics will illuminate fundamental particle properties and relationships between the observed forces. New symmetries, extra dimensions, and the source of the mysterious dark matter of the cosmos are possible discoveries. The International Linear Collider (ILC) will bring complementary vision to exploration of the Terascale, enabled by the special advantages of an electron-positron collider. I will summarize the physics opportunities of the ILC, and the detector technologies under development to enable this experimental program.

Biography:

Jim Brau is Knight Professor of Natural Science at the University of Oregon. He is a graduate of the U.S. Air Force Academy, and did graduate study at M.I.T, where he earned his Ph.D. He initiated the experimental particle physics program at Oregon in 1988, and currently serves as Director of the Center for High Energy Physics there. Dr. Brau has conducted research at many accelerator laboratories, including SLAC, Fermilab, Argonne, Brookhaven, and CERN. He is co-chair of the American Linear Collider Physics Group, co-chair of the World-wide Study for Future electron-positron Colliders, a member of the DOE/NSF High Energy Physics Advisory Panel, and a member of the National Research Council Board on Physics and Astronomy.

N02-1: The SuperB Project

David Hitlin
California Institute of Technology
Pasadena, California, U.S.A.

Abstract:

The physics objectives and conceptual design of SuperB, an asymmetric electron-positron collider with luminosity above 1036cm-2s-1 are discussed. With the very large data samples obtainable at SuperB, effects of physics beyond the Standard Model should be observable. The collider has a novel low emittance design that achieves this performance with wall-plug power comparable to that of the current B Factories.

Biography:

David Hitlin is Professor of Physics at California Institute of Technology. He has worked in heavy flavor physics for nearly four decades, mostly at SLAC. He was spokesman for the Mark II and Mark III experiments at SPEAR, worked on the SLD experiment at SLAC Linear Collider, and was Spokesman for the BaBar experiment at PEP-II. He has also worked on the BES experiment in Beijing. He is currently pursuing the goal of building a Super B Factory. He is a Fellow of the American Physical Society.

N02-2: Dark Energy and the SNAP Space Mission

Chris Bebek
Lawrence Berkeley Laboratory
Berkeley, California, U.S.A.

Abstract:

Dark energy generates the force driving the current accelerating expansion of the Universe. Three techniques for measuring the expansion history are described: Type Ia supernovae, weak gravitational lensing, and baryon acoustic oscillation. The SNAP Supernova/ Acceleration Probe space mission exploits two of these techniques, Type Ia supernova distance luminosity measurements, and weak lensing angular distance correlation power spectrum. The supernova program uses photometric discovery and detailed follow-up observations of at least 2000 Type Ia supernovae with red shifts ranging from 0.3 to 1.7. The weak lensing program uses a deep small field survey and a shallower large field survey with photometry, position, and shape measurement of several million galaxies. The instrument sits at the focus of a ~2-m diameter three mirror anastigmat telescope with a 1.4 square degree FOV. It consists of an imager that instruments 0.7 square degree of the FOV, and a low resolution spectrograph. Both the photometer and spectrograph use visible and near infrared detectors to span the wavelength range of 400 nm to 1700 nm. Wavelength is covered with two detector materials implemented with different readout architectures – CCDs for the visible and HgCdTe hybrid pixel detectors for the near infrared. The instrument operation, architecture, and characteristics of the detectors and data handling will be described.

Biography:

Christopher J. Bebek received his B.A. in physics from Pomona College, Claremont, CA, in 1971, and his M.S. and Ph.D. in physics from Harvard University, Cambridge, MA, in 1976. In 1981, he joined the staff of the Laboratory of Nuclear Studies, Cornell University, Ithaca, NY, and in 2001, he moved to the Physics Division at the Lawrence Berkeley National Laboratory, Berkeley, CA, to work on the Supernova/Acceleration Probe satellite.

NSS LUNCHEON SPEAKER

Opening the Next Generation of Giant Telescopes: The Thirty Meter Telescope

Gary Sanders
Thirty Meter Telescope

Abstract:

The Thirty Meter Telescope (TMT) project is designing the first of the next generation of giant optical/infrared telescopes. Planned for construction in 2009, with first light in 2016, TMT will image the first galaxies, the birth of stars, and advance the search for exo-solar planets. With a diameter of 30 meters, the TMT will collect nine times more light than the current largest terrestrial telescopes (the Keck telescopes on Mauna Kea), 144 times as much light as the Hubble Space Telescope, and will use adaptive optics to sweep away the disturbances of the Earth's atmosphere. The TMT design, the search for the best available mountain site, and the plan to construct TMT will be described.

Biography:

Gary Sanders spent 25 years carrying out experiments in high-energy physics. He then joined Caltech in 1994 to serve as the Project Manager and Deputy Director of the Laser Interferometer Gravitational Wave Observatory (LIGO). With LIGO searching for gravitational waves in 2004, he took on the leadership of the Caltech/University of California/Association of Canadian Universities for Research in Astronomy initiative to design and construct the TMT.

NSS REFRESHER COURSE PROGRAM

Improving Gaseous Detectors: Why and How

Monday, October 29, 19:00 - 19:45, Coral Ballroom #1

Fabio Sauli, *INFN Trieste, TERA Foundation, and CERN*

Description: Since the introduction of multiwire chambers by Georges Charpak 40 years ago, gaseous detectors have been and are used in a variety of configurations and sizes in most experiments in physics and other fields. To cope with the increasingly stringent requirements of modern applications, both in terms of tracking accuracy and rate capability, new generations of devices have recently emerged. In this introduction to the topic, I will briefly summarize the performance and limitations of the present generation gaseous detectors, as well as indicate directions of research aimed at solving endemic problems such as rate capability, long term survivability at high radiation levels, and energy and position resolutions.

Digital Design with FPGAs: Examples and Resource Saving Tips

Tuesday, October 30, 07:30 - 08:15 Coral Ballroom #1

Jinyuan Wu, *Fermi National Accelerator Laboratory, U.S.A.*

Description: As the reality of technology progress deviates from the prediction of Moore's Law, resource-saving in digital electronics and advanced computing becomes non-negligible. This short refresher course contains a handful of FPGA design examples used in accelerator instrumentation and high energy physics, with an emphasis on resource-saving tips.

This course is designed for the following audiences:

(1) For beginners, the course serves as a recipe for daily design jobs.

(2) For experienced designers, the course serves as a review of FPGA digital design tricks for better performance and lower costs. Through analyzing examples, resource-saving tricks in firmware, both with and without software analogue, will be studied.

(3) For planners and managers, the course serves as a sketch of FPGA digital data processing and reconfigurable computing. Instead of eyeing high-end FPGA devices, the main focus of this course is on what can be fit into low-cost devices when resource-saving design practices are fully considered.

The topics and examples to be covered include:

- Comparison of transistor usage between logic elements in FPGA and corresponding logic functions in ASIC;
- RAM based histograms and related issues: fast reset of RAM contents and the read-after-write (RAW) hazard;
- Using registered adders to implement non-integer decimation and arbitrary bit rate DESER;
- Examples of daily design jobs: LED brightness variation, Divider-free temperature measurement, Silicon ID reading, Geographic address determination; and
- Topics for DAQ and advanced trigger systems: Zero-suppression and the timeframe FIFO, the Hash Sorter, the Tiny Triplet Finder, curved track fitter, etc.

GEANT 4: A Simulation Tool for Multi-disciplinary Applications

Wednesday, October 31, 07:30 - 08:15, Coral Ballroom #1

Maria Grazia Pia, *INFN Sezione di Genova, Italy*

Description: This course consists of an overview of the capabilities of GEANT4 and a collection of its experimental applications in diverse fields, including high energy physics, nuclear physics, astrophysics, and medical instrumentation.

NSS PROGRAM

N01 NSS Plenary I

Monday, Oct. 29 08:15-10:00, Coral IV & V
Session Chair: Ren-yuan Zhu, *California Institute of Technology*

N01-1 Welcome from NSS Program Chair and General Chair
R.-Y. Zhu, *Califoirnia Institute of Technology, U.S.A.*

N01-2 (invited) The Large Hadron Collider Experiments: Status and Physics Prospects
T. S. Virdee, *Imperial College, U.K.*

N01-3 (invited) The Physics and Detectors of the International Linear Collider
J. E. Brau, *University of Oregon, U.S.A.*

N02 NSS Plenary II

Monday, Oct. 29 10:30-12:00, Coral IV & V
Session Chair: Ren-yuan Zhu, *California Institute of Technology*

N02-1 (invited) The SuperB Project
D. G. Hitlin, *California Institute of Technology, U.S.A.*

N02-2 (invited) Dark Energy and the SNAP Space Mission
C. J. Bebek, *Lawrence Berkeley National Laboratory, U.S.A.*

N03 Analog and Digital Circuits I: Electronics for Gamma and X-Ray Detectors

Monday, Oct. 29 14:00-15:30, Coral I
Session Chairs: Lorenzo Fabris, *Oak Ridge National Laboratory*
M. Nance Ericson, *Oak Ridge National Laboratory*

N03-1 Pixel Electronics for Unidepleted Monoilithic Active Pixel Sensor for Electron Microscopy
G. Deptuch, J.-F. Pratte, J. Fried, P. Rehak
Brookhaven National Laboratory, USA

N03-2 Wide Dynamic Range Front-End Electronics for Gamma Spectroscopy with a HPGe Crystal of AGATA
F. Zocca, A. Pullia, *University of Milano / INFN, Italy;* D. Bazzacco, *INFN, Italy;* G. Pascovici, *IKP, Germany*

N03-3 First Results of XPAD3, a New Photon Counting Chip for X-Ray CT-Scanner with Energy Discrimination
P. Pangaud, S. Basolo, B. Chantepie, J.-C. Clemens, P. Delpierre, B. Dinkespiler, M. Menouni, C. Morel
Centre de Physique des Particules de Marseille (CPPM), France

N03-4 The RatCAP Front-End ASIC
J.-F. Pratte, S. Junnarkar, G. Deptuch, J. Fried, P. O'Connor, V. Radeka, P. Vaska, C. Woody, D. Schlyer, S. Stoll, S. H. Maramraju, S. Krishnamoorthy, *Brookhaven National Laboratory, USA;* R. Lecomte, R. Fontaine, *Université de Sherbrooke, CANADA*

N03-5 Front-End ASIC for High Resolution X-Ray Spectrometers
G. De Geronimo, W. Chen, J. Fried, P. Rehak, E. Vernon, *Brookhaven National Laboratory, USA;* B. D. Ramsey, J. A. Gaskin, *Marshall Space Flight Center, USA*

N03-6 Readout ASIC for 3D Position Sensitive Detectors
G. De Geronimo, A. Dragone, K. Ackley, J. Fried, P. O'Connor, E. Vernon, *Brookhaven National Laboratory, USA;* Z. He, F. Zhang, *University of Michigan, USA*

N04 Astrophysics and Space Instrumentation I: Experiments I

Monday, Oct. 29 14:00-15:30, Coral II
Session Chairs: William Craig, *LLNL*
Helmuth Spieler, *LBNL*

N04-1 (invited) Design and Performance of the Antarctic Impulsive Transient Antenna
G. S. Varner, *Univ. of Hawaii, USA*
On behalf of the ANITA Collaboration

N04-2 (invited) PAMELA: a Payload for Antimatter Matter Exploration and Light Nuclei Astrophysics - Status and First Results
M. Pearce, *The Royal Institute of Technology, KTH, Sweden*
On behalf of the PAMELA Collaboration

N04-3 The NeXT X-Ray Mission to Explore Non-Thermal Universe
T. Takahashi, K. Mitsuda, *ISAS/JAXA, Japan;* H. Kunieda, *Nagoya University, Japan*

N05 High Energy and Nuclear Physics Instrumentation I: Cherenkov and Scintillator Detectors

Monday, Oct. 29 14:00-15:30, Coral IV
Session Chairs: Yi-Fang Wang, *Institute of High Energy Physics, Beijing*
Marat Gataullin, *California Institute of Technology*

N05-1 Construction, Commissioning and Performance of a Hadron Blind Detector for the PHENIX Experiment at RHIC
W. Amderson[1], B. Azmoun[2], C. C. -Y. Chi[3], Z. Citron[1], A. Dubey[4], Z. Fraenkel[4], T. Hemmick[1], J. Kamin[1], A. Kozlov[4], A. Milov[2], M. Naglis[4], R. Pisani[2], I. Ravinovich[4], T. Sakaguchi[2], D. Sharma[4], A. Sickles[2], I. Tserruya[4], C. Woody[2]
[1]Stony Brook University, US; [2]Brookhaven National Laboratory, US; [3]Columvia University, US; [4]Weizmann Institute, Israel

N05-2 Performance of the CLEO Ring Imaging Cherenkov Detector
S. Stone, *Syracuse University, USA*
On behalf of the CLEO RICH Collaboration

N05-3 The Performance of the LHCb Pixel Hybrid Photon Detectors in a 25ns Structured Test-Beam
D. L. Perego, *Istituto Nazionale di fisica Nucleare - sezione di Milano-Bicocca, Italy*
On behalf of the LHCb RICH Collaboration

N05-4 Performance of the CDF Luminosity Monitor at High Luminosity 3 \times 10^{32} Cm^{-2}s^{-1}
A. I. Sukhanov, *University of Florida, US*

N05-5 The Two Scintillator Detectors on BESIII
Y. Heng, Institute of High Energy Physics, China
On behalf of the BESIII

N05-6 A Prototype Large-Angle Photon Veto Detector for the P326 Experiment at CERN
F. Ambrosino[1], A. Antonelli[2], E. Capitolo[2], P. S. Cooper[2], R. Fantechi[3], L. Iannotti[2], G. Lamanna[3], E. Leonardi[4], M. Moulson[2], M. Napolitano[1], V. Palladino[1], M. Raggi[2], A. Romano[1], G. Saracino[1], M. Serra[4], T. Spadaro[2], P. Valente[4], S. Venditti[3]
[1]University of Naples, Italy; [2]Frascati National Laboratories, Italy; [3]University of Pisa, Italy; [4]University of Rome, Italy

N06 Photodetectors and Radiation Imaging I

Monday, Oct. 29 14:00-15:30, Coral V
Session Chair: Klaus Ziock, *Oak Ridge National Laboratory*

N06-1 High Gain Photodetectors Formed by Nano/ MicroMachining and Nanofabrication
D. R. Winn, *Fairfield University, USA*

N06-2 Breakthrough in Quantum Efficiency of bi-alkali photocathode PMTs
M. Kapusta, P. Lavoute, F. Lherbet, E. Rossignol, C. Moussant, F. Fouché
Photonis, France

N06-3 Study of the CsI3 as a Possible X-Ray Photocathode Candidate Material
M. Kocsis, G. Potdevin, *European Synchrotron Radiation Facility, France*; R. Durst, Y. Diawara, *Bruker AXS Inc., USA*

N06-4 High Quantum Efficiency Polymer Photodetectors Using Interdigitated Electrodes
A. C. Niemeyer[1,2], I. H. Campbell[1], F. So[2], B. K. Crone[1]
[1]Los Alamos National Laboratory, USA; [2]University of Florida, USA

N06-5 Novel Polycrystalline Mercuric Iodide Photodetectors Coupled to Scintillators
W. C. Barber, N. E. Hartsough, M. Q. Damron, J. S. Iwanczyk
DxRay Inc., USA

N06-6 Timing Measurements of a New Micro-Channel Plate PMT Incorporating a Novel Equal-Time Anode Structure
K. Byrum, G. Drake, C. Ertley, *Argonne National Laboratory, USA*; H. Frisch, H. Sanders, F. Tang, *University of Chicago, USA*

N07 Solid State Tracking Detectors I

Monday, Oct. 29 16:00-17:45, Coral I
Session Chair: Simon Kwan, *Fermilab*

N07-1 The Construction of the CMS Silicon Strip Tracker.
R. D'Alessandro, *Universita' di Firenze e INFN-Firenze, ITALY*
On behalf of the CMS collaboration

N07-2 Commissioning of the CMS Silicon Strip Tracker
G. L. Bruno, *Universite catholique de Louvain, Belgium*
On behalf of the CMS Tracker Collaboration

N07-3 Design and Performance of the New Innermost Layer of Silicon Detector at D0
D. Strom, *Northwestern University, USA*
On behalf of the D0 Collaboration

N07-4 The CDF RUN II Silicon Detector: Aging Studies
J. E. Garcia, *INFN - Sezione di Pisa, Italy*
On behalf of the CDF Collaboration

N07-5 The LHCb Vertex Locator Detector System: Status and Perspectives
M. Artuso, *Syracuse University, USA*
On behalf of the LHCb VELO Group

N07-6 Charge Collection Efficiency Measurements for Segmented Silicon Detectors Irradiated to 1x10^16 N Cm-2
G. Casse, P. P. Allport, *University of Liverpool, UK*

N07-7 Fine Pitch and Low Material Readout Bus for Silicon Pixel Detector in PHENIX Vertex Tracker
K. Fujiwara, *RIKEN, Japan*

N08 Data Acquisition and Analysis Systems I

Monday, Oct. 29 16:00-18:00, Coral II
Session Chair: Martin Purschke, *Brookhaven National Lab*

N08-1 Data Acquisition Systems for Future Calorimetry at the International Linear Collider
M. Warren, *University College London, UK*
On behalf of the CALICE-UK Collaboration

N08-2 New Online System without Hardware Trigger for the Super-Kamiokande Experiment
S. Yamada, Y. Hayato, Y. Obayashi, M. Shiozawa
Institute for Cosmic Ray Research, University of Tokyo, Japan

N08-3 Data Acquisition System for PICASSO Experiment
N. Starinski, J.-P. Martin, C. Mercier, R. Gornea
University of Montreal, Canada

N08-4 The ATLAS Event Builder
H. Beck, *LHEP - University of Bern, Switzerland*
On behalf of the ATLAS TDAQ DataFlow Group

N08-5 The New Front-End Electronics for the Super-Kamiokande Experiment
H. Nishino[1], Y. Arai[2], K. Awai[1], Y. Hayato[1], K. Ishikawa[3], K. Kaneyuki[1], A. Minegishi[3], S. Nakayama[1], K. Okumura[1], M. Shiozawa[1], A. Takeda[1]
[1]Institute for Cosmic Ray Research, University of Tokyo, Japan; [2]High Energy Accelerator Research Organization (KEK), Japan; [3]Iwatsu Test Instruments Corporation, Japan

N08-6 Custom 14-Bit, 125MHZ ADC/Data Processing Module for the KL Experiment at J-Parc
M. Bogdan, J. Ma, H. Sanders, Y. Wah
The University of Chicago, USA

N08-7 Signal Timing and Readout (STaR) Pipelined Upgrade for the Belle TOF System
J. Rorie, L. L. Ruckman, G. S. Varner, *Univ. of Hawaii, USA*

N08-8 The DAQ System for NEMO Project
F. Ameli, *Istituto Nazionale di Fisica Nucleare, Italy*
On behalf of the NEMO Collaboration

N09 High Energy and Nuclear Physics Instrumentation II: Electromagnetic Calorimeters

Monday, Oct. 29 16:00-18:00, Coral IV
Session Chairs: Horst Oberlack, *MPI fuer Physik Munich*
Roger Rusack, *The University of Minnesota*

N09-1 Dual-Readout Calorimetry with Crystals
R. Wigmans, *Texas Tech University, USA*
On behalf of the DREAM Collaboration

N09-2 The CMS Electromagnetic Calorimeter
A. Bornheim, *CALTECH, USA*
On behalf of the CMS ECAL Collaboration

N09-3 The Atlas Liquid Argon Calorimeter: Installation, Commissioning and Beam Test Results
D. Rousseau, *Laboratoire Accélérateur Linéaire, Orsay, France*
On behalf of the ATLAS Liquid Argon Calorimeter Group

N09-4 The CMS ECAL Laser Monitoring System
K. Zhu, ,
On behalf of the CMS ECAL Collaboration

N09-5 Intercalibration of the CMS Electromagnetic Calorimeter Using Neutral Pion Decays
V. Litvine, *California Institute of Technology, USA*
On behalf of the CMS collaboration

N09-6 The High Resolution EM Calorimeter of PANDA
R. W. Novotny, *University Giessen, Germany*
On behalf of the PANDA Collaboration

N09-7 CMS ECAL Readout Electronics
A. Singovski, *University of Minnesota, US*
On behalf of the CMS collaboration

N10 Instrumentation for Homeland Security I: Neutron Detection

Monday, Oct. 29 16:00-18:00, Coral V
Session Chair: Giancarlo Nebbia, *Istituto Nazionale di Fisica Nucleare*

N10-1 (invited) Testing Challenges for Next Generation Radiological/Nuclear Detection
D. J. Blumenthal, *DHS/DNDO, USA*

N10-2 Advances in Imaging Fission Neutrons with a Neutron Scatter Camera
P. A. Marleau, J. Brennan, K. Krenz, J. Lund, N. Mascarenhas, S. Mrowka
Sandia National Lab, USA

N10-3 The Fast Neutron Imaging Telescope (FNIT) – Hardware Development and Prototype Testing
J. R. Macri, U. Bravar, P. J. Bruillard, J. S. Legere, M. L. McConnell, J. M. Ryan, R. S. Woolf
University of New Hampshire, USA

N10-4 Calibration and Testing of a Large-Area Fast-Neutron Directional Detector
P. E. Vanier[1], L. Forman[2], I. Dioszegi[1], C. Salwen[1], V. J. Ghosh[1]
[1]Brookhaven National Laboratory, USA; [2]Ion Focus Technology, USA

N10-5 Long Range Neutron-Gamma Point Source Detection and Imaging Using Unique Rotating Detector
J. L. Lacy, A. Athanasiades, C. S. Martin, L. Sun, J. W. Anderson, T. D. Lyons
Proportional Technologies, Inc., U.S.A.

N10-6 Low-Background Detection of Fission Neutrons Produced by Pulsed Neutron Interrogation
F. H. Ruddy, R. W. Flammang, J. G. Seidel
Westinghouse Electric Company, USA

N10-7 Detection of Special Nuclear Material by Means of Promptly Emitted Radiation Following Photonuclear Stimulation
B. Blackburn, J. Jones, S. Watson, J. Johnson, *Idaho National Laboratory, US*; C. Moss, L. Waters, K. Ianakiev, C. McCluskey, *Los Alamos National Laboratory, US*; J. Mihalczo, P. Hausladen, S. Pozzi, M. Flaska, S. Clarke, *Oak Ridge National Laboratory, US*; A. Hunt, D. Wells, F. Harmon, *Idaho Accelerator Center, US*

N10-8 Measurement and Analysis System for the Identification of Shielded Neutron Sources
M. Flaska, S. A. Pozzi, *Oak Ridge National Laboratory, USA*

N11 Computing and Software for Experiments I: HEP Software

Tuesday, Oct. 30 08:30-10:00, Coral I
Session Chair: Jamie Shiers, *CERN*

N11-1 Commissioning of the ATLAS Offline Software with Cosmic Rays
M. J. Costa, *IFIC, Spain*
On behalf of the ATLAS offline commissioning group

N11-2 Data Quality Monitoring for the CMS Electromagnetic Calorimeter
G. Franzoni, *University of Minnesota, USA*; G. Della Ricca, B. Gobbo, *University of Trieste and INFN, Italy*; E. Di Marco, *University of Roma La Sapienza and INFN, Italy*

N11-3 The User Interface for the ATLAS Trigger and Its Use in Physics Studies
T. Eifert[1], N. Berger[2], T. Bold[3], R. Goncalo[4], J. Haller[5], J. Stelzer[6], M. Wielers[7]
[1]University of Geneva, Switzerland; [2]LAPP, France; [3]University of California, Irvine, USA; [4]Royal Holloway University of London, London, United Kingdom; [5] University of Hamburg, Hamburg, Germany; [6]CERN, Geneva, Switzerland; [7]Rutherford Appleton Laboratory, Abbingdon, United Kingdom

N11-4 The Control and Monitoring System of the Level-1 Trigger for the First CMS Global Run
I. Magrans de Abril, *Institute for High Energy Physics, Austrian Academy of Sciences, Austria*; M. Magrans de abril, *CERN, Switzerland*

N11-5 The ALICE-LHC Online Data Quality Monitoring Framework
F. Roukoutakis, S. Chapeland, *CERN, Switzerland*

N11-6 Writing Software or Writing Scientific Articles?
M. G. Pia, *INFN Genova, Italy, Italy*

N12 Gaseous Detectors I

Tuesday, Oct. 30 08:30-10:00, Coral II
Session Chairs: Graham Smith, *Brookhaven National* Laboratory
Shinichi Sasaki, *High Energy Accelerator Research Organization*

N12-1 Development of a High-Rate GEM-Based TPC for PANDA
Q. Weitzel, C. Höppner, T. Huber, B. Ketzer, I. Konorov, A. Mann, S. Neubert, S. Paul
Technische Universität München, Germany

N12-2 A New VLSI Counting Chip for MicroPattern Gas Detectors
R. Bellazzini, G. Spandre, M. Minuti, *INFN - sez. Pisa, Italy*; F. Krummenacher, *Ecole Polytechnique Federale de Lausanne, Switzerland*

N12-3 Triple-GEM Detectors for the Forward Tracker in STAR
F. Simon[1], J. Kelsey[1], M. Kohl[1], R. Majka[2], M. Plesko[1], D. Underwood[3], T. Sakuma[1], N. Smirnov[2], H. Spinka[3], B. Surrow[1]

[1]Massachusetts Institute of Technology, USA; [2]Yale University, USA; [3]Argonne National Laboratory, USA

N12-4 Light Yield Measurements of GEM Avalanches at Cryogenic Temperatures and High Densities in Neon and Helium Based Gas Mixtures.
R. Galea, J. Dodd, W. Willis, *Columbia University, USA*; P. Rehak, V. Tcherniatine, *Brookhaven National Laboratory, USA*

N12-5 A Triple-GEM Detector with Pixel Readout for High-Rate Beam Tracking in COMPASS
B. Ketzer, A. Austregesilo, F. Haas, I. Konorov, M. Krämer, A. Mann, T. Nagel, S. Paul
Technische Universität München, Germany

N12-6 Study of a TPC Prototype with GEM Readout
Y. Li[1], H. Qi[1], Y. Gao[1], J. Li[2], Y. Li[1], Z. Yang[1]
[1]Tsinghua University, China; [2]Institute of High Energy Physics, China

N13 High Energy and Nuclear Physics Instrumentation III: Hadron Calorimeters

Tuesday, Oct. 30 08:30-10:00, Coral IV
Session Chairs: Richard Wigmans, *Texas Tech University*
Horst Oberlack, *MPI fuer Physik Munich*

N13-1 The ZEUS Uranium Calorimeter - 15 Years of Successful Operation
I.-M. Gregor, *DESY, Germany*
On behalf of the The ZEUS Calorimeter Group

N13-2 Commissioning of the Compact Muon Solenoid (CMS) HCAL Detector at the Large Hadron Collider (LHC)
A. Bodek, *University of Rochester, USA*
On behalf of the Compact Muon Solenoid (CMS) HCAL Collaboration

N13-3 Recent Results of the CMS Hadron Calorimeters in the Combined Test Beams
S.-W. Lee, *Texas Tech University, USA*
On behalf of the CMS HCAL Collaboration

N13-4 A Tera-Pixel Calorimeter for the ILC
J. A. Ballin[1], J. P. Crooks[2], P. D. Dauncey[1], A.-M. Magnan[1], Y. Mikami[3], O. Miller[3], M. Noy[1], V. Rajovic[3], M. Stanitzki[2], K. D. Stefanov[2], R. Turchetta[2], M. Tyndel[2], E. G. Villani[2], N. K. Watson[3], J. A. Wilson[3]
[1]Imperial College, United Kingdom; [2]STFC Rutherford Appleton Laboratory, United Kingdom; [3]University of Birmingham, United Kingdom

N13-5 The CALICE Tile Hadron Calorimeter Prototype with SiPM Read-Out: Design, Construction and First Test Beam Results
F. Sefkow, *DESY, Germany*
On behalf of the CALICE collaboration

N13-6 Development of Gas Electron Multiplier Based Digital Hadron Calorimetry for a Detector at the International Linear Collider
A. P. White[1], A. Brandt[1], H. Brown[1], K. De[1], C. Hahn[2], J. Li[1], C. Mendoza[1], J. Smith[1], M. Sosebee[1], J. Yu[1], T. Zhao[3]
[1]University of Texas at Arlington, USA; [2]Changwon National University, Korea; [3]University of Washington, USA

N14 Neutron Imaging and Radiography

Tuesday, Oct. 30 08:30-10:00, Coral V
Session Chairs: Arnold Burger, *Fisk University Ron Cooper, SNS*

N14-1 Microcolumnar Plastic Scintillator for Time-Resolved Neutron Imaging
I. K. Shestakova[1], E. E. Ovechkina[1], V. Gaysinskiy[1], Z. W. Bell[2], J. J. Antal[3], L. Bobek[3], H. Bilheux[2], L. Crow[2], V. V. Nagarkar[1]
[1]RMD Inc., USA; [2]Oak Ridge National Laboratory, USA; [3]University of Massachusetts Lowell, USA

N14-2 Neutron Imaging Development for Mega-Joule Scale Inertial Confinement Fusion Experiments
G. P. Grim, P. A. Bradley, D. D. Clark, V. E. Fatherley, J. P. Finch, F. P. Garcia, S. A. Jaramillo, A. J. Montoya, G. L. Morgan, J. A. Oertel, T. A. Ortiz, J. R. Payton, P. Pazuchanics, D. W. Schmidt, A. C. Valdez, C. H. Wilde, M. D. Wilke, D. C. Wilson, R. D. Day
Los Alamos National Laboratory, USA

N14-3 Development of a Neutron Color Image Intensifier
K.-I. Mochiki, T. Matsumoto, Y. Wada, M. Okazaki, *Musashi Institute of Technology, Japan*; K. Nittoh, C. Konagai, *Toshiba Co., Japan*

N14-4 Time-Resolved High Resolution Neutron Imaging Studies at the ORNL Spallation Neutron Source
V. V. Nagarkar[1], I. Shestakova[1], S. R. Miller[1], J. F. Ankner[2], H. Z. Bilheux[2], D. Penumadu[3], C. E. Halbert[2]
[1]RMD Inc., USA; [2]Oak Ridge National Laboratory, USA; [3]University of Tennessee, USA

N14-5 Design Optimization and Performance Capabilities of the Fast Neutron Imaging Telescope (FNIT)
U. Bravar[1], P. J. Bruillard[1], E. O. Flückiger[2], A. L. MacKinnon[3], J. R. Macri[1], M. L. McConnell[1], M. R. Moser[2], J. M. Ryan[1], R. S. Woolf[1]
[1]University of New Hampshire, USA; [2]University of Bern, Switzerland; [3]University of Glasgow, Scotland

N14-6 High Resolution Thermal Neutron Imaging at High Counting Rates with Noiseless Readouts
A. S. Tremsin, J. V. Vallerga, J. B. McPhate, O. H. W. Siegmund, J. S. Hall, *University of California at Berkeley, USA*; W. B. Feller, *bNOVA Scientific, Inc., USA*

N15 NSS POSTER I

Tuesday, Oct. 30 10:30 - 12:00, South Pacific I - V and Poster Tent
Session Chairs: Ralf Engels, *Forschungszentrum Juelich GmbH, Germany*
Liyuan Zhang, *California Institute of Technology*

Analog and Digital Circuits

N15-1 A High Resolution Time-to-Digital Converter Using Two-Level Vernier Delay Line Technique
H.-P. Chou, G. H. Lee
National Tsing Hua University, Taiwan

N15-3 ADC and TDC Implemented Using FPGA
J. Wu, S. Hansen, Z. Shi, *Fermilab, USA*

N15-5 Analysis on Sampling Bounds for Digital Spectrometers
X. Deng, Z. Deng, *Doctor, P.R. China*; Y. Liu, *Professor, P.R. China*; J. Ni, *Associate Professor, P.R. China*

N15-7 Filter Performance of a Multiple Correlated Double Sampling System with Exponential Reset
M. Porro[1,2], S. Herrmann[1,2], N. Hoernel[3]
[1]Max Planck Institut fuer Extraterrestrische Physik, Germany; [2]MPI Halbleiterlabor, Germany; [3]Cadence Design Systems GmbH, Germany

N15-9 Readout ASIC for GEM Detectors
Z. Deng, X. Deng, Y. Li, Y. Liu, Y. Li
Tsinghua University, China

N15-11 Parallel A-Synchronic Readout System, to Improve Imaging Efficiency with CZT Detectors.
A. Shahar, D. Shalom, D. Braginsky, U. El-Hanany
Orbotech Medical Solutions, Israel

N15-13 A Fast Integrating ADC Using Precise Time-to-Digital Conversion
T. Fusayasu, *Nagasaki Institute of Applied Science, Japan*

N15-15 Development of a Frontend LSI for Radiation Imaging Detectors with Gas Electron Multipliers
T. Fusayasu[1], S. Sano[2], Y. Tanaka[1], H. Hamagaki[2]
[1]Nagasaki Institute of Applied Science, Japan; [2]University of Tokyo, Japan

N15-17 Hardware-Based TCP Processor for Gigabit Ethernet
T. Uchida, *University of Tokyo, Japan*

N15-19 Performance of Multi-Channel and Low Power Front-End ASIC for MPGD μ-PIC Readout
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N15-21 An 8-Channels Analog ASIC for a Gamma-Ray Burst Detector Based on Silicon Drift Detector and Scintillator
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N15-23 High Resolution Double Hit Timing and Time over Threshold Measurement Feasibility for the TACQUILA System
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N15-25 Development of High Resolution TDC ASICs at GSI
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N15-27 A Circuit Technique for Offset Cancellation in Low-Noise Preamplifiers for Ionising Radiation Sensors
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N15-29 IDeF-X ECLAIRs: a CMOS ASIC for the Readout of Cd(Zn)Te Detectors for the SVOM Mission.
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CEA, France

N15-31 Simple Charge Sensitive Preamplifiers for Experiments with a Small Number of Detector Channels
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N15-33 MAROC: Multi-Anode ReadOut Chip for MaPMTS
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N15-35 A Ultra Fast Hybrid Charge-Sensitive Preamplifier for High-Capacitance Detectors
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N15-37 A VME Module for a Fast Readout of the Monolithic Analog Front-End Chip
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N15-39 Digital Part of SiPM Readout Chip for ILC
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N15-41 Evaluation of the LANL Hand Held Multiplicity Register and Canberra JSR-15
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N15-43 Double Precision FIR Filtering for High Resolution Digital Spectroscopy in Programmable Logic
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N15-45 Low Noise Integrated CMOS Front-End Electronics for Rays Spectroscopy
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N15-47 Charge Integrating ASIC with Pixel Level A/D Conversion
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N15-49 Preliminary Results from a Current-Mode CMOS Front-End Circuit for Silicon Photomultiplier Detectors
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N15-51 Reliability Issues and Implications of Electronic Circuit Design in an Industrial or a Research Environment
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N15-53 Signal Splitting Effect Analysis on SNR and Jitter Requirement for Muon Tracker Detector
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N15-55 Continuous Time Digitizer Utilizing Multiphase Sampling Technique
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N15-57 Design and Performance of the Low-Noise CMOS Charge Sensitive Preamplifier for CdZnTe Detectors
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N15-59 Prototype of Position-Sensitive X-Ray Detector Based on CdZnTe Sensitive Elements
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N15-61 The NEMO Directional Optical Module: Design and Prototyping
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N15-63 Readout Electronics Reliability Analysis and Qualification Tests for NEMO Underwater Neutrino Telescope
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N15-65 Results from the Low Mass Cosmic Ray Experiment on the HASP Balloon
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N15-67 Simulated Performance of 3-DTI Gamma-Ray Telescope Concepts
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N15-69 Closed Drift Accelerator with Instability/Overheating-Reduction System
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N15-71 Preliminary Observation of Polarization for Crab Nebula by PHENEX Polarimeter
M. Kanno, S. Gunji, Y. Kishimoto, H. Muramaya, Y. Ishigaki, F. Tokanai, H. Sakurai, Y. Ishikawa, K. Katayama, *Yamagata University, Japan*; K. Hayashida, M. Morimoto, N. Anabuki, H. Tsunemi, *Osaka University, Japan*; Y. Saito, T. Yamagami, *Institute of Space and Astronautical Science, Japan*; T. Mihara, M. Kohama, M. Suzuki, *The*

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N15-73 The Control Electronics of the Silicon Tracker Cooling System of the AMS-02 Experiment
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N15-75 The Electronic Ground Support Equipment for the Silicon Tracker Cooling System of the AMS-02 Experiment
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N15-77 EEE Project: "Science in the Schools"
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On behalf of the EEE Colaboration

N15-79 GEANT4 Response Calculations and Light Collection Studies for Gamma-Ray Burst Polarimeter - POLAR
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N15-81 Depth and 3D Position Sensing on UltraPeRL CdZnTe Detectors
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N15-83 Characterization of X-Ray Detectors Based on Encapsulated Vertical Bridgman Grown CZT Crystals for Astrophysics Application.
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N15-85 Characterization of Near Infrared Detectors for SNAP
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N15-87 Demo Model and Readout Electronics of POLAR - New Gamma Ray Burst Polarimeter
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N15-89 Evaluation of Hamamatsu Fully Depleted CCDs and the Applications to Subaru Telescope Imagers
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N15-91 A Cold Low Noise Preamplifier for Use in Liquid Xenon
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N15-93 Pixel Area Variation in CCDs and Implications for Precision Photometric Calibration
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N15-95 Depth Dependent Background Measurements with NCT
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N15-97 Data Acquisition System for the PoGOLite Astronomical Hard X-Ray Polarimeter
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N15-99 A Digital Signal Processor to Implement a Multi-Parameter Pulse-Shape Discriminator for High Purity Germanium Spectrometers
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N15-101 An FPGA-Based Data Acquisition System for a Multi-Layer Phoswich Detector
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N15-103 MWPC Readout with the GPX ASIC
H. Kleines, G. Bertschinger, M. Drochner, W. Erven, S. Frank, A. Axel, W. Peter, K. Franz-Josef
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N15-105 Temperature Monitoring for BES-III Experiment
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On behalf of the Detector slow control group of BES-III collaboration

N15-107 The PULSAR board for the the MAGIC-II Telescope Data Acquisition System
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On behalf of the MAGIC Collaboration

N15-109 Calibration Strategy for 3-D Position Sensitive CdZnTe Spectrometer Arrays
F. Zhang, Z. He, *The University of Michigan, USA*

N15-111 Maximum-Likelihood Estimation of Pulse Amplitude and Timing
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N15-113 Digital Adaptive Timing and Energy Measurement of Scintillator Events
S. Brambilla[1], F. Camera[1], M. Cuccarese[1], A. Geraci[2,1], B. Million[1], S. Scarpaci[2,1]
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N15-115 A Monitoring-Aware Design of the ATLAS Experiment's Read Out Driver for the RPCs Muon Spectrometer.
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N15-117 New Data Acquisition System for FOREST detector at LNS
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N15-119 A Versatile SoC Architecture for Detector Monitoring
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N15-121 Improvement of a High Speed and High Density Data Acquisition System for Multiple Gamma-Ray Detection
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N15-123 Generic Data Acquisition System for Multi-Dimensional Radiation Detectors
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N15-125 High Performance Firmware Architecture for FIR Filtering in DSP Processors
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N15-127 Optimum Synthesis of FIR Filters with Arbitrary Time and Frequency Constraints for Energy and Time Estimations in Case of Pulse Correlated Noise
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N15-129 Installation and Commissioning of the TileCal Read-Out Drivers.
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N15-131 MuSyC: a Software Package for the Time Alignment of the LHCb Muon System
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N15-133 The Optical Multiplexer Board for the ATLAS Hadronic Tile Calorimeter.
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N15-135 Design, Test and Commissioning of the Electronics Crate for the AMS-02 Calorimeter
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N15-137 FPGA Implementation of High-Resolution Time-to-Digital Converter
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N15-139 Electronics System for the GammaTracker Handheld CdZnTe Detector
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N15-141 Pulse Processing System for the RADMAP Radiation Modulation Aperture Imager
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N15-143 Radiation Detector Signal Processing Using Sampling Kernels without Bandlimiting Constraints
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N15-145 Multiple-event Sensitive DAQ for High-resolution Position-Sensing Silicon Drift Detectors: Hardware, Firmware and Software Architecture
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N15-147 Readout Electronics for Flat Panel PSPMT with Multiple CPU and Full Parallel Acquisition
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N15-149 A Compact 32 Channels Sampling ADC and Digital Processing Board
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N15-151 A Data Acquisition Architecture for a RPC-Based Small Animal Pet
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N15-153 The Data-Logging System of the Trigger and Data Acquisition for the ATLAS Experimenet at CERN
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N15-155 Online Monitoring and FPGA Configuration Using JTAG over Ethernet
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N15-157 A VME64x, 16-Channel, Pipelined, 250 MSPS Flash ADC with Switched Serial (VXS) Extension
F. J. Barbosa, E. Jastrzembski, H. Dong, J. Wilson, C. Cuevas, D. J. Abbott
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N15-159 Automated Testing of Radiation Detectors for Homeland Security
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N15-161 Neutron Spectrometer Automation at the Lujan Center
P. S. Lewis, D. S. Barr, G. M. Cooper, E. A. Meyer, A. H. Shapiro, R. B. Shurter, F. R. Trouw
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N15-163 A High-Speed Data Acquisition System for Segmented Ge-Detectors
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N15-165 Implementing Clients for Control and Monitoring Using AJAX
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N15-167 Digital Timing with Non- Stationery Noise Optimal Filter Algorithm for LSO/APD Detectors
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N15-169 Application-Level Protocols for Network-Based Control and Data Acquisition
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N15-171 Tests of an Operation-Server Based Distributed Data Acquisition System
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N15-173 A Flexible Readout Electronics for CZT Arrays with Real Time Digital Signal Processing
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N15-175 An Investigation of an Intra-Operative PET Imaging Probe
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N15-177 Error Detection and Device Control by Symbolic Analysis in High Speed Data Acquisition Systems
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N15-179 Development of a Modern Pressurized Water Reactor Simulator: Instrumentation, Design and Data Acquisition
D. R. Osborne, L. F. Miller, J. Hou, G. Graves
University of Tennessee, USA

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N15-181 Xenon-Filled Ionization Counters Utilizing a Virtual Frisch Grid
R. A. Austin
Constellation Technology Corporation, United States

N15-183 Detailed Study of the Performance of the LHCb Muon Chambers with Cosmic Rays
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N15-185 Drift Time Calibration of the ATLAS Monitored Drift Tubes with a Precision Mini-chamber
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N15-187 Saturation Characteristics of Ionization Chambers for High-Intensity Continuous and Pulsed X-Ray Beams
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N15-189 Investigations on the Performance of Pressurized Ionization Chambers for a Radiation Monitoring
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N15-193 Development of a GEM Detector for X-Ray Radiography of Cultural Properties
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N15-195 Gas Compositions Studies for the ATLAS MDT Calibration Model
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N15-197 Utilization of a Gaseous Micro Pattern Detector in a TPC Mode for Very High Flux (1GHz)
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N15-199 A Room Temperature Gas Proportional Scintillation Counter with Ar-Xe Mixtures for Soft X-Rays
S. J. C. do Carmo, F. I. G. M. Borges, T. H. V. T. Dias, F. P. Santos, A. M. F. Trindade, C. A. N. Conde
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N15-201 New Method to Produce Laser Calibration Beams in Gaseous Detectors.
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N15-203 Photoelectron Collection Efficiency in Mixtures Xe-CF4
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N15-205 Novel Photon Counting Gaseous Detectors for X-Ray Detection
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N15-207 Performance of 3-DTI Gamma-Ray Telescopes
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N15-209 Thicker GEM Foil Made by Chemical Etching Method
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N15-211 Charged Particle Identification Using Difference in Track Length Detected by Two-Dimensional Multi-Wire Proportional Counter
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N15-213 Thermal Neutron Detection with 6Li Converters
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N15-215 Assembling of GEM Detectors for the TOTEM Experiment
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N15-217 Development of a Curved Neutron Detector for Single Crystal Diffraction Study
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N15-219 Study of the Electron Photoextraction on Resistive Plate Chamber
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N15-221 Energy Dependence of W-Values for Heavy Charged Particles in Gases
S. Sasaki, T. Sanami, K. Saito, K. Iijima, H. Tawara, *High Energy Accelerator Research Organization, Japan*; T. Murakami, *National Institute of Radiological Sciences, Japan*

N15-223 A Triple GEM Detector for Luminosity Monitor at Dafne Phi Factory
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N15-225 A Study on the Output Charge from a TGC for 2.5 MeV and 14 MeV Neutrons
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N15-227 Second Generation High Pressure Xenon Gamma Ray Detector
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N15-229 Elastic Collision Cross Sections and Monte Carlo Calculations of Kr+ Ions Drifting in Gaseous Krypton
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N15-231 Performance of a Large-Volume, Low-Background, Internal-Source Proportional Counter
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N15-233 RPC Investigation Using Finely Spaced 2-D Strip Readout
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N15-235 VUV Light Detection Using MSGC for Next-Generation VUV Scintillator
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N15-237 Fabrication and Test of a Beta Gauge for Thickness Measurement
T.-Y. Song, H. S. Kim, S.-H. Park, J. H. Ha, J.-B. Kim, *Korea Atomic Energy Research Institute, Korea*; Y.-K. Kim, *Hanyang University, Korea*

N15-239 A Measurement of Scintillation in CF4 Using GEM Foils and a CsI Photocathode
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N15-241 3 Gamma Medical Imaging Using Liquid Xenon and Scandium-44 Radio Nuclide
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N15-243 Advances in Neutron Science Instrumentation and Hardware at the Los Alamos Neutron Science Center (LANSCE)
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N15-245 Development of Radiation Hard N-on-P Silicon Microstrip Sensors for Super LHC
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N15-247 A Cosmic Ray Detector for Use in Informal and Formal Education Settings
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N15-249 Electron Beam Test Results with a DC-Coupled Single-Sided Strip Detector
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N15-251 Tests of AC-Coupled Silicon Strip Detectors with a Proton Beam and a Beta Source
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N15-253 A Very Fast Beam Spectrometer For Physics Experiments
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N15-255 A Method for Humidity Extraction and Exchanging in Experimental Gas Mixtures
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N15-257 Aligning the CMS Muon Endcap Detector with a System of Optical and Mechanical Sensors
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N15-259 Compact Micro Focusing DIRC
T. Zhao, *University of Washington, USA*

N15-261 Performance evaluation of silica aerogel Cherenkov counters with n>1.08
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N15-263 New Methods for the Alignment of the ATLAS Muon Spectrometer with Tracks
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N15-265 Measurement of the Mass Attenuation Coefficient of Ge and BGO for High-Energy Gamma-Rays
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N15-267 Evaluation of Contact Resistance of Silver-Loaded Epoxy with Aluminized Backplane of Silicon Microstrip Sensors
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N15-269 The HV Protection Boards for the RICH Detectors of LHCb
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N15-271 Results on the Position Sensitivity of AGATA Prototype Detectors and Generation of Simulated Basis Pulse Shapes for on-Line PSA and Tracking
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N15-273 A New Four Channel Pulse Shape Discriminator
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N15-275 An Efficient Method to Determine the Space-to-Drift-Time Relationship of the ATLAS Monitored Drift Tube Chambers
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N15-277 Serial Powering of Silicon Sensors: Noise Performance and Data Communication over Power Lines
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N15-279 A Simple and Complete USB Interface Package for Test Bench Development.
D. R. Breton, C. Cheikali, *CNRS - LAL ORSAY, FRANCE*

N15-281 A Novel High Voltage System for Triple GEM Detectors
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N15-283 Development of Reflective PVC Extrusions for the NOvA Neutrino Detector
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N15-285 Gamma-Radiation Dosimetry with Magnetic Czochralski Silicon Diode
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N15-287 Development of Compact Hard X-Ray Source via Laser Compton Scattering for Biological and Medical Imaging at AIST
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N15-289 Study of Alternative Serial Powering Systems for the Future ILC Silicon Tracker
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N15-291 Voltage-Regulation Stations for the Distributed Power Supply System of the ATLAS Pixel Detector
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N15-293 Timing Calibration of a Neutrino Telescope Prototype
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On behalf of the NEMO Collaboration

N15-295 A VUV Gas Transmission Monitor and Recirculating Gas System for the PHENIX Hadron Blind Detector
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N15-297 A Multichannel TDC Based on Time Multiplexing
F. Iacoangeli, *INFN, Italy*

N15-299 Implementation of the Legendre Transform for Track Segment Reconstruction in the ATLAS Monitored Drift Tube Chambers
E. N. Gazis, M. Bachtis, T. Alexopoulos, G. Tsipolitis
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N15-301 The Cathode Strip Chamber System of the ATLAS Muon Spectrometer
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Nuclear Measurements and Monitoring Techniques

N15-303 Dosimetry of High Intensity Electron Beams Produced with Dedicated Accelerators in Intra-Operative Radiation Therapy (IORT)
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N15-305 Measurement of Excitation Functions for the Proton-Induced Nuclear Reactions on Natural Tungsten up to 40 MeV
G. Kim, M. Lee, M. U. Khandaker, K. Kim, Y. S. Lee, *Kyungpook National University, Korea*; M. S. Uddin, *Atomic Energy Establishment, Bangladesh*

N15-307 Measurement of Cross Sections for Radioisotopes Produced by the (p, Xn) Reactions in Natural Molybdenum
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N15-309 Atmospheric Radiation as a Tracer of Precipitation Secular Equilibrium, Transit Times and Rates
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N15-311 Performance Test of an Environmental Radiation Monitoring System
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N15-313 A Dual Modality Gamma Camera Using LaCl3(Ce) Scintillator
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N15-315 Evaluation of Phoswich Well Detectors for Radioxenon Monitoring
W. Hennig, H. Tan, A. Fallu-Labruyere, W. K. Warburton, K. Sabourov, *XIA LLC, USA*; J. I. McIntyre, *Pacific Northwest National Laboratory, USA*; A. Gleyzer, *PhotoPeak, Inc, USA*

N15-317 An Unattended Gamma Monitor for the Determination of Snow Water Equivalent (SWE) Using the Natural Ground Gamma Radiation
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N15-319 TDC Module for Time-Of-Flight
K.-C. Jin, *Korea Institute of Industrial Technology, South Korea*; M.-K. Moon, *Korea Atomic Energy Research Institute, South Korea*

N15-321 Modeling Ambient Background in Complex Detection Scenarios
S. D. Kiff, L. E. Smith, K. D. Jarman
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N15-323 Application of the Cd Ratio Method to the Measurement of Fissile Material Content of the ACP Nuclear Materials
T. H. Lee, H. D. Kim, J. S. Yoon, *Korea Atomic Energy Research Institute, Republic of Korea*; H. O. Menlove, *Los Alamos National Laboratory, USA*

N15-325 Design and Testing of a Unique Active Compton-Suppressed LaBr3(Ce) Detector System for Improved Sensitivity Assays of TRU in Remote-Handled TRU Wastes
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N15-327 Neutron Spectrometry of 7Li(p,n) Neutron Source Using a 3He Ion Chamber
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N15-329 Application of the BJT Detector for Simple, Low-Cost, and Low-Power Alpha-Particle Detection Systems
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N15-331 Preliminary Results of an on-Line, Multi-Spectrometer Fission Product Monitoring System to Support Advanced Gas Reactor Fuel Testing and Qualification in the Advanced Test Reactor at the Idaho National Laboratory
D. M. Scates, J. K. Hartwell, M. W. Drigert, J. B. Walter
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N15-333 Identification of Actinides by Delayed Gamma-Ray Spectrometry: Assessment of Performances on Mock-up Packages
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N15-335 Quantification of Neutron Fields of Several Nuclear Facilities in Korea Using an Extended Bonner Sphere
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N15-337 Heavy Ions Fragmentations Measurements at Intermediate Energies in Hadrontherapy and Spatial Vehicles Shielding
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N15-339 Proton Beam Flux Monitoring with Liquid Scintillator Circulation System
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N15-341 Feasibility Evaluation of the Application of Silicon Drift Detectors to PIXE Detection of Medium-Light Elements
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N15-343 Photofission Tomography of Nuclear Waste Packages
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N15-345 Monitoring Neutron Generator Output in a Mixed Neutron-Gamma Field Using a Plastic Scintillator
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N15-347 Cellular Design for a Liquid Argon Time Projection Chamber
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N15-349 Wireless Neutron Detector Modules for Dosimetry and Remote Monitoring
D. S. McGregor, S. L. Bellinger, D. Bruno, S. Cowley, W. L. Dunn, M. Elazegui, W. J. McNeil, H. Oyenan, E. Patterson, J. K. Shultis, G. Singh, C. J. Solomon
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N15-351 The Use of Cosmic-Ray Radiation to Determine the Bulk Density of Waste Containers for Matrix Attenuation Correction
D. R. Nakazawa, S. Croft, R. D. McElroy, W. F. Mueller
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N15-353 Detection of Gamma-Ray Emission from Cosmogenetic Muonic Atoms
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N15-355 A New Algorithm for Radioisotope Concentration Monitoring in Cooling Water Outlet of Nuclear Power Plant
S. M. Rahman, G. Cho, S. Chang, J. H. Sin, J. Lee
Korea Advanced Institute of Science and Technology, Korea

N15-357 A Gamma-Ray Scanner for Nuclear Spent-Fuel Cask Safeguards
A. J. Caffrey, R. Aryaeinejad, E. H. Seabury, C. J. Wharton, P. L. Winston, J. M. J.M. Zabriskie
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N15-359 MIPP Nuclear Cross Sections for Calormeter Development
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On behalf of the MIPP E907 Expeirment at Fermilab

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N15-361 FPGA-Based High-speed Data Transmission with Optical Fiber in Trigger System of BESIII
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N15-363 Signal Processing in the Calorimeters' Pre-Trigger of the CMD-3 Detector
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N15-365 Silicon Micro Strip Detector Readout System
J. Hoffmann, N. Kurz, W. Ott, *GSI Darmstadt, Germany*

N15-367 SPECS: a Serial Protocol for Control System of LHCb
D. D. Charlet, D. D. Breton, *CNRS, France*

N15-369 Implementation and Performance of the Tau Trigger in the ATLAS Experiment
M. P. Casado Lechuga, *UAB & IFAE, Spain*
On behalf of the ATLAS LVL1 calorimeter group and ATLAS HLT group

N15-371 Proposal of a Readout Technique for Low-Pitch Pixel Detectors
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N15-373 The Design of a Digital Coincidence-Detection Trigger System for a RPC-Based Pet
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N15-375 Integrated Tests of a High Speed VXS Switch Card and 250 MSPS Flash ADC
C. Cuevas, H. Dong, F. Barbosa, E. Jastrzembski, J. Wilson, M. Taylor, *Thomas Jefferson National Accelerator Facility, USA*; D. Curry, *Harris Corporation, USA*

N15-377 The Fast Resistive Plate Chamber Based Muon Trigger Upgrade for PHENIX
R. Towell, *Abilene Christian University, USA*
On behalf of the PHENIX Collaboration

N15-379 A High Quality Exclusive Trigger Selection for the HW Discovery Channel at CDF
M. Casarsa, *Fermilab, USA*
On behalf of the Higgs Trigger Task Force of CDF

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N15-381 Prototype Development of a Time Projection Chamber Based on GEM Foils
F. Garcia, M. Kalliokoski
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N15-383 The ATLAS Simulation in Preparation for the LHC Startup
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N15-385 Simulating the Response of Ultra-High Energy Resolution X- and Gamma-Ray Microcalorimeter Detectors
A. S. Hoover, M. K. Bacrania, M. W. Rabin, C. R. Rudy, D. T. Vo, *Los Alamos National Laboratory, USA*; J. A. Beall, W. B. Doriese, R. D. Horansky, K. D. Irwin, J. N. Ullom, B. L. Zink, *National Institute of Standards and Technology, USA*

N15-387 Test of the Influence of Random Numbers Quality in GATE Simulations for a Tomographic Reconstruction
R. Romain, H. R. C. Hill, *LIMOS, France*; E. B. Ziad, B. Vincent, *LPC, France*

N15-389 Simulation of the Radiation Environment Encountered by a Biochip During a Mars Mission
A. Le Postollec, M. Dobrijevic, *Université Bordeaux 1, CNRS, OASU, Laboratoire d'astrophysique de bordeaux (LAB), UMR 5804, FRANCE*; S. Incerti, P. Moretto, H. Seznec, *Université Bordeaux 1, CNRS / IN2P3, Centre d'Etudes Nucléaires de Bordeaux Gradignan, UMR 5797, FRANCE*; L. Desorgher, *Physikalisches Institut, University of Bern, SWITZERLAND*; G. Santin, P. Nieminen, *ESA-ESTEC, THE NETHERLANDS*; L. Dartnell, *CoMPLEX, University College London, UK*; O. Vandenabeele-trambouze, G. Coussot, *Organisation Moléculaire, Evolution et Matériaux Fluorés, Université Montpellier II, FRANCE*

N15-391 cMsg - a Publish/Subscribe Interprocess Communication Package and Framework
E. Wolin, D. Abbott, V. Gyurjyan, G. Heyes, E. Jastrzembski, D. Lawrence, C. Timmer
Jefferson Lab, US

N15-393 EVIO - a Lightweight Object-Oriented I/O Package
E. Wolin, D. Abbott, V. Gyurjyan, G. Heyes, E. Jastrzembski, D. Lawrence, C. Timmer
Jefferson Lab, US

N15-395 Simulations of HEX Payload Using Geant4
M. Sudhakar, P. Sreekumar, *ISRO Satellite Center, India*

N15-397 Anatomical Modeling with the Geant4 Toolkit
S. Chauvie[1,2], S. Guatelli[2], B. Mascialino[2], M. G. Pia[2], W. Pokorski[3]
[1]S Croce e Carle Hospital, Italy; [2]INFN, Italy; [3]CERN, Switzerland

N15-399 The ET System - High Speed Event Transfer and Distribution via Shared Memory and Networks
E. Wolin, D. Abbott, V. Gyurjyan, G. Heyes, E. Jastrzembski, D. Lawrence, C. Timmer
Jefferson Lab, US

N15-401 Slow Control System for the STAR Experiment
Y. Gorbunov, M. Cherney, J. Fujita, W. Waggoner
Creighton University, USA

N15-403 Silicon Vertex Tracker Drift Velocity Calibration and Alignment
I. V. Kotov, *The Ohio State University, USA*; J. Lauret, Y. Fisyak, V. Perevoztchikov, G. Van Buren, *Brookhaven National Laboratory, USA*; J. Bouchet, *Subatech, France*; R. Derradi de Souza, *Instituto de Fisica da Universidade de Sao Paulo, Brazil*; S. Margetis, *Kent State University, USA*

N15-405 The Realization of Distributed Information Management System in DAQ Testbed
Y. Mei
Institute of High Energy Physics , Academia Sinica, CHINA

N15-407 Development of a Monte Carlo Simulation to Study Linear Radiation Position Sensitive Detectors
C. H. de Mesquita, M. M. Hamada
Instituto de Pesquisas Energeticas e Nucleares - IPEN/CNEN-SP, Brazil

N15-409 Study of Protn Computed Tomography Using GEANT4 Simulation
T. Aso, K. Fujisaka
Toyama National College of Maritime Technology, Japan

N15-411 Nonparametric Bayesian Inference in Nuclear Spectrometry
E. Barat, T. Dautremer, *CEA Saclay, France*

N15-413 gMocren: High-Quality Volume Visualization Tool for Geant4 Simulation
A. Saitoh, *Japan Science and Technology Agency, Japan*; A. Kimura, *Ashikaga Institute of Technology, Japan*; S. Tanaka, *Ritsumeikan University, Japan*; T. Sasaki, *High Energy Accelerator Research Organization, Japan*

N15-415 Distributed Policy Framework Across Multiple Grid Domains
V. Ciaschini[1], A. Ferraro[1], A. Forti[1], A. Ghiselli[1], A. Gianoli[1], E. Luppi[2], F. Stagni[2], L. Tomassetti[2], V. Venturi[1]
[1]INFN, Italy; [2]Universita' di Ferrara, Italy

N15-417 A Compact and Lightweight AIDA Implementation
A. Pfeiffer, *CERN, Switzerland*

N15-419 Robustness in Quantitative analysis of perfusion PET ammonia studies
S. Chauvie, *S. Croce e Carle Hospital, Italy*
On behalf of the Department of Radiology, S. Croce e Carle Hospital

N15-421 The Development of a Set of Images to Test Analysis and Visualization Software in Commercial Nuclear Medicine and Pet Software
S. Chauvie, *S Croce e Carle Hospital, Italy*
On behalf of the S. Croce e Carle Hospital Team

N15-423 The GANGA Job-Management System
D. Liko, *CERN, Switzerland*
On behalf of the GANGA Team

N15-425 Evaluation of Phase Effects in Geant4 Microdosimetry Models for Particle Interactions in Water
S. Incerti, P. Moretto, *CENBG, France*; M. G. Pia, *INFN Genova, Italy*

N15-427 Enhancing Collaboration in Large Scientific Projects through Virtual Logbooks
D. Bourilkov, S. Sonapeer, *University of Florida, USA*

N15-429 A Method to Correct for PVE Errors in SPECT Imaging for Parkinson's Disease
S. Chauvie[1,2], A. Papaleo[1], A. Boghi[1], L. Gozzoli[1], A. Biggi[1], G. Perno[1]
[1]S Croce e Carle Hospital, Italy; [2]INFN, Italy

N15-431 Hot-chamber Software-Based Management in Nuclear Medicine Dept
S. Chauvie[1,2], G. Perno[1], R. Giuliano[1], V. Anna[1]
[1]S Croce e Carle Hospital, Italy; [2]INFN, Italy

N15-433 BaBar Skim Production
D. A. Smith, *Stanford Linear Accerator Center, USA*
On behalf of the BaBar computing group

N15-435 Validation on GEANT4 Use Applied to Estimate Transmission Curves to Diagnostic Energies to Concrete and Lead
G. Hoff, S. F. Firmino
Pontifical Catholic University in Rio Grande do Sul, Brazil

N15-437 Automatically Generating Domain Specific Visual Language Editors for the Purpose of Deriving a Robust HEP Data Analysis Tool
V. Sousa, V. M. M. D. Amaral
UNL Universidade Nova de Lisboa, Portugal

N15-439 Validation of the Geant4 Physics at MeV Energies with Electron Beams
P. L. Gueye, *Hampton University, USA*
On behalf of the CAMI collaboration

N15-441 Validation of the Geant4 Physics in the GeV Regime with Jefferson Lab Data
P. L. Gueye[1], M. Epps[1,2]
[1]Hampton University, USA; [2]Jeffeson Lab, USA

N15-443 Classrooms PCs as Enhancement for the GRID Effort
E. Etzion, Y. Benhammou, E. Aronovich
Tel Aviv University, Israel

N15-445 Muon Track Reconstruction in the ATLAS Experiment
S. Y. Willocq, *University of Massachusetts, Amherst, USA*
On behalf of the ATLAS Collaboration

NSS/MIC Joint Program

Tuesday, Oct. 30 13:30 - 18:00
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N16 Solid State Tracking Detectors II

Tuesday, Oct. 30 13:30-15:30, Coral IV
Session Chair: Wojciech Dulinski, *IPHC/IN2P3/CNRS*

N16-1 Development of 3D Detectors for Very High Luminosity Colliders
C. Fleta, *University of Glasgow, United Kingdom*
On behalf of the RD50 Collaboration

N16-2 A Fourth Generation Continuous Acquisition Pixel Detector
E. Martin, G. S. Varner, M. Cooney, *Univ. of Hawaii, USA*

N16-3 Recent Development on Triple Well 130 nm CMOS MAPS with in-Pixel Signal Processing and Data Sparsification Capability
G. Rizzo, *Universita' di Pisa & INFN, Italy*
On behalf of the SLIM5 Collaboration

N16-4 A Novel CMOS Monolithic Active Pixel Sensor with Analog Signal Processing and 100% Fill Factor
J. A. Ballin[1], J. P. Crooks[2], P. D. Dauncey[1], A.-M. Magnan[1], Y. Mikami[3], O. Miller[3], M. Noy[1], V. Rajovic[3], M. Stanitzki[2], K. D. Stefanov[2], R. Turchetta[2], M. Tyndel[2], E. G. Villani[2], N. K. Watson[3], J. A. Wilson[3]
[1]Imperial College, United Kingdom; [2]STFC Rutherford Appleton Laboratory, United Kingdom; [3]University of Birmingham, United Kingdom

N16-5 CMOS APS Sensor Characterization with Infrared, Visible and Ultraviolet Laser Sources
D. Passeri[1,2], A. Marras[3,2], P. Placidi[1,3], P. Delfanti[3,2], D. Biagetti[1,2], L. Servoli[2], G. M. Bilei[2]
[1]University of Perugia (Italy), Italy; [2]INFN Perugia (Italy), Italy; [3]University of Parma (Italy), Italy

N16-6 Radiation Tolerance of the MOS-Type DEPFET Active Pixel Sensor
L. Andricek[1], M. Battaglia[2], D. Contarato[2], G. Ferrari[3], G. Lutz[1], H. G. Moser[1], M. Porro[1], P. Giubilato[2], S. Rummel[1], R. H. Richter[1], J. Treis[1], Q. Wei[1]
[1]MPI Halbleiterlabor, Germany; [2]LBNL, USA; [3]Politecnico di Milano, Italy

N16-7 High Energy Beam Test Studies Using a Submicron DEPFET Telescope
R. Kohrs, *Physikalisches Institut der Univeristät Bonn, Germany*
On behalf of the DEPFET Collaboration

N17 Instrumentation for Homeland Security II: Gamma-Ray Detection

Tuesday, Oct. 30 13:30-15:30, Coral V
Session Chairs: Robert Runkle, *PNNL*
Sara Pozzi, *Oak Ridge National Laboratory*

N17-1 Defense Threat Reduction Agency (DTRA): Combating the Radiological/Nuclear Threat:
R. G. Harbs
Nuclear Detection Technologies Division (NTD), USA

N17-2 Simulated Performance of the GammaTracker CdZnTe Handheld Radioisotope Identifier
C. E. Seifert, D. V. Jordan, M. J. Myjak
Pacific Northwest National Laboratory, USA

N17-3 Hand-Held Gamma-Ray Spectrometer Based on High-Efficiency Frisch-Ring CdZnTe Detectors
Y. Cui, A. Bolotnikov, G. Camarda, A. Hossain, R. B. James, G. De Geronimo, J. Fried, P. O'Connor, *Brookhaven National Laboratory, USA*; A. Kargar, M. J. Harrison, D. S. McGregor, *Kansas State University, USA*

N17-4 A Fieldable-Prototype, Large-Area, Gamma-Ray Imager for Orphan Source Search
K. P. Ziock[1], J. W. Collins[2], M. F. Cunningham[1], L. Fabris[1], F. Habte[1], T. P. Karnowski[1]
[1]Oak Ridge National Laboratory, USA; [2]Lawrence Livermore National Laboratory, USA

N17-5 Development and Use of a Portable Spectral Gamma - Neutron Scanner with Real - Time Isotope Identification for Use in Nuclear Security, Safeguards and Environmental Surveys
R. Arlt, K. Baird, P. Dvornyak, M. Schrenk, *International Atomic Energy Agency, Austria*; V. Kazhamyakin, E. Bystrov, *Atomtex, Belarus*; F. Kniest, *Saint-Gobain Crystals, The Netherlands*

N17-6 *Cs2LiYCl6:Ce Neutron Gamma Detection System*
J. Glodo, W. Brys, G. Entine, W. M. Higgins, E. V. D. van Loef, M. R. Squillante, K. S. Shah
Radiation Monitoring Devices, Inc., USA

N17-7 The First 3-D Position Sensitive HgI2 Detector Array System
Z. He, F. Zhang, Y. Zhu, W. Kaye, *The University of Michigan, USA*; L. Bastian, L. V. D. Berg, K. Pohl, *Constellation TEchnology Corporation, USA*

N17-8 Application of LaBr3:Ce (BrilLanCe®380) Scintillators in Radio-Isotope Identification Devices
G. Pausch, C.-M. Herbach, R. Hillebrands, A. Kreuels, R. Lentering, F. Lueck, F. Platte, K. Roemer, F. Scherwinski, J. Stein, N. Teofilov, *ICx Radiation GmbH, Germany*; M. Moszynski, L. Swiderski, T. Szczesniak, *Soltan Institute for Nuclear Studies, Poland*

N18 New Solid State Detectors I: Si Detectors and Arrays

Tuesday, Oct. 30 16:00-18:00, Coral IV
Session Chair: Robert McLaren, *Consultant*

N18-1 Performance Evaluation of Multi-Pixel Photon Counters for PET Imaging
Q. Xie[1,2], R. Wagner[3], G. Drake[3], P. DeLurgio[3], Y. Dong[4], C.-T. Chen[1], C.-M. Kao[1]
[1]The University of Chicago, USA; [2]Huazhong University of Science and Technology, China; [3]Argonne National Lab, USA; [4]Illinois Institute of Technology, USA

N18-2 Scintillation Detection Using a 3mm X 3mm Silicon Photomultiplier
K. C. Burr, G.-C. Wang, *GE Research, USA*

N18-3 New Developments on 3D Detectors at IRST
G. F. Dalla Betta[1,2], M. Boscardin[3], L. Bosisio[4,5], C. Piemonte[3], A. Pozza[3], S. Ronchin[3], A. Zoboli[1,2], N. Zorzi[3]
[1]University of Trento, Italy; [2]INFN Padova (Gruppo collegato di Trento), Italy; [3]FBK-IRST, Italy; [4]University of Trieste, Italy; [5]INFN Trieste, Italy

N18-4 3D Active Edge Silicon Sensors with Different Electrode Configurations: Radiation Hardness and Noise Performance
C. Da Via[1], E. Bolle[2], K. Einsweiler[3], M. Garcia-Sciveres[3], J. Hasi[1], C. Kenney[4], V. Linhart[5], S. Parker[6], S. Pospisil[5], O. Rohne[2], T. Slavickec[5], S. Watts[1], N. Wermes[7]
[1]University of Manchester /CERN, UK; [2]Oslo University, Norway; [3]Lawrence berkeley laboratory, USA; [4]Molecular Biology Consortium, USA; [5]Technical University, Praha, Czech Rep.; [6]University of Hawaii, USA; [7]Bonn University, Germany

N18-5 DEPFET Detector-Amplifier Structure: Properties, Achievements and New Developments, Concepts and Applications
G. Lutz, S. Herrmann, M. Porro, R. H. Richter, L. Strueder, J. Treis, S. Woelfel
MPI Semiconductor Laboratory, Germany

N18-6 A Photogate Monolithic Active Pixel Sensor with Lateral Electric Field to Improve Its Charge Transfer-Efficiency
G. W. Deptuch[1], H. S. Matis[2], A. Raman[3], M. Turowski[3], H. H. Wieman[2]
[1]Brookhaven National Laboratory, USA; [2]Lawrence Berkeley National Laboratory, USA; [3]CFD Research Corporation, USA

N18-7 High Precision Telescope for Medium and Low Energy Particle Beams Based on Thin, Submicron Precision CMOS Monolithic Active Pixel Sensors
W. Dulinski, A. Besson, J. Baudot, G. Claus, M. Goffe, M. Winter, *IPHC/IN2P3/CNRS, France*; A. F. Zarnecki, *Warsow University, Poland*

N18-8 Application of Controlled-Drift Detectors to Spectroscopic X-Ray Imaging
A. Castoldi[1,2], C. Guazzoni[1,2], R. Hartmann[3,4], C. Ozkan[5,2], L. Strüder[4,6,7], A. Visconti[1,2]
[1]Politecnico di Milano, Italy; [2]INFN, Italy; [3]PNSensor GmbH, Germany; [4]Max Planck Institut, Germany; [5]Universita' degli Studi di Milano, Italy; [6]Max Planck Institut für Extraterrestrische Physik, Germany; [7]Universität Siegen, Germany

N19 Instrumentation for Homeland Security III

Tuesday, Oct. 30 16:00-18:00, Coral V
Session Chair: R. Leon Feinstein, *DHS/DNDO*

N19-1 Geometrically Optimized, Labr3:Ce Scintillation Sensor Array for Enhanced Stand-off Direction Finding of Gamma Radiation Sources
J. H. Winso, E. S. Ackermann, M. Fennell, J. Rolando, R. Perez, M. Pagey, *Space Micro Inc, USA*; J. Hovgaard, *Radiation Solutions Inc, Canada*; H. R. B. Everett, *US Navy, USA*

N19-2 Fast Neutron Resonance Radiography for Homeland Security
B. W. Blackburn[1], G. Chen[2], W. A. Franklin[1], E. E. Ihloff[1], G. E. Kohse[1], R. C. Lanza[1], B. McAllister[1], D. Perticone[2], V. Ziskin[1,2]
[1]MIT, USA; [2]L3 Communications, USA

N19-3 Feasibility Study of the Detection of Special Nuclear Materials in Air Cargo Using Fast-Neutron/Gamma-Ray Radiography
J. R. Tickner, J. E. Eberhardt, Y. Liu, G. Roach, B. Sowerby
CSIRO, Australia

N19-4 Muon Radiography with the CMS Muon Barrel Chambers
E. Conti[1], F. Gonella[1], S. Vanini[1,2], G. Zumerle[1,2], M. Benettoni[1], P. Checchia[1], A. Dainese[1,2], D. Fabris[1], F. Gasparini[1,2], U. Gasparini[1,2], M. Lunardon[1,2], A. T. Meneguzzo[1,2], M. Morando[1,2], S. Moretto[1,2], G. Nebbia[1], M. Pegoraro[1], S. Pesente[1], P. Ronchese[1,2], E. Torassa[1], G. Viesti[1,2], G. Bonomi[3], A. Zenoni[3]
[1]INFN sez. di Padova, Italy; [2]Universita' di Padova, Italy; [3]Universita' di Brescia, Italy

N19-5 Development of an Intense Pulsed Characteristic Gamma-Ray Source for Active Interrogation of SNMs
J. W. Schumer, R. J. Commisso, D. H. Hinshelwood, D. Mosher, D. P. Murphy, D. G. Phipps, S. J. Stephanakis, B. V. Weber, F. C. Young, G. Cooperstein, *Naval Research Laboratory, USA*; B. W. Blackburn, J. L. Jones, J. Johnson, N. O. Valles, *Idaho National Laboratory, USA*

N19-6 Standoff Nuclear Material Imaging and Detection of Photonuclear-Induced Delayed Emissions
D. R. Norman, J. L. Jones, D. L. Chichester, K. J. Haskell, *Idaho National Laboratory, USA*; P. Vanier, *Brookhaven National Laboratory, USA*; A. W. Hunt, *Idaho State University, USA*

N19-7 GeMini: A Miniature Germanium-Based Gamma-Ray Spectrometer
M. T. Burks, D. Eckels
Lawrence Livermore National Laboratory, USA

N19-8 High Performance Cryostat Development for Fieldable
J. E. Fast, C. E. Aalseth, A. R. Day, E. S. Fuller, B. J. Hyronimus, O. D. Mullen, R. C. Runkle, J. E. Smart, G. A. Warren
Pacific Northwest National Laboratory, USA

N20 Solid State Tracking Detectors III

Wednesday, Oct. 31 08:30-10:00, Coral I
Session Chairs: Norbert Wermes, *Bonn University*
Ingrid-Maria Gregor, *DESY*

N20-1 A Novel Monolithic Pixel Detector Implemented in High-Voltage CMOS Technology
I. Peric, *University of Mannheim, Germany*

N20-2 SOI Pixel Developments in a 0.15um Technology
Y. Arai, Y. Ikegami, Y. Ushiroda, 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, H. Miyake, *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, K. Fukuda, H. Komatsubara, J. Ida, H. Hayashi, Y. Kawai, *Oki Electric Industry Co. Ltd., JAPAN*

N20-3 TCAD Simulation for SOI Pixel Detector
M. Hazumi, Y. Arai, Y. Ikegami, T. Kohriki, O. Tajima, S. Terada, T. Tsuboyama, Y. Unno, Y. Ushiroda, *KEK, Japan*; K. Hara, H. Miyake, *University of Tsukuba, Japan*; H. Ikeda, *JAXA, JAPAN*; H. Ishino, Y. Saegusa, *Tokyo Institute of Technology, Japan*; T. Kawasaki, *Niigata University, Japan*; E. Martin, G. Varner, *University of Hawaii, USA*; H. Tajima, *SLAC, USA*; K. Fukuda, H. Hayashi, J. Ida, H. Komatsubara, M. Ohno, *Oki Electric Industry Co. Ltd., JAPAN*

N20-4 Testbeam Results of 3D Silicon Pixel Detectors
M. Mathes[1], C. DaVia[2], J. Hasi[2], S. Parker[3], L. Reuen[1], M. Ruspa[4], J. Velthuis[1], S. Watts[2], M. Cristinziani[1], K. Einsweiler[5], M. Garcia-Sciveres[5], C. Kenney[6], N. Wermes[1]
[1]Universität Bonn, Germany; [2]Brunel University, UK; [3]University of Hawaii, USA; [4]Universita degli Studi di Torino, Italy; [5]Lawrence Berkeley National Laboratory, USA; [6]Molecular Biology Consortium, USA

N20-5 A Silicon-on-Insulator Implementation of a Fifth Generation Continuous Acquisition Pixel Detector
E. Martin, G. S. Varner, H. Hoedlmoser, *Univ. of Hawaii, USA*; Y. Arai, Y. Ikegami, Y. Ushiroda, Y. Unno, O. Tajima, T. Tsuboyama, *KEK, High Energy Accelerator Research Organization, JAPAN*; H. Ikeda, *JAXA, JAPAN*; K. Hara, H. Miyake, *Univ. of Tsukuba, JAPAN*; H. Ishino, *Tokyo Inst. Tech., JAPAN*; T. Kawasaki, *Niigata Univ., JAPAN*; H. Tajima, *SLAC, USA*; M. Ohno, K. Fukuda, H. Komatsubara, J. Ida, H. Hayashi, Y. Kawai, *Oki Electric Industry Co. Ltd., JAPAN*

N20-6 Charge Collection from Proton and Alpha Particle Tracks in Silicon Pixel Detector Devices
M. Campbell[1], E. Heijne[1], T. Holý[2], J. Idárraga[3], J. Jak bek[2], C. Lebel[3], C. Leroy[3], X. Llopart[1], S. Pospíšil[2], L. Tlustos[1], Z. Vykydal[2]
[1]CERN, CH-1211 Switzerland; [2]Institute of Experimental and Applied Physics, Czech Technical University in Prague, CZ-12800 Czech Republic; [3]Université de Montréal, H3C 3J7 Canada

N21 Gaseous Detectors II

Wednesday, Oct. 31 08:30-10:00, Coral II
Session Chairs: Fabio Sauli, *INFN-Trieste and CERN*
Yulan Li, *Tsinghua University*

N21-1 (invited) The Optimal Detector for WIMP and 0-Neutrino Double Beta Decay Searches: Identical High-Pressure Xenon Gas TPC
D. R. Nygren, *Lawrence Berkeley National Laboratory, USA*

N21-2 Three Dimensional Track Imager (3-DTI) Image Reconstruction
S. Son[1], L. M. Barbier[1], P. F. Bloser[2], G. A. de Nolfo[1], S. D. Hunter[1], J. F. Krizmanic[1], J. T. Link[1], M. L. McConnell[2], J. W. Mitchell[1], J. M. Ryan[2], R. M. Sambruna[1]
[1]NASA/GSFC, USA; [2]University of New Hampshire, USA

N21-3 Development of High-Efficiency, Glass Shell-Based, Helium 3-Filled Neutron Detector
R. A. Kisner[1], D. E. Holcomb[1], A. C. Stephan[2], V. Jardret[2], C. L. Britton[1]
[1]Oak Ridge National Laboratory, USA; [2]Material Innovations, USA

N21-4 The Impact of Multiple-Site Interactions on the Energy Resolution of a High-Pressure Xenon Gamma-Ray Spectrometer
S. D. Kiff, *Pacific Northwest National Laboratory, USA*; Z. He, *University of Michigan, USA*

N21-5 A New Concept for Two-Dimensional Thermal Neutron Detectors
G. De Geronimo, N. A. Schaknowski, G. C. Smith, E. O. Vernon, B. Yu, *Brookhaven National Laboratory, USA*; C. L. Britton, W. L. Bryan, L. G. Clonts, S. S. Frank, *Oak Ridge National Laboratory, USA*

N22 Astrophysics and Space Instrumentation II: Electronics and DAQ

Wednesday, Oct. 31 08:30-10:00, Hibiscus I&II
Session Chairs: Gary Varner, *Univ. of Hawaii*
William Craig, *Lawrence Livermore National Library*

N22-1 A Low Noise, Radiation Tolerant CCD Readout Processor for the Proposed SNAP Satellite.
A. Karcher, R. P. Abiad, C. J. Bebek, G. Y. Chao, D. Gnani, B. Krieger, H. V. D. Lippe, J. Reith, J. P. Walder
Lawrence Berkeley National Laboratory, USA

N22-2 Development of an ASIC for Multi-Readout X-Ray CCDs
D. Matsuura, H. Nakajima, E. Miyata, H. Tsunemi, *Osaka University, Japan*; J. P. Doty, *Noqsi Aerospace Ltd., USA*; H. Ikeda, *Institute of Space and Astronautical Science(ISAS), Japan Aerospace Exploration Agency(JAXA), Japan*

N22-3 High Voltage CMOS Control Interface for Astronomy-Grade Charged Coupled Devices
E. Martin, A. Koga, G. S. Varner, P. Onaka, J. Tonry, A. Lee
Univ. of Hawaii, USA

N22-4 CASIS1.1: a VLSI Front-End Circuit with Very Large Dynamic Range and Integrated Cyclic ADC for Silicon Calorimetry
V. Bonvicini, G. Orzan, G. Zampa, N. Zampa, *INFN, Italy*

N22-5 Solar Intensity X-Ray Spectrometer (SIXS) ASIC Onboard the ESA BepiColombo Mission to Mercury
F. F. Khalid[1], M. L. Prydderch[1], Q. Morrissey[1], P. Seller[1], E. Valtonen[2,3], J. Peltonen[2], M. Anttila[4], A. Malkki[5], R. Vainio[5], J. Huovelin[5]
[1]Rutherford Appleton Laboratory, STFC, United Kingdom; [2]Aboa Space Research Oy, Finland; [3]Turku University, Finland; [4]Space Systems Finland Ltd., Finland; [5]University of Helsinki, Finland

N22-6 Distributed Data Acquisition and Storage Architecture for the SuperNova Acceleration Probe
A. G. Prosser, *Fermi National Accelerator Laboratory, USA*
On behalf of the SNAP Collaboration/Instrument Electronics

N23 Computing and Software for Experiments II: Grid Computing

Wednesday, Oct. 31 08:30-10:00, Kahili I&II
Session Chair: David Malon, *Argonne National Laboratory*

N23-1 (invited) A Global Computer – the Grid Is Reality
J. Knobloch, *CERN, Switzerland*

N23-3 Grid Computing at D0
B. Abbott, *University of Oklahoma, USA*
On behalf of the D0 Collaboration

N23-4 CDF Monte Carlo Production on LCG Grid
D. Lucchesi, S. Pagan Griso, *University and INFN of Padova, Italy*; G. Compostella, *University Of Trento INFN Padova, Italy*; D. Cesini, *INFN-CNAF, Italy*; I. Sfiligoi, *Fermilab, USA*

N23-5 Benchmark Tests for High-Precision Dosimetry in Radiooncology on the Grid
A. Lechner[1], G. A. P. Cirrone[2], G. Cuttone[2], F. DiRosa[2], F. Foppiano[3], P. Mendez Lorenzo[1], J. Moscicki[1], M. G. Pia[4], M. Piergentili[4], G. Russo[2]
[1]CERN, Switzerland; [2]INFN LNS, Italy; [3]IST, Italy; [4]INFN Genova, Italy

N23-6 Making Science in the Grid World: Using Glideins to Maximize Scientific Output
I. Sfiligoi, *Fermilab, 60510*

N24 NSS POSTER II

Wednesday, Oct. 31 10:30 - 12:00, South Pacific I-V and Poster Tenr

Session Chairs: Liyuan Zhang, *California Institute of Technology*
Ralf Engels, *Forschungszentrum Juelich GmbH, Germany*

Instrumentation for Homeland Security

N24-2 Research and Development of the Humanitarian Landmine Detection System by a Compact Fusion Neutron Source
K. Yoshikawa[1], E. Hotta[2], S. Shiroya[1], M. Ohnishi[3], Y. Kubo[4]
[1]Kyoto University, Japan; [2]Tokyo Institute of Technology, Japan; [3]Kansai University, Japan; [4]JGC Corporation, Japan

N24-4 Passive Neutron Detection at Borders
R. T. Kouzes, E. R. Siciliano, J. H. Ely, P. E. Keller, R. J. McConn
Pacific Northwest National Laboratory, USA

N24-6 Improvement of Detection Accuracy of Illegal Objects for Dual-Energy X-Ray Scanners with Scintillator-Photodiode Detectors on the Base of ZnSe Scintillation Materials
V. D. Ryzhikov[1], S. V. Naydenov[1,2], A. D. Opolonin[1], S. N. Galkin[1], P. V. Pashko[3]
[1]Institute for Scintillation Materials, Ukraine; [2]Institute for Single Crystals, Ukraine; [3]Ukrainian State Customs Service, Ukraine

N24-8 Demands on Detection of Explosives, Illicit Materials, and Landmines: an IAEA Response
F. Mulhauser, G. Mank
International Atomic Energy Agency, Austria

N24-10 Development of Hand-Held, Highly Sensitive Neutron Search Detector for Nuclear Security and Nuclear Safeguards Applications
M. Mayorov[1], R. Arlt[1], K. Baird[1], P. Dvornyak[1], A. Lebedev[2], M. Schrenk[1]
[1]International Atomic Energy Agency, Austria; [2]YaFI - Nuclear Physics Research, Russia

N24-12 Detection and Identification of Illicit Material in a Moving Vehicle
S. W. Kwak, H.-S. Yoo, S. S. Jang, J.-K. Kim, J.-S. Kim, W. K. Yoon
Korea Institue of Nuclear Non-proliferation and Control, South Korea

N24-14 Network-Oriented Radiation Monitoring System (NORMS)
R. Aryaeinejad, D. F. Spencer
Idaho National Laboratory, Idaho

N24-16 Detector Pulse Shape Analysis for X-Ray Scatter Based Baggage Inspection Systems
H. Bomsdorf, T. Klostermann, *University of Wuppertal, Germany*; F. Scherwinski, J. Stein, *ICx Radiation GmbH, Germany*

N24-18 Advances in the Detection of Special Nuclear Material Utilizing Silicon Carbide Diodes
B. W. Blackburn[1], F. Ruddy[2], J. Jones[1], J. Seidel[2], R. Flammang[2], S. Watson[1], J. Johnson[1]
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N24-20 Interacting with the SWORD Package (SoftWare for the Optimization of Radiation Detectors)
C. S. Gwon, *Naval Research Laboratory / National Research Council Postdoctoral Research Associate, USA*; E. I. Novikova, B. F. Phlips, M. S. Strickman, *Naval Research Laboratory, USA*; R. C. Johns, L. S. Waters, *Los Alamos National Laboratory, USA*

N24-22 Crane Mounted Solution for Passive Radiation Screening of Shipping Containers
E. Yamamoto[1], M. Alioto[1], J. P. Alioto[1], H. Franklin[1], K. McKinny[1], R. H. Redus[2], M. Wadhwani[1]
[1]VeriTainer Corp., USA; [2]Amptek Inc., USA

N24-24 Three Dimensional Imaging of Hidden Objects Using Positron Emission Backscatter
M. S. Wallace, M. Galassi, E. Fenimore, W. Vogan McNeil, K. Borozdin
Los Alamos National Laboratory, USA

N24-26 A Rotationally Modulated Radiation Imager for Homeland Security Applications
B. R. Kowash, D. K. Wehe, *University of Michigan, USA*

N24-28 Preliminary Simulations in the Use of Fast Neutrons to Detect Explosives Hidden in Cargo Containers
A. L. Lehnert, Z. D. Whetstone, T. Zak, K. J. Kearfott
University of Michigan, United States

N24-30 A Pulsed Neutron Interrogation Facility for Research in Illicit Trafficking and Nuclear Safeguards
A. Favalli, H.-C. Mehner, J.-M. Crochemore, B. Pedersen
Institute for the Protection and Security of the Citizen(IPSC), JRC-European Commission, Italy

N24-32 Application of MCNP-PoliMi to Photon Interrogation of Nuclear Material
S. D. Clarke[1,2], S. A. Pozzi[2], E. Padovani[3], T. J. Downar[4], S. J. Thompson[5], M. T. Kinlaw[5], A. W. Hunt[5], B. Blackburn[6], J. Jones[6]
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N24-34 Calculating Gamma-Ray Signatures from Aged Mixtures of Heavy Nuclides
D. Wright, T. Gosnell, J. Gronberg, L. Hiller
Lawrence Livermore National Laboratory, USA

N24-36 Cosmic-Ray Shower Generator (CRY) for Monte Carlo Transport Codes
D. Wright, C. Hagmann, D. Lange
Lawrence Livermore National Laboratory, USA

N24-38 Optimal Background Attenuation for Fielded Spectroscopic Detection Systems
S. M. Robinson, E. D. Ashbaker, J. E. Schweppe, E. R. Siciliano
Pacific Northwest National Laboratory, WA

N24-40 Development of Humanitarian Landmine Detection System by Measuring Radiations from Landmine
Y. Takahashi[1], T. Yagi[1], T. Misawa[2], C. H. Pyeon[2], S. Shiroya[2], K. Yoshikawa[3], K. Masuda[3], T. Takamatsu[1], T. Fujimoto[1]
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N24-42 Effects of High Count Rate and Gain Shift on Isotope Identification Algorithms
S. M. Robinson, E. D. Ashbaker, S. D. Kiff, M. L. Woodring
Pacific Northwest National Laboratory, WA

N24-44 Real-Time Gamma-Ray Imaging with the Compact Compton Imager
L. Mihailescu, K. Vetter, K. Nelson, M. Burks, D. Hoyt
Lawrence Livermore National Laboratory, USA

N24-46 Performance of a Mobile Large-Area Gamma Imager Using a Point Source Injection Study
F. Habte, M. F. Cunningham, L. Fabris, K. Ziock
Oak Ridge National Laboratory, USA

N24-48 Isotope Confusion Between SNM and Common Sources in Homeland Security Detector Systems
M. Woodring, E. Ashbaker, M. Catalan, K. Conlin, J. Ely, S. Robinson, A. Seifert, J. Schweppe
Pacific Northwest National Laboratory, USA

N24-50 Characterization and Limitations of Energy Information in Plastic Scintillator Material
J. Ely, R. Kouzes, D. Weier, M. Woodring
Pacific Northwest National Laboratory, WA

N24-52 Neutron Spectroscopy by Double Scatter and Associated Particle Techniques
I. Dioszegi, P. E. Vanier, *BNL, USA*; L. Forman, *Ion Focus Technology, USA*

N24-54 Directional Radiation Detector
J. Uher[1], C. Fröjdh[2], J. Jakubek[1], S. Pospisil[1], G. Thungström[2]
[1]Institute of Experimental and Applied Physics, Czech Technical University, Czech Republic; [2]Mid-Sweden University, Sweden

N24-56 Electronics and Signal Processing for Prompt Radiation Detection
K. D. Ianakiev[1], B. W. Blackburn[2], P. Hausladen[3], A. W. Hunt[4], J. T. Johnson[2], J. L. Jones[2], C. W. McCluskey[1], J. T. Mihalczo[3], C. E. Moss[1]
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N24-58 Material Discriminated X-Ray CT by Using Conventional Microfocus X-Ray Tube and CdTe Imager
Y. Onishi, T. Nakashima, A. Koike, H. Morii, Y. Neo, H. Mimura, T. Aoki
Shizuoka University, Japan

N24-60 Representing Domain Expertise for Comprehensive Analysis of Data from Radiation-Detection Systems
M. Pivovaroff, S. Labov, K. Herndon Ford, M. Krnjajic, D. Speck, K. Nelson, *Lawrence Livermore National Laboratory, USA*; D. Cohen, J. Estrada, *Sandia National Laboratory, USA*; A. Dubrawski, S. Ray, J. Ostlund, J. Roure, K. Chen, *Carnegie Mellon University, USA*

N24-62 Fast Neutron Sensitivity with HPGe
A. Seifert, W. K. Hensley, E. R. Siciliano, W. K. Pitts
Pacific Northwest National Laboratory, USA

N24-64 Evaluation of Key Detector Parameters for Isotope Identification
C. J. Sullivan, M. A. Smith-Nelson
Los Alamos National Laboratory, USA

N24-66 Simulation of Nuclear Resonance Fluorescence in Geant4
D. V. Jordan, G. A. Warren
Pacific Northwest National Laboratory, USA

N24-68 New Sandwich Type Detector Module and Its Characteristic for Baggage Inspection System
K. H. Kim, *College of Dentistry Chosun University, South Korea*; S. E. Yun, *RadTeK, Co., Ltd., South Korea*

N24-70 A Compact Scintillator-Based Coded Aperture Imager for Localizing Illicit Nuclear Materials
P. Vaska[1], P. E. Vanier[1], S. Junnarkar[1], J.-F. Pratte[1], S. Krishnamoorthy[2], S. Stoll[1]
[1]Brookhaven National Laboratory, USA; [2]Stony Brook University, USA

N24-72 Contextually Aware Nuclear Evaluation System
S. E. Labov, M. J. Pivovaroff, K. B. Herndon Ford, M. M. Krnjajic, D. Speck, K. E. Nelson, *Lawrence Livermore National Laboratory, USA*; D. Cohen, J. K. Estrada, *Sandia National Laboratory, USA*; A. Dubrawski, S. Ray, J. Ostlund, J. Roure, K. Chen, *Carnegie Mellon Univeristy, USA*

N24-74 The Use of Gamma-Ray Imaging to Improve Portal Monitor Performance
K. P. Ziock[1], J. W. Collins[2], M. F. Cunningham[1], L. Fabris[1], T. F. Gee[1], J. S. Goddard[1], F. Habte[1], T. P. Karnowski[1]
[1]Oak Ridge National Laboratory, USA; [2]Lawrence Livermore National Laboratory, USA

N24-76 Multi-Dimensional Gamma-Ray Signatures for Homeland Security Applications for SNM Detection
D. A. Strellis, T. Gozani
Rapiscan Systems Neutronics and Advanced Technologies, USA

N24-78 Spectroscopic Portal Identification of Special Nuclear Materials
T. Saunders, *Textron Systems, USA*

N24-80 Characterization and Testing of Pixellated CdZnTe Detectors for UltraPeRL
B. W. Sturm, K. E. Nelson, A. R. Fisher, S. Labov, D. Knapp, J. D. Valentine, V. J. Riot, J. W. Collins, *Lawrence Livermore National Laboratory, U.S.A.*; W. R. Cook, R. McLean, *California Institute of Technology, U.S.A.*; Z. He, *University of Michigan, U.S.A.*

Environmental Health and Safety Instrumentation

N24-82 Environmental Radiation in West-North of Iran in Different Seasons
F. Saghatchi, A. Eslami, *Zanjan University of Medical Sciences, IRAN*; M. Salouti, *Islamic Azad University- Zanjan Branch, Iran*

N24-84 Development of a Gamma-Ray Detector Array for Multiple Prompt Gamma-Ray Analysis
M. Oshima, T. Kin, K. Furutaka, Y. Toh, A. Kimura, M. Koizumi, *Japan Atomic Energy Agency, Japan*; J. Goto, *Niigata University, Japan*

N24-86 The "RP 500 Sciara" a Revolutionary System to Inject PET Traces
A. A. Speranzi, A. A. Cistaro, A. A. D'Agata, A. A. Pupi, U. U. Ficola
Maspres industries, Italy

Photodetectors and Radiation Imaging

N24-88 Development of a Gamma Imaging System Based upon the CMOS Imager Coupled with a CdTe Photoconductor for Nondestructive Testing Applications
H. Cho, S. Choi, K. Kim, J. Oh, H. Cho, S. Lee, *Yonsei University, South Korea*; B. Lee, *Konkuk University, South Korea*; S. Kim, *Cheju National University, South Korea*

N24-90 Active Coded-Aperture Imaging Concepts
M. Cunningham, L. Fabris, F. Ghebretatios, K. Ziock
Oak Ridge National Laboratory, USA

N24-92 Fast Focal Plane Array Imaging for FTIR Microspectroscopy
Z.-J. Xin[1], P. Codd[1], L. McNicholl[1], J. Headspith[1], R. Farrow[1], M. Tobin[1,2], M. Chesters[1,3]
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N24-94 Characteristics of Carbon-Interspaced Antiscatter Grids Based upon the IEC Standard Fixture and Conventional DR Imaging Systems
K. Kim, J. E. Oh, H. S. Cho, O. D. Oh, *Yonsei University, South Korea*; J. S. Kim, J. G. Kim, J. W. Kim, N. G. Chung, *Jungwon Precision Ind. Co., LTd., South Korea*; B. S. Lee, *Konkuk University, South Korea*; S. Kim, *Cheju National University, South Korea*

N24-96 Optimized Geometry and Limitations of Compton Cameras with LaBr3
Y. Feng[1], R. S. Detwiler[1], W. Kernan[2], J. E. Baciak[1]
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N24-98 Characterization of Area Sensitivity in 55 Um Pixellated CdTe X-Ray Imaging Detectors
C. Fröjdh, B. Norlin, *Mid Sweden University, Sweden*; J. Jakubek, T. Holy, *Czech Technical University in Prague, Czech Republic*

N24-100 A Small Gamma Camera Combined with a Uniformly Redundant Array (URA) Collimator: the Performance Comparison with a Pinhole Gamma Camera
H. Jeon, H. Kim, S. Chang, M. S. Rahman, G. Cho
Korea Advanced Institute of Science and Technology, South Korea

N24-102 Light Amplifier/Compressor Photodetectors and Applications
D. R. Winn, *Fairfield University, USA*

N24-104 Simulation of a Scintillator-Based Compton Telescope with Micropattern Readout
R. L. Varner, J. R. Beene
Oak Ridge National Laboratory, USA

N24-106 Gamma Tomography for Large Random Packed Columns
P. A. Vasquez S., C. H. Mesquita, M. M. Hamada
Instituto de Pesquisas Energeticas e Nucleares - IPEN/CNEN-SP, Brazil

N24-108 Investigation of the Small Pixel Effect in CdZnTe Detectors
M. D. Wilson, P. Seller, M. C. Veale
Rutherford Appleton Laboratory, UK

N24-110 Development of 144ch HAPD for Aerogel RICH for Belle Upgrade.
S. Nishida[1], Y. Miyazawa[2], I. Nishizawa[3], T. Sumiyoshi[3], H. Ikeda[4], I. Adachi[1], T. IIjima[5], P. Krizan[6], S. Korpar[6]
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N24-112 Noise Performance of the Charge Sensitive Amplifier for Photodetection
S. W. Park, Y. Yi, *Korea University, SOUTH KOREA*; S. Yuk, *Korea Orthopedics & Rehabilitation Engineering Center, SOUTH KOREA*

N24-114 Radiation Hardness of Multi-Pixel Photon Counters (MPPC)
T. Matsumura, *National Defense Academy in Japan, Japan*
On behalf of the photon sensor group in KEK Detector Technology Project

N24-116 The Angular Response of the ΔE-E Monolithic Telescope
A. Fazzi[1], A. Polal, S. Agosteo, V. Varolil[1], C. Pirovano[1], D. Rozzi[1], I. Cornelius[2], M. Reinhard[3], R. Siegele[3], D. Prokopovich[3], A. J. Wroe[2], A. L. Ziebell[2], A. B. Rosenfeld[2]
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N24-118 RADMAP, a Passive Imaging System for Gamma-Ray Mapping and Density Profiling
M. L. Woodring, J. H. Ely, M. J. Myjak, L. C. Todd, S. M. Robinson, P. Reeder, A. R. Lingley
Pacific Northwest National Laboratory, USA

N24-120 Timing Properties of Silicon Photomultiplier
D. J. Herbert, D. Cronin, A. G. Stewart, P. J. Hughes, J. C. Jackson
SensL, Ireland

N24-122 Scintillator Geometry and Surface Treatment for Readout by a Small Area Silicon Photomultiplier
P. Barton[1], C. Stapels[2], J. Christian[2], D. Wehe[1]
[1]University of Michigan, USA; [2]Radiation Monitoring Devices, Inc., USA

N24-124 Thermal and Electrical Characterization of Silicon Photomultiplier
M. Petasecca, *University of Perugia, Italy*
On behalf of the DASiPM collaboration

N24-126 Characterization of the Signal Response of a Prototype Amorphous Silicon Active Matrix Flat Panel Dosimeter
D. A. Roberts, J. M. Moran, L. E. Antonuk, Y. El-Mohri, B. A. Fraass
University of Michigan, USA

N24-128 Signal Corrections in 3-Dimensions on UltraPeRL CZT Detectors
J. Kim[1], B. Dönmez[1], K. Nelson[2], Z. He[1]
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N24-130 Simple Low Power Waveform Readout Method for Position and Energy Flux Sensitivity in Photoconductive Detector Arrays
R. H. O'Neal, Jr., *Florida A&M University, U.S.A.*

N24-132 Gamma-Ray Source Location by Attenuation Measurements
W. R. Kaye, C. G. Wahl, W. Wang, Z. He
University of Michigan, USA

N24-134 Design of Wide Energy Range Coded Aperture Mask of an Environment Radiation Monitoring System
X. Li[1], Z. Wu[1], Y. Liu[1], T. Ma[1,2], Y. Jin[1]
[1]Nuclear Medicine, China; [2]Nuclear Science, USA

N24-136 Gamma-Ray Energy-Imaging Integrated Deconvolution in a Detector Array System
W. Wang, C. G. Wahl, Z. He, *University of Michigan, USA*

N24-138 Timing and Cross-Talk Properties of BURLE Multi-Channel MCP PMTs
S. Korpar[1,2], P. Križan[3,2], R. Pestotnik[3]
[1]University of Maribor, Slovenia; [2]J. Stefan Institute, Slovenia; [3]University of Ljubljana, Slovenia

N24-140 Development and Characterization of a 2D Hybrid Pixel X-Ray Detector with Single Photon Counting Capability
S. Jeon[1], S. Jin[1], Y. Huh[1], T. Kim[2], Y. Kim[2], J. Lee[1], J. Park[1], B. Kim[1]
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N24-142 Determining the Absolute Photoelectron Yield of LSO with APDs
S. Stoll, C. Woody, *Brookhaven National Laboratory, USA*

Radiation Damage Effects

N24-144 Target Theory Applied in the Radiation Damage Analysis for Organic Detectors.
C. H. de Mesquita, J. M. Fernandes Neto, M. M. Hamada
Instituto de Pesquisas Energeticas e Nucleares - IPEN/CNEN-SP, Brazil

N24-146 Study of Influence of Irradiation by 120 MeV Protons on Properties of CdZnTe X-Ray Detectors
V. V. Levin[1], V. V. Akimov[1], M. N. Pavlinsky[1], V. N. Merinov[2], I. N. Pappe[1], A. A. Rotin[1], O. A. Smirnov[1]
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N24-148 Radiation Damage Study of the Stripixel Sensor for PHENIX Vertex Upgrade
A. Taketani, *RIKEN, Japan*

N24-150 Position Sensitive TCT Evaluation of Irradiated 3D-Stc Detectors
M. Zavrtanik, V. Cindro, G. Kramberger, J. Langus, I. Mandi , M. Mikuž, *J. Stefan Institute, Slovenia*; C. Piemonte, M. Boscardin, G.-F. Della Betta, S. Ronchin, N. Zorzi, A. Pozza, *Fondazione Bruno Kesler, Italy*

N24-152 Study of Radiation Damage in VCSELs and PINs for the Optical Links of the ATLAS Inner Tracker
S. Hou, M. L. Chu, S. C. Lee, D. S. Su, P. K. Teng
Academia Sinica, Taiwan

N24-154 Damage Annealing in Irradiated Geiger Detectors
S. Vasile, *aPeak Inc., USA*

N24-156 Examination of the Utility of Commercial-off-the-Shelf Memory Devices as X-Ray Detectors
T. Z. Fullem, L. P. Lehman, E. J. Cotts
Binghamton University, USA

N24-158 Total Dose Effects of BNT Ferroelectric Thin Films under Radiation
Y. Ma, Y. Zhou, *Xiangtan University, P. R. China*

N24-160 Determination of the Charge Collection Efficiency
M. Bruzzi, *Universita e INFN di Firenze, Italy*
On behalf of the SMART Collaboration

N24-162 Extraction of the Effective Doping Density Profile
H. F. F. -W. Sadrozinski, *Univ. of California Santa Cruz, USA*
On behalf of the SMART Collaboration

Scintillators and Scintillation Detectors

N24-164 Short-Lived Radioactive Beams Studies Using Deuterated Liquid Scintillators
M. Ojaruega, F. Becchetti, H. Jiang, H. Amro, *University of Michigan, USA*; J. Kolata, *University of Notre Dame, USA*

N24-166 Evaluation of Gamma-Ray Responses of LuAG(Pr) Scintillator Coupled with APD
T. Yanagida, M. Sato, A. Yoshikawa, K. Kamada
Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan

N24-168 Intrinsic Resolution of Ceramic YAG(Ce), GYAG(Ce), and YAG(Ce,Nd) Scintillators
T. Yanagida, M. Sato, A. Yoshikawa, *Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan*; M. Kawaharada, *Riken, Japan*; T. Itoh, *The University of Tokyo, Japan*

N24-170 Temperature Dependence of alpha/gamma-ratio of GSO(Ce) Scintillator
T. Yanagida, M. Sato, A. Yoshikawa, *Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan*; T. Itoh, *The University of Tokyo, Japan*; M. Kawaharada, *Riken, Japan*

N24-172 Study of LaBr3 Crystals Coupled to Photomultipliers and Avalanche Photodiodes
M. Moszynski, L. Swiderski, T. Szczesniak, A. Nassalski, A. Syntfeld-Kazuch, W. Czarnacki, *Soltan Institute for Nuclear Studies, Poland*; G. Pausch, J. Stein, *ICx Radiation GmbH, Germany*; P. Lavoute, F. Lherbert, *Photonis, France*; F. Kniest, *Saint-Gobain Crystals, The Netherlands*

N24-174 Neutron Scintillation Detectors for Environmental, Security and Geological Studies
J. H. Baker, *SELOR eeig, the Netherland*; N. Z. Galunov, O. A. Tarasenko, *Institute for Scintillation Materials, National Ac.Science of Ukraine, Ukraine*

N24-176 Position Resolution in LaBr3 Scintillators Using Multi-Anode Photomultiplier Tubes
P. F. Bloser, M. L. McConnell, J. R. Macri, J. M. Ryan, A. Kumar
University of New Hampshire, USA

N24-178 Scintillation Characteristics of (Gd1-xCex)2Si2O7 (x=0.025-0.25) Single Crystals fabricated by Floating Zone Method.
S. Kawamura[1], J. H. Kaneko[1], M. Higuchi[1], J. Haruna[1], S. Saeki[1], F. Fujita[1], A. Homma[1], S. Ueda[2], K. Kurashige[2], H. Ishibashi[2], M. Furusaka[1]
[1]Hokkaido University, Japan; [2]Hitachi Chemical, Japan

N24-180 Unusual Fluorescence Emission Characteristics from Europium-Doped Lead Glass Caused by 3 MeV Proton Irradiation
W. A. Hollerman[1], S. M. Goedeke[2], R. J. Moore[1], L. A. Boatner[3], S. W. Allison[3], R. S. Fontenot[1]
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N24-182 Termination Effect on Pulse Shape Discrimination
A. Li[1,2], A. Hawari[2], M. Nelson[1]
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N24-184 Energy Resolution Of Plastic Scintillation Counters for Beta Rays
H. H. Vo[1], C. Marquet[2], F. Piquemal[2], J.-S. Ricol[2], K. Shinya[1], K. Yasuda[3], M. Nomachi[1], H. Nakamura[1], Y. Sugaya[1]
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N24-186 Investigation of the Properties of a 1" X 1" LaBr3 Scintillator Using Its Self Activity
R. Nicolini[1], F. Camera[1], N. Blasi[2], S. Brambilla[2], O. Wieland[2], F. Crespi[1]
[1]Università di Milano, Italy; [2]I.N.F.N., Italy

N24-188 LuAG:Ce Single Cristalline Films for High 2D-Resolution Scintillation Detectors
K. Blazek, J. Tous, *Crytur Ltd., Czech Republic*; M. Nikl, J. Mares, N. Solovieva, *Institut of Physics, Czech Republic*; Y. Zorenko, V. Gorbenko, *I.F.university, Ukraine*

N24-190 Boron-10 Loaded BC523A Liquid Scintillator for Neutron Detection in the Border Monitoring
L. Swiderski, M. Moszynski, D. Wolski, T. Szczesniak, T. Batsch, *Soltan Institute for Nuclear Studies, Poland*; F. Kniest, *Saint-Gobain Crystals, The Netherlands*; M. Kusner, *Saint-Gobain Crystals, USA*; G. Pausch, J. Stein, *ICx Radiation GmbH, Germany*; W. Klamra, *Royal Institute of Technology, Sweden*

N24-192 A Neutron Sensitive Anger Camera for Neutron Scattering Instruments
R. G. Cooper, J. D. Richards, C. Donahue, T. Visscher
ORNL/SNS, USA

N24-194 MAPMT H7546B Anode Current Response Study for ILC SiD Muon System Prototype
A. S. Dyshkant, G. Blazey, D. Hedin, *NORTHERN ILLINOIS UNIVERSITY, USA*; H. Fisk, *FERMILAB, USA*; R. J. Abrams, *INDIANA UNIVERSITY, USA*

N24-196 Scintillation Kinetics of YSO:Ce
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N24-198 NaI (Tl) Detector Energy Resolution Modeling
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N24-200 Use of Photocell Readouts in the Development of High-Resolution Scintillator Systems
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N24-202 Fast Neutron Detection by Storage Phosphors with Low Gamma-Ray Sensitivity
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N24-204 Characterization of One-Dimensional Fiber-Optic Scintillating Detector for Electron Beam Therapy Dosimetry
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N24-206 Impact of Ce Concentration for the Scintillation Properties of Lu2xGd2(1-x)SiO5:Ce (LGSO, X=0.2) Single Crystals
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N24-208 Basic Experiments on Radiation Imaging by Using Pr:Lu3Al5O12 (LuAG) Small Crystalline Pixels with Various Reflector
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N24-210 Development of Application of Gadolinium Compounds to Thick Film Scintillators
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N24-212 Cerium Concentration Dependence of Luminescence Properties of Gd2Si2O7
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N24-214 Characterization of Charge Transport and Optical Processes in Scintillators
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N24-216 Investigation of the Thermoluminescent Response of K2GdF5:Dy3+ Crystals to Photon Radiation Fields
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N24-218 Basic Properties of Scintillation in Helium Mixed with Xenon and Their Application to a Position-Sensitive Neutron Detector
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N24-220 Temperature Dependency Analysis of Light Output from an NE-213 Liquid Scintillator
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N24-222 Characterization of the Linear Scintillator Array Signal Response as a Function of X-Ray Impact Parameter
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N24-224 Properties of Novel LSO:Ce Polycrystalline Ceramic Scintillators
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N24-226 Photoluminescence and Scintillation Properties of Cerium-Doped REOX (RE = Y, La, Gd, and Lu; X = F, Cl, Br, and I)
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N24-228 Factors Affecting the Characterization of Very Fast Scintillators with Low Light Output.
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N24-230 Change in the Depth of Interaction of Gamma Rays in a Long LSO Scintillator via Treatment of the Surface
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N24-232 Availability of Tool Using CCD Camera – Plastic Scintillator System in HDR for Quality Assurance
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N24-234 Timing Properties of LSO Ceramic
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N24-236 Search for New Scintillators: Synthesis and Analysis of a Series of Substituted Hafnium Oxides.
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N24-238 Challenging Conventional Wisdoms: Design Rules for Scintillating Materials
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N24-240 Luminosity Structure-Property Relationships For Ce-Activated Scintillators
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N24-242 LaBr3-xClx Cyrstal Growth and Scintillator Properties
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N24-244 Measuring Light Reflectance of BGO Crystal Surfaces
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N24-246 Experimental and Monte Carlo Investigation of Intrinsic Limits of Scintillator Energy Resolution
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N24-248 Distributed Radiation Sensor with Flexible Light Guide Filled with Liquid Organic Scintillator
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Solid State Tracking Detectors

N24-250 Strip Edgeless Detectors Fabricated by Plasma Etching Process
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N24-252 Optimization of the Position Resolution in Semiconductor Detectors
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N24-254 Binary Mode CMOS Sensors for MIP Detection
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N24-256 ALPHA – Antihydrogen Laser PHysics Apparatus, Silicon Tracking Detector for Antihydrogen Annihilation Detection
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N24-258 Beamtest of Double-Sided Silicon Microstrip Detector
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N24-260 Proposal of a Data Sparsification Unit for a Mixed-Mode MAPS Detector
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On behalf of the SLIM5 Collaboration

N24-262 Small-Scale Readout System Prototype for the STAR Heavy Flavour Tracker
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New Solid State Detectors

N24-264 Novel Radiation Detector for Fusion Research
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N24-266 Detection of Hole Multiplication Process in an Avalanche Photodiode
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N24-268 Temperature Effects in Reverse-Type Avalanche Photodiodes
M. Sato, T. Yanagida, A. Yoshikawa, *The Tohoku University, Japan*; Y. Yatsu, J. Kataoka, *The University of Tokyo Institute of Technology, Japan*

N24-270 The Performance of RADFET Dosimeter Monitor System
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N24-272 Sensor Development at VTT
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N24-274 Electrical Characterization of CdZnTe Detectors Grown by Low-Pressure Vertical Bridgman
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N24-276 Neutron Intercepting Silicon Chip (NISC) - a Sensitive Neutron Detector
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N24-278 A Single Crystal Diamond Pixel Detector: Testbeam and Lab Results
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On behalf of the RD42 collaboration

N24-280 The CdZnTe Ring Detector: A Novel Concept for Hard X-Ray Detection
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N24-282 Optimization of Anode Electrodes for Large CdZnTe Crystals using GALLUS
T. H. Prettyman, J. M. Jaworski, M. L. Hall, C. J. Sullivan, *Los Alamos National Laboratory, USA*; A. Burger, M. Groza, *Fisk University, USA*

N24-284 Characteristics of CVD Diamond Film Detectors for Pulsed Radiation Detection
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N24-286 Modified Measurements of Mobility-Lifetime Product in Pixellated CdZnTe Detectors
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N24-288 Performance of Pixellated CdZnTe Detectors with Steering Grid under Floating Potential
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N24-290 Signals from Guard Rings on Side Wall of CZT Detectors
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N24-292 Development of Multi-Pixel Photon Counter (MPPC)
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N24-294 High-Resolution Alpha-Particle Spectroscopy with an Hybrid SiC/GaN Detector/Front-End Detection System
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N24-296 Thermal Annealing of Metal-Semiconductor Contact for CZT Detectors
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N24-298 Study of the Spectral Response of CZT Multiple-Electrode Detectors
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N24-300 Thicker Silicon Detectors Through Wafer Bonding
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N24-302 Stability and Characteristics of 3D HgI2 Detectors at Different Cathode Biases
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N24-304 Correlation of Resistivity and CCE of Semi-Insulating CdTe:In with Annealing at Te Pressures.
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N24-306 Measurement and Design of Thermal Properties in Superconducting Microcalorimeters
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N24-308 Detector Grade Cd0.9Zn0.1Te Crystal Growth and Characterizations
K. C. Mandal, S. H. Kang, M. Choi, A. Smirnov, R. D. Rauh
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N24-310 Position-Sensitive Ge Detectors with Amorphous-Ge and Amorphous-Si Contacts
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N24-312 Amorphous Selenium Stabilized Alloys for High Energy Detection and Medical Imaging Applications
K. C. Mandal, S. H. Kang, M. Choi, A. Smirnov, R. D. Rauh
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N24-314 Photoluminescence and Charge Transport Studies of CdZnTe Grown by the Travelling Heater Method
P. J. Sellin, A. Davies, A. Lohstroh, M. E. Ozsan, J. Parkin, V. Perumal, M. Veale, *University of Surrey, UK*; H. Chen, P. Lu, S. Awadalla, J. Mackenzie, R. Redden, G. Bindley, *Redlen Technologies, Canada*

N24-316 Polycrystalline Mercuric Iodide Films for Novel Detector Applications
N. E. Hartsough, J. S. Iwanczyk, W. C. Barber, *DxRay, Inc., USA*; M. Namkung, J. I. Trombka, *NASA, USA*

N24-318 Solutions in the CMS HO Using SiPM Photo Detectors
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N24-320 The First Polaris 3-D CdZnTe Detector Array System
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N24-322 Growth of Detector Grade Thick Films CdTe
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N24-324 Ultra-High Energy Resolution Superconducting Gamma-Ray and Fast-Neutron Spectrometers Without Cryogenic Liquids
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N24-326 Exploration of GaTe for Gamma Detectors
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N24-328 Angular Efficiency Design Considerations for Perforated Semiconductor Neutron Detectors
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N24-330 Effects of Point Defects on Carrier Transport in Bulk AlSb
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N24-332 Application of a Biparametric Method Using a Twin Shaping Filter on CZT Detectors
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N24-334 Multiple-Pulse Readout of Linear Silicon Drift Detectors for Fast Imaging Applications
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N24-336 Development of a Silicon Carbide Semiconductor Radiation Detector for Neutron Measurement
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N24-338 Sub-Pixel Position Resolution in Pixellated Semiconductor Detectors
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N24-340 Analysis of 6H-SiC Surface under Various Chemical Etching Conditions by Using AFM
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N24-342 Fabrication of Pillar-Structured Thermal Neutron Detectors
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N24-344 Digital Waveform Analysis Techniques for Pixellated Semiconductor Detectors
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N24-346 Development of InSb Cryogenic Detector for Ultra High-Resolution Energy Spectroscopy
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N24-348 Recent Improvements on calGPDs
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Synchrotron Radiation Instrumentation

N24-350 Silicon X-Ray Detectors and Data Acquisition for the LCLS Science Instruments
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N24-352 Experimental Results of a 7-channel Spectroscopy Detector Module with Mega-Count Rate Capability
C. Reckleben, K. Hansen, I. Diehl, H. Klär, E. Welter
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N24-354 Application of High-Energy Photon CT System with Laser-Compton Scattering to Nondestructive Test
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N24-356 Kodak CCD-Based Detector for Small Angle X-Ray Scattering
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N24-358 Development of X-Ray Active Matrix Pixel Sensors Based on J-FET Technology for the Linac Coherent Light Source
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N24-360 X-Ray Pixel Detectors for Real and Reciprocal Space Imaging with Synchrotron Radiation
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N24-362 A PET Prototype for "In-Beam" Monitoring of Proton Therapy
S. Vecchio[1,2], F. Attanasi[1,2], N. Belcari[1,2], M. Camarda[1,2], G. A. P. Cirrone[3], G. Cuttone[3], A. Del Guerra[1,2], F. Di Rosa[3], N. Lanconelli[4,5], V. Rosso[1,2], G. Russo[3]
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N24-364 Development of a HpXe Hybrid Gamma Detector Aiming Scintigraphy
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N24-366 Semi-Automatic Position Calibration for a Dual-Head Small Animal Scanner
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N24-368 Measurements of Two-Dimensional Photon Beam Distributions Using Fiber-Optic Radiation Sensors for Small Field Radiation Therapy
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N24-370 Purification and Laser Isotope Separation of Yb-176 for the Medical Applications
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N24-372 Response of a SOI Microdosimeter to the CERF Reference Facility for Aviation Dosimetry
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N24-374 Cylindrical Silicon-on-Insulator Microdosimeter: Design, Fabrication and TCAD Modeling
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N24-376 Lattice Simulation and Hadron Therapy
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On behalf of the EMMA Collaboation

N24-378 Preliminary Tests and Performance Estimate of PFMA-1, the First Prototype of a Plasma Focus Device for SLR Production
M. Sumini, D. Mostacci, F. Rocchi, S. Mannucci, *University of Bologna, Italy*; A. Tartari, E. Angeli, *University of Ferrara, Italy*

N24-380 Residual Energy Measurements for Proton Computed Tomography
N. Randazzo, V. Sipala, D. Lo Presti, G. A. P. Cirrone, G. Cuttone, F. Di Rosa, *INFN, Italy*; V. Bashkirov, R. Schulte, *Loma Linda University, USA*

N24-382 Study of Cadmium Zinc Telluride (CZT) Radiation Detector Modules under Moderate and Long-Term Variations of Temperature and Humidity
G. E. Maehlum[1], K. I. Dietzel[1], D. Meier[1], M. Szawlowski[2], B. Sundal[1], T. Vandehei[2], D. J. Wagenaar[2], B. E. Patt[2]
[1]Gamma Medica-Ideas (Norway) as, Norway; [2]Gamma Medica-Ideas (USA), USA

N24-384 Comparison of Three Pulse Processing Systems for Microdosimetry
G. M. Spirou, S. H. Byun, W. V. Prestwic
McMaster University, Canada

N24-386 IBIS : an Ion Beam Inspection System for Radiobiology and Hadrontherapy
C. Pautard, J. M. Fontbonne, G. Ban, B. Carniol, D. Cussol, J. Colin, D. Etasse, M. Labalme, P. Laborie, *LPC CAEN/ENSICAEN CNRS/IN2P3, FRANCE*; E. Balanzat, *CIRIL/GANIL, FRANCE*

N24-388 A New Tool for Measuring a Therapeutic Electron Beam's Energy with Scintillation Light
M. Ishigami[1], H. Kojima[1], H. Kojima[1], Y. Fukushima[2], M. Uemae[3], M. Hashimoto[4], T. Nishio[5], K. Maruyama[1]
[1]Kitasato University, Japan; [2]Gunma University Hospital, Japan; [3]Kitasato University Hospital, Japan; [4]Chiba University Hospital, Japan; [5]National Cancer Center East Hospital, Japan

N24-390 Performance Characteristics of Thick Silicon Double-Sided Strip Detectors
S. Shokouhi[1], H. L. Durko[2], M. Fritz[1], B. S. McDonald[1], L. R. Furenlid[2], T. E. Peterson[1]
[1]Vanderbilt University Institute of Imaging Science, USA; [2]University of Arizona Center for Gamma-Ray Imaging, USA

N24-392 Single Photon Counting X-Ray Imaging System Using a MicroHole and Strip Plate
H. Natal da Luz[1,2], J. F. C. A. Veloso[1], J. M. F. dos Santos[2], J. A. Mir[3]
[1]University of Aveiro, Portugal; [2]University of Coimbra, Portugal; [3]CCLRC Rutherford Appleton Laboratory, UK

N24-394 Ultra-Fast Wiener Filter-Based Crystal Identification Algorithm Applied to the LabPET™ Phoswich Detectors
H. C. Yousefzadeh (IEEE student member), N. Viscogliosi, M.-A. Tétrault, C. M. Pepin, P. Bérard, M. Bergeron, R. Lecomte (IEEE member), R. Fontaine (IEEE member)
University of Sherbrooke, Canada

N24-396 Monte Carlo Study on Scintimammographic Compton Imaging with Double-Sided Silicon Scatterers and Pixellated CZT Absorbers
J. H. Lee, Y. K. Kwon, C. S. Lee
Chung-Ang University, Republic of Korea

N24-398 Silicon Detector Telescope for Radiobiological Characterization and Monte Carlo Code Verifications in Hadron Therapy
A. B. Rosenfeld, A. J. Wroe, *University of Wollongong, Australia*; A. Fazzi, A. Pola, S. Augusteo, V. Varoli, *Politecnico di Milano,, Italy*; R. Schulte, *Loma Linda University, USA*

Accelerators and Beam Line Instrumentation

N24-400 The Mechanical Instability of the BPMS at HLS
Y. Cao, B. Sun, D. He, C. Li, J. Li, K. Xuan, P. Lu, J. Wang
NSRL, University of Science and Technology of China, China

N24-402 A New Wide-Band Beam Current Monitor with Active-Passive Circuit
W. Zhou, B. Sun, X. Wang, P. Lu, Y. Wang
NSRL, University of Science and Technology of China, P. R. China

N24-404 Measuring Emittance Using Beam Position Monitors with Log-Ratio Method
P. Li, B. Sun, Q. Luo, X. Wang, H. Xu, P. Lu
NSRL, University of Science and Technology of China, P. R. China

N24-406 Equipment for Electron Beam Energy Calibration in HLS
H. Xu, B. Sun, J. Zhang, L. Wang, G. Huang, J. Li
National Synchrotron Radiation Lab,University of Science and Technology of China, China

N24-410 Accuracy of LHC Proton Loss Rate Determination by the BLM System
E. B. Holzer, *CERN, Switzerland*
On behalf of the LHC BLM team

N24-412 A New Wire Positio Monitor Readout System for ILC Cryomodules
F. Bedeschi[1], G. Bellettini[1], A. Bosotti[2], R. Carosi[1], S. Galeotti[1], A. Gennai[1], C. Pagani[2], F. Paoletti[1], R. Paparella[2], D. Passuello[1], F. Spinella[1]
[1]I.N.F.N. sez. Pisa, Italy; [2]I.N.F.N. sez. Milano and LASA, Italy

N24-414 Spin Flip in High Energy Electron Rings
Š. Stres, R. Pestotnik, *Jožef Stefan Institute, Slovenia*

N24-416 LHC Cryogenics Hardware Commissioning
K. Anastasopoulos[1,2], R. M. Avramidou[1,2], A. Dragoneas[1,2], X. Fampris[1,2], E. Gousiou[1,2], F. Karagiannis[1,2], A. Koumparos[1,2], A. Patsouli[1,2], I. Polychroniadis[1,2], G. Theodoropoulos[1,2], C. Vottis[1,2]
[1]CERN, Switzerland; [2]National Technical University of Athens, Greece

N24-418 Design of a Slow Pulsed Positron Beam for Positron Annihilation Lifetime Spectroscopy
A. G. Hathaway, J. Moxom, A. I. Hawari, *North Carolina State University, USA*; J. Xu, *Oak Ridge National Laboratory, USA*

N24-420 Implementation of a Diamond-Beam-Conditions Monitor into the LHCb Experiment at CERN
C. J. Ilgner, *European Organization for Nuclear Research (CERN) and University of Dortmund, Germany*
On behalf of the LHCb beam-conditions monitor group

N24-422 The Synchrotron Light Source ANKA
M. Hagelstein, T. Baumbach
Forschungszentrum Karlsruhe GmbH, Germany

N24-424 Synchrotron Imaging and Defects Recognition–Applications in Microelectronics and in Microsystems Technology
T. Baumbach, D. Lübbert, L. Helfen, T. Weitkamp, M. Elyyan, A. Rack, A. Cecilia
Forschungszentrum Karlsruhe, Germany

Neutron Imaging and Radiography

N24-426 Determining the Energy Distribution of an X-Ray Source
H. Snyder, D. Desimone, P. Berry, B. Temple
Los Alamos National Laboratory, USA

N24-428 Phase Contrast Neutron Imaging of Mixed Phase-Amplitude Objects
K. K. Mishra, A. I. Hawari
North Carolina State University, USA

N24-430 Characterization of a High Spatial Resolution Neutron Imaging System
L. Cao[1,2], S. R. Biegalski[2]
[1]Massachusetts General Hospital,Harvard Medical School, U.S.A; [2]the University of Texas at Austin, U.S.A

N24-432 Microradiographic Observation of Grainy Structure of Al Alloy
D. Vavrik, J. Jakubek, M. Jakubek, T. Holy
Institute of Experimental and Applied Physics, Czech Republic

N24-434 Texture Analysis Using Bragg-Edge Neutron Transmission Method
K. Iwase, T. Nagata, K. Sakuma, O. Takada, T. Kamiyama, Y. Kiyanagi
Division Of Quantum Science and Engineering, Graduate School of Engineering, Hokkaido University, Japan

N24-436 Epithermal Neutron Tomography with Time-of-Flight Technique
T. Kamiyama, H. Sato, N. Miyamoto, H. Iwasa, Y. Kiyanagi, *Hokkaido University, Japan*; S. Ikeda, *High Energy Accelerator Research Organization (KEK), Japan*

N24-438 Neutron Source Detection with High Pressure Capillary Arrays and Background Reduction
M. S. Derzon, P. C. Galambos, W. P. Ballard, R. F. Renzi, S. B. Martin, J. D. Williams, M. H. Van Bentham, C. A. Hall
Sandia National Laboratories, USA

N24-440 Coded Source Phase-Contrast Imaging with Neutrons
A. L. Damato, P. J. Binns, R. C. Lanza
Massachusetts Institute of Technology, USA

N24-442 Quantitative Measurement and Analysis of Neutron Phase Imaging with Grating at a Monochromatic Cold Neutron Beam Line
S. W. Lee[1,2], D. S. Hussey[2], D. L. Jacobson[2], C. M. Sim[1], M. Arif[2]
[1]Korea Atomic Energy Research Institute, South Korea; [2]National Institute of Standards and Technology, USA

N25 Data Acquisition and Analysis Systems II

Wednesday, Oct. 31 13:30-15:30, Coral I
Session Chair: Alberto Aloisio - *University of Naples 'Federico II' and INFN*

N25-1 A Flexible Advanced TCA Based Sampling ADC System for Multimodality Positron Emission Tomography
A. B. Mann, I. Konorov, S. Paul, *Technische Universitaet Muenchen, Germany*; V. C. Spanoudaki, S. I. Ziegler, *Klinikum rechts der Isar, Technische Universitaet Muenchen, Germany*

N25-2 Design and Performance of the COMPASS Online Event Filter
R. Kuhn[1], T. Nagel[1], R. Konopka[1], L. Schmitt[2], S. Paul[1]
[1]Technische Universität München, Germany; [2]Gesellschaft für Schwerionenforschung, Germany

N25-3 The LHCb Muon Control System: the DAQ Domain
V. Bocci, S. Cadeddu, M. Carletti, C. Deplano, A. Lai, R. Nobrega, D. Pinci
Istituto Nazionale Fisica Nucleare, Italy

N25-4 The PHENIX Experiment in the RHIC Run 7
M. L. Purschke, *Brookhaven National Lab, USA*
On behalf of the PHENIX Collaboration

N25-5 Data Acquisition and Control for a Pixel Array Detector for Single Particle Scattering at the Linac Coherent Light Source
M. S. Hromalik, H. T. Philipp, L. J. Koerner, M. W. Tate, S. M. Gruner
Cornell University, USA

N25-6 Data Acquisition and Trigger System for the Gamma Ray Energy Tracking in-Beam Nuclear Array (GRETINA)
J. T. Anderson[1], D. Doering[2], T. Hayden[1], B. Holmes[2], J. Joseph[2], S. Zimmermann[2]
[1]Argonne National Laboratory, USA; [2]Lawrence Berkeley National Laboratory, USA

N25-7 A Spectroscopy System for High Event Rates from Pulsed Interrogations
D. Wehe, H. Yang, *University of Michigan, USA*

N25-8 A Highly Integrated Low-Cost Readout System for the COMPASS RICH-1 Detector
I. V. Konorov, *Technical University of Munich, Germany*
On behalf of the COMPASS RICH upgrade group

N26 High Energy and Nuclear Physics Instrumentation IV: Pixel Detectors

Wednesday, Oct. 31 13:30-15:30, Coral II
Session Chairs: Simon Kwan, *Fermilab*
Sheldon Stone, *Syracuse University*

N26-1 Inclusive Forward Vertex Detector for PHENIX
G. J. Kunde, *Los Alamos National Laboratory, USA*
On behalf of the iFVTX Collaboration

N26-2 PHENIX Silicon Vertex Tracker
R. Pak, *Brookhaven National Laboratory, USA*
On behalf of the PHENIX Collaboration

N26-3 Status and Overview of the ATLAS Pixel Detector
C. Troncon[1,2], *[1]INFN, Italy; [2]Dip. di Fisica, Italy*
On behalf of the ATLAS Pixels Collaboration

N26-4 ATLAS Pixel Detector System Test and Cosmics Run
M. Keil, *CERN, Switzerland*
On behalf of the ATLAS Pixel Detector Collaboration

N26-5 EUDET: Detector R&D Towards the International Linear Collider
J. Mnich, *DESY, Germany*
On behalf of the EUDET consortium

N26-6 Pixel Vertex Detector Readout and Design Considerations for the International Linear Collider
S. Worm, *Rutherford Appleton Laboratory, UK*
On behalf of the LCFI Collaboration

N26-7 CCD-Based Sensor Development for the Vertex Detector at ILC
K. D. Stefanov, *STFC Rutherford Appleton Laboratory, UK*

N26-8 Development of CMOS Monolithic Pixel Sensors with in-Pixel Correlated Double Sampling and Fast Readout
M. Battaglia, D. Contarato, P. Denes, L. E. Glesener, J. M. Bussat, *LBNL and UC, USA*; P. Giubilato, *LBNL and INFN, Italy*

N27 New Solid State Detectors II: CdTe and CdZnTe Materials and Detectors

Wednesday, Oct. 31 13:30-15:30, Hibiscus I&II
Session Chair: Ralph James, *Brookhaven National Laboratory*

N27-1 Improvement of the Productivity in the Growth of CdTe Single Crystal by THM for the New PET System
H. Shiraki[1], M. Funaki[1], Y. Ando[1], S. Kominami[2], K. Amemiya[2], R. Ohno[1]
[1]ACRORAD CO., LTD., Japan; [2]Hitachi, LTD., Japan

N27-2 Studies of the Effects of Te Inclusions in CdZnTe Radiation Detectors
A. E. Bolotnikov, G. S. Camarda, Y. Cui, A. Hossain, R. B. James
Brookhaven National Laboratory, USA

N27-3 Polarization Studies of CdZnTe Detectors Using Synchrotron X-Ray Radiation
G. S. Camarda, A. E. Bolotnikov, Y. Cui, A. Hossain, R. B. James
Brookhaven National Lab, US

N27-4 Bulk Uniformity of Cadmium Zinc Telluride (CZT) Crystals for Large Volume Co-Planar Gamma Spectrometers
C. J. Sullivan[1], A. Burger[2], M. Groza[2], T. H. Prettyman[1]
[1]Los Alamos National Laboratory, USA; [2]Fisk University, USA

N27-5 Characterization of the First 3-D Position Sensitive CdZnTe Array
F. Zhang[1], C. E. Seifert[2], Z. He[1]
[1]The University of Michigan, USA; [2]Pacific Northwest National Laboratory, USA

N27-6 Impact of Temperature Variation on the Energy Resolution of a 3D Position Sensitive CZT Gamma-Ray Spectrometer
W. Li, Y. Du, B. D. Yanoff, J. S. Gordon
GE Global Research, USA

N27-7 Improved Fabrication of Frisch Collar CdZnTe Gamma Ray Spectrometers
M. J. Harrison, A. Kargar, D. S. McGregor
Kansas State University, USA

N27-8 The Characterisation of Pixellated CdZnTe Detectors for Use in a Portable Gamma-Ray Spectrometer
S. V. Rigby, A. J. Boston, P. Nolan, R. Murphy, D. Oxley, M. Slee, *University of Liverpool, UK*; I. Lazarus, V. Pucknell, J. Simpson, *STFC Daresbury, UK*; P. Seller, *STFC Rutherford Appleton Laboratory, UK*; D. M. Cullen, P. Jales, S. Tygier, *University of Manchester, UK*

N28 Gaseous Detectors III

Wednesday, Oct. 31 13:30-15:30, Kahili I&II
Session Chairs: David Nygren, *Lawrence Berkeley National Laboratory*
Scott Kiff, *Pacific Northwest National Laboratory*

N28-1 Development of Precision Drift Tube Detectors for Very High Background Rates at Super-LHC
H. Kroha, J. Dubbert, S. Horvat, F. Legger, O. Kortner, R. Richter, *Max-Planck-Institut f. Physik, Germany*; R. Hertenberger, F. Rauscher, *Ludwig-Maximilian University, Germany*

N28-2 Development of Position-Sensitive Tissue Equivalent Proportional Chamber for Space Dosimetry
S. Sasaki, H. Tawara, *High Energy Accelerator Research Organization, Japan*; T. Nagayoshi, Y. Fujita, T. Doke, K. Terasawa, *Waseda University, Japan*; K. Miuchi, *Kyoto University, Japan*; H. Matsumoto, *Japan Aerospace Exploration Agency, Japan*; Y. Uchihori, *National Institute of Radiological Science, Japan*

N28-3 Performance and Aging of BaBar RPCs
H. R. Band, *U. of Wisconsin, USA*
On behalf of the BaBar IFR Group

N28-4 A High-Efficiency and High-Resolution Straw Tube Tracker for the LHCb Experiment
A. Pellegrino, *NIKHEF, The Netherlands*
On behalf of the LHCb Outer Tracker Group

N28-5 A New Prototype of MRPC with Long Strip
C. Li[1], Y. J. Sun[1], H. F. Chen[1], Z. B. Xu[2], M. Shao[1], B. Gui[1], Z. B. Tang[1], Y. E. Zhao[1]
[1]University of Science and Technology of China (USTC), China; [2]Brookhaven National Laboratory, USA

N28-6 ATLAS Endcap Monitored Drift Tube Chambers Performance
C. Ferretti, *University of MIchigan & ATLAS collaboration, USA*
On behalf of the ATLAS Collaboration

N28-7 LUCID: a Cherenkov Tube Based Detector for Monitoring the ATLAS Experiment Luminosity
M. Bruschi, *INFN, Italy*
On behalf of the ATLAS Luminosity and Forward Physics working group

N28-8 BESIII Drift Chamber
L. Wu, *Institute of High Energy Physics, China*
On behalf of the BESIII drift chamber group

N29 Analog and Digital Circuits II: Electronics for High Energy Physics Detectors

Wednesday, Oct. 31 16:00-18:00, Coral I
Session Chairs: Nicholas Mascarenhas, *Sandia National Laboratories, California*
David Reyna, *Argonne National Laboratory*

N29-1 The First Version Buffered Large Analog Bandwidth (BLAB1) ASIC for High Luminosity Collider and Extensive Radio Neutrino Detectors
G. S. Varner, L. L. Ruckman, *Univ. of Hawaii, USA*

N29-2 SKIROC : a Front-End Chip to Read Out the Imaging Silicon-Tungsten Calorimeter for ILC
J. L. Fleury, *LAL-CNRS, France*
On behalf of the CALICE / EUDET

N29-3 HARDROC1, Readout Chip of the Digital Hadronic Calorimeter of ILC
N. Seguin-Moreau, *LAL ORSAY/IN2P3, FRANCE*
On behalf of the Calice and Eudet collaborations

N29-4 VIP1: a 3D Integrated Circuit for Pixel Applications in High Energy Physics
J. R. Hoff[1], G. W. Deptuch[2], R. J. Lipton[1], T. N. Zimmerman[1], R. J. Yarema[1]
[1]Fermilab, IL; [2]Brookhaven National Lab, NY

N29-5 SPIROC (SiPM Integrated Read Out Chip): Dedicated Very Front-End Electronics for an ILC Prototype Hadronic Calorimeter with SiPM Readout
L. Raux, *Laboratoire de l'accélérateur linéaire (LAL), FRANCE*
On behalf of the CALICE / EUDET collaboration

N29-6 A 130nm CMOS Digitizer Prototype Chip for Silicon Strips Detectors Readout
J.-F. C. Genat, J. David, D. Fougeron, R. Hermel, J.-F. Huppert, H. Lebbolo, T. H. Pham, A. Savoy-Navarro, R. Sefri
CNRS/IN2P3, France

N29-7 AFTER, an ASIC for the Readout of the Large T2K Time Projection Chambers.
E. Delagnes, P. Baron, X. de La Broise, D. Calvet, F. Druillole, J.-L. Fallou, E. Mazucato, F. Pierre, A. Sarrat, E. Virique, E. Zonca, M. Zito
CEA/DAPNIA, France

N29-8 Perspectives for Low Noise Detector Readout in a Sub-Quarter-Micron CMOS SOI Technology
V. Re[1], L. Gaioni[2], M. Manghisoni[1], L. Ratti[2], V. Speziali[2], G. Traversi[1], R. Yarema[3]
[1]Università di Bergamo, Italy; [2]Università di Pavia, Italy; [3]Fermi National Accelerator Laboratory, USA

N30 High Energy and Nuclear Physics Instrumentation V: Muon and Tracking Detectors

Wednesday, Oct. 31 16:00-18:00, Coral II
Session Chairs: Joachim Mnich, *DESY*
Richard Cavanaugh, *University of Florida*

N30-1 First Test Beam Results from the EUDET Pixel Telescope
I.-M. Gregor, *DESY, Germany*
On behalf of the EUDET JRA1 Collaboration

N30-2 The CMS Muon Detectors
M.-C. Fouz, *CIEMAT, Spain*
On behalf of the CMS collaboration

N30-3 Status of the CMS Muon System Commissioning
A. Colaleo, *INFN-Bari, Italy*
On behalf of the CMS collaboration

N30-4 Commissioning of the ATLAS Muon Spectrometer
J. Guimaraes da Costa, *Harvard University, U.S.A*
On behalf of the ATLAS Muon Collaboration

N30-5 First Cosmic Ray Results of the ATLAS Barrel Muon Spectrometer with Magnetic Field
J. von Loeben, *Max-Planck-Institut für Physik, Germany*
On behalf of the ATLAS Muon Collaboration

N30-6 Performance of CMS Cathode Strip Chambers
A. Korytov, *University of Florida, USA*
On behalf of the CMS collaboration

N30-7 Commissioning of the ATLAS Inner Detector with Cosmic Rays
S. Mima, *Okayama University, Japan*
On behalf of the ATLAS Inner Detector Group

N30-8 The Forward Drift Chamber System for the GlueX Detector
S. Taylor, *Jefferson Lab, USA*
On behalf of the GlueX Collaboration

N31 New Solid State Detectors III: Alternative Solid State Devices

Wednesday, Oct. 31 16:00-17:45, Hibiscus I&II
Session Chair: Douglas McGregor, *Kansas State University*

N31-1 Observation of Charge Loss in an HPGe Double-Sided Strip Detector
J. P. Hayward, D. K. Wehe, *University of Michigan, USA*

N31-2 Large Area Silicon on Insulator (SoI) Neutron Detectors
B. F. Phlips, F. J. Kub, E. I. Novikova, E. A. Wulf
Naval Research Laboratory, USA

N31-3 Angular Response of Perforated Neutron Detectors: Circular Holes Vs. Straight Channel Trenches
W. J. McNeil, S. L. Bellinger, E. L. Patterson, C. J. Solomon, J. K. Shultis, D. S. McGregor
Kansas State University, SMART Lab, USA

N31-4 TlBr Gamma-Ray Spectrometers Using the Depth Sensitive Single Polarity Charge Sensing Technique
K. Hitomi, T. Onodera, T. Shoji, Y. Hiratate, *Tohoku Institute of Technology, Japan*; Z. He, *University of Michigan, USA*

N31-5 High Resolution Alpha Spectroscopy with Transition-Edge Microcalorimeters
J. N. Ullom, R. D. Horansky, J. A. Beall, G. C. Hilton, K. D. Irwin, L. R. Vale, *NIST, USA*; D. E. Dry, S. P. Lamont, C. R. Rudy, M. W. Rabin, *Los Alamos National Laboratory, USA*

N31-6 Operation and Performance of Large-Format Microcalorimeter X- and Gamma-Ray Spectrometer
M. W. Rabin, M. K. Bacrania, A. S. Hoover, C. R. Rudy, *Los Alamos National Laboratory, USA*; J. Beall, W. B. Doriese, R. D. Horansky, G. C. Hilton, K. D. Irwin, C. D. Reintsema, J. N. Ullom, *National Institute of Standards and Technology, USA*; C. A. Kilbourne, F. S. Porter, J. King, *National Aeronautics and Space Administration, USA*

N31-7 The ATLAS Beam Conditions Monitor
M. Mikuž[1], V. Cindro[1], I. Dolenc[1], H. Frais-Kölbl[2], A. Gorišek[1], E. Griesmayer[2], H. Kagan[3], B. Macek[1], M. Niegl[2], H. Pernegger[4], W. Trischuk[5], P. Weilhammer[4], M. Zavrtanik[1]

[1]*Jožef Stefan Institute and Department of Physics, University of Ljubljana, Slovenia;* [2]*University of Applied Sciences Wiener Neustadt and Fotec, Austria;* [3]*Ohio State University, USA;* [4]*CERN, Switzerland;* [5]*University of Toronto, Canada*

N32 Computing and Software for Experiments III: Core Software Tools

Wednesday, Oct. 31 16:00-18:00, Kahili I&II
Session Chair: Juergen Knobloch, *CERN*

N32-1 LCG / AA / SPI - Configuration, Build and Distribution of LCG Applications Area Software for the LHC Experiments
S. Roiser, A. Pfeiffer, *CERN, Switzerland*

N32-2 Distributed Database Access in the LHC Computing Grid with CORAL
R. Chytracek, D. Duellmann, G. Govi, I. Papadopoulos, *CERN, Switzerland*; Z. Xie, *Princeton University, USA*

N32-3 Roles and Challenges for Metadata and Navigation Tools in High Energy Physics Data Stores
D. Malon, *Argonne National Laboratory, USA*

N32-4 Feicim: an Interactive Tool for Vary Large Scientific Datasets
T. Kechadi, R. McNulty, Z. Lazar
University College Dublin, Ireland

N32-5 Analysis of Statistical Algorithms for the Comparison of Data Distributions in Physics Experiments
A. Lechner[1], A. Pfeiffer[1], M. G. Pia[2], A. Ribon[1], P. Viarengo[3]
[1]*CERN, Switzerland;* [2]*INFN Genova, Italy;* [3]*University Federico II of Napoli, Italy*

N32-6 VPP – a Verilog HDL Simulation and Generation Library for C++
A. Madorsky, D. E. Acosta, *University of Florida, USA*

N32-7 Software Usability in a Large Scientific Community: the Athena Experience.
P. Calafiura, *Lawrence Berkeley National Laboratory, USA*
On behalf of the ATLAS Collaboration

N32-8 Lessons Learnt from the Deployment of Production Worldwide Grid Services for the Large Hadron Collider at CERN
J. D. Shiers, *CERN, Switzerland*

N33 Photodetectors and Radiation Imaging II

Thursday, Nov. 1 08:30-10:00, Coral I
Session Chairs: Ryan McLean, *California Institute of Technology*
Jim Lund, *Sandia National Laboratories*

N33-1 Single Photon Sensitive Imaging Detectors with High Quantum Efficiency Based on a New Avalanche Amplifier Structure
G. Lutz, P. Holl, R. H. Richter, L. Strueder
MPI Semiconductor Laboratory, Germany

N33-2 A New Silicon Detector System for Optical and Low Light Imaging Based on RNDR-DEPFET
M. Porro[1,2], L. Bombelli[3,4], C. Fiorini[3,4], S. Herrmann[1,2], E. Lama Vaquero[1,2], P. Lechner[2,5], G. Lutz[2,5], R. H. Richter[6,2], L. Strueder[1,2], J. Treis[1,2], S. Woelfel[1,2]

SSN

[1]*Max Planck Institut fuer Extraterrestrische Physik, Germany;* [2]*MPI Halbleiterlabor, Germany;* [3]*Politecnico di Milano, Italy;* [4]*Italian National Institute of Nuclear Physics (INFN), Italy;* [5]*PNSensor GmbH, Germany;* [6]*Max Planck Institut fuer Physik, Germany*

N33-3 Development and Characterization of CMOS-Based Monolithic X-Ray Imager Sensor
G. Cho, B. K. Cha, J. H. Bae, B.-J. Kim, S. C. Jeon, *Korea Advanced Institute of Science and Technology, Korea*; Y.-H. Kim, G.-H. Lim, *Changwon National University, Korea*

N33-4 Development of Thin-Window Silicon Drift Detector for X-Ray Spectroscopy
W. Chen[1], G. Carini[1], J. A. Gaskin[2], G. De Geronimo[1], J. Keister[1], Z. Li[1], B. D. Ramsey[2], P. Rehak[1]
[1]*Brookhaven National Lab, USA;* [2]*The MSFC, USA*

N33-5 An Electron-Tracking Compton Imaging Camera Based on a Gaseous TPC and a Scintillation Camera
K. Ueno[1], K. Hattori[1], S. Kabuki[1], H. Kubo[1], S. Kurosawa[1], K. Miuchi[1], T. Nagayoshi[2], H. Nishimura[1], Y. Okada[1], R. Orito[3], A. Takada[1], T. Tanimori[1], K. Tsuchiya[1]
[1]*Graduate school of Science,Kyoto University, Japan;* [2]*Waseda University, Japan;* [3]*Kobe University, Japan*

N33-6 Further Studies on Avalanche Photodiodes for Liquid Xenon Scintillation
U. Oberlack, C. Olsen, P. Shagin, *Rice University, USA*; R. Farrell, M. McClish, K. Shah, *Radiation Monitoring Devices Inc., USA*

N34 Nuclear Measurements and Monitoring Techniques I

Thursday, Nov. 1 08:30-10:00, Coral II
Session Chair: Jim Lund, *Sandia National Laboratories*

N34-1 CVD Diamond Neutron Detectors for Areal Density Measurement at the National Ignition Facility
L. S. Dauffy, J. A. Koch, I. Nobuhiko
Lawrence Livermore National Laboratory, USA

N34-2 Characteristics of Hybrid Plastic Scintillators for Neutron
K. S. Lee, R. J. Hu, J. H. Kim, S. H. Ahn, B. Hong, M. Ito, T. I. Kang, B. I. Kim, H. C. Kim, K. B. Lee, S. K. Park, M. S. Ryu, K.-S. Sim, *Korea University, South Korea*; S. R. Bahk, *Wonkwang University, South Korea*; S. J. Hong, *Gachon Medical School, South Korea*; Y. J. Kim, *Cheju National University, South Korea*; D. G. Koo, *Seoul National University of Education, South Korea*; S. J. Lee, *Seonam University, South Korea*; S. K. Nam, *Kangwon University, South Korea*; J. T. Rhee, *Konkuk Univ., South Korea*; Y. E. Kim, *Chungbuk National University, South Korea*

N34-3 Digital Scintillator-Based Dosimeter-on-a-Chip
C. J. Stapels[1], E. B. Johnson[1], R. Sia[1], P. Barton[2], D. K. Wehe[2], G. Entine[1], M. R. Squillante[1], J. F. Christian[1]
[1]*Radiaiton Monitoring Devices, USA;* [2]*University of Michigan, USA*

N34-4 A Pulsed Neutron Dose Monitor
A. Klett, *Berthold Technologies, Germany*; A. Leuschner, *DESY Deutsches Elektronen-Synchrotron, Germany*

N34-5 Solid State Capture Gated Spectrometer for the Detection of Fission Neutrons
G. Aigeldinger, A. L. Vance, N. Mascarenhas
Sandia National Laboratories, USA

N34-6 Determination of (n,n') Cross Sections at En=2.5 MeV
Y. Ben-Dov, *Nuclear Research Center - Negev, Israel*; R. B. Firestone, J. Reijonen, *Lawrence Berkeley National Laboratory, USA*

N35 Trigger and Front-End Systems I

Thursday, Nov. 1 08:30-10:00, Hibiscus I&II
Session Chairs: Friedrich Wulf, *Hahn-Meitner-Institut Berlin*
Yasuo Arai, *KEK, High Energy Accelerator Research Organization*

N35-1 BESIII Electronics System
H. Dai, *Institute of High Engery Physics, China*
On behalf of the BESIII Electronics Group

N35-2 High Precision Timing, Pipelined Readout for a Focusing DIRC
L. L. Ruckman, G. S. Varner, *Univ. of Hawaii, USA*

N35-3 The Front End Readout System for the T2K-ND280 Detectors
A. Vacheret, M. Raymond, M. Noy, S. Greenwood, *Imperial College London, UK*; A. J. G. Weber, *Rutherford Appleton Laboratory, UK*

N35-4 Development of a Low-Noise Analog Front-End ASIC for CdTe Detectors
T. Kishishita[1,2], H. Ikeda[1], T. Kiyuna[3], K.-I. Tamura[1,2], K. Nakazawa[2], T. Takahashi[1,2]
[1]*Institute of Space and Astronautical Science, Japan;* [2]*the University of Tokyo, Japan;* [3]*ACRORAD Co., Ltd., Japan*

N35-5 Front End Electronics for Silicon Tungsten Calorimeter
A. Sukhanov, *Brookhaven National Laboratory, NY*
On behalf of the PHENIX Forward Upgrade group

N35-6 A Fast Digitizer System for the Hadron Blind Detector in PHENIX
C.-Y. Chi, *Columbia University, U.S.A.*
On behalf of the PHENIX Collaboration

N36 Computing and Software for Experiments IV: Montecarlo Simulation I

Thursday, Nov. 1 08:30-10:00, Kahili I&II
Session Chair: Maria Grazia Pia, *INFN Genova, Italy*

N36-1 Recent Status and Calculations of PHITS
N. Koji[1], H. Iwase[2], T. Sato[3], L. Sihver[4], D. Mancusi[4], Y. Iwamoto[3], N. Matsuda[3], Y. Sakamoto[3], H. Nakashima[3]
[1]*RIST, Japan;* [2]*KEK, Japan;* [3]*JAEA, Japan;* [4]*Chalmers University of Technology, Sweden*

N36-2 Recent MCNPX Features for Particle Transport and Detection
G. W. McKinney, J. W. Durkee, M. L. Fensin, J. S. Hendricks, M. R. James, R. C. Johns, D. B. Pelowitz, L. S. Waters
Los Alamos National Laboratory, USA

N36-3 Validation of Geant4 Backscattering Simulation Against Energy and Charge Albedo Measurements
A. Lechner, *CERN, Switzerland*; M. G. Pia, *INFN Genova, Italy*

N36-4 Validation of Geant4 Low Energy Electromagnetic Physics Models Against Calorimetric Measurements
A. Lechner, *CERN, Switzerland*; L. Pandola, *INFN Laboratori Nazionali del Gran Sasso, Italy*; M. G. Pia, *INFN Genova, Italy*

N36-5 Building Geometry Models for Monte Carlo Transport Codes
K. A. Van Riper, *White Rock Science, USA*

N36-6 The Simulations on the Neutron Transport with MCNP(X), FLUKA and Geant4
G. L. Lin[1], H. M. Liu[2], T. C. Liu[1], C. H. Wang[3], Y. S. Yeh[1]
[1]National Chiao Tung University, Taiwan; [2]National Tsing Hua University, Taiwan; [3]National United University, Taiwan

N37 Scintillators and Scintillation Detectors I: Detector Principles

Thursday, Nov. 1 10:30-12:00, Coral I
Session Chair: Klaus Peters, *GSI, Darmstadt*

N37-1 Application Studies of Novel Silicon-Based Photo-Detectors
E. Garutti, N. D'Ascenzo, *DESY, Germany*; A. Tadday, *University of Heidelberg, Germany*

N37-2 Intrinsic Energy Resolution of BGO and GSO:Ce Measured with the Reverse-Type Avalanche Photodiodes
M. Sato, T. Yanagida, A. Yoshikawa, *The Tohoku University, Japan*; Y. Yatsu, J. Kataoka, *The University of Tokyo Institute of Technology, Japan*

N37-3 Evaluation of LGSO Scintillators with Si PIN Photodiodes
K. Hitomi, T. Onodera, T. Shoji, *Tohoku Institute of Technology, Japan*; Y. Kurata, N. Shimura, T. Usui, H. Ishibashi, *Hitachi Chemical Co., Ltd., Japan*

N37-4 Optical Reflectance Measurements for Commonly Used Reflectors
M. Janecek, W. W. Moses
Lawrence Berkeley National Laboratory, USA

N37-5 Imaging Performance of Lanthanum Bromide Scintillators with Wavelength Shifting Fiber Readout
B. Budden, G. L. Case, M. L. Cherry, J. Isbert, M. Stewart
Louisiana State University, USA

N37-6 R+D on Scintillating Crystals for the R3B Calorimeter
M. M. Gascon, *University of Santiago de Compostela, Spain*
On behalf of the R3B Collaboration

N38 Nuclear Measurements and Monitoring Techniques II

Thursday, Nov. 1 10:30-12:00, Coral II
Session Chair: Zane Bell, *Oak Ridge National Laboratory*

N38-1 Progress in Mix Diagnosis for Inertial Confinement Fusion Experiments
G. P. Grim, P. A. Bradley, T. A. Bredeweg, D. D. Clark, S. C. Evans, K. A. Defriend, B. F. Espinoza, V. E. Fatherley, M. M. Fowler, F. P. Garcia, J. R. Griego, A. C. Hayes, G. Jungman, T. E. Larson, A. W. Obst, J. A. Oertel, R. S. Rundberg, P. G. Sanchez, D. J. Vieira, J. B. Wilhelmy, Y. Wang
Los Alamos National Laboratory, USA

N38-2 Response of a Large Mass Ultra Low Noise HPGe to Sub-keV Nuclear Recoils
P. S. Barbeau, J. I. Collar, *University of Chicago, USA*

N38-3 4 Pi Directional Imaging for Low Energy Gamma Rays Using Detector Self-Shielding Methods
Y. Du, W. Li, B. D. Yanoff, J. S. Gordon
GE Global Research Center, USA

N38-4 Nuclear Resonance Fluorescence Measurements of High Explosives
J. A. Caggiano, G. A. Warren, *Pacific Northwest National Laboratory, USA*; W. Bertozzi, R. Hasty, S. E. Korbly, R. J. Ledoux, W. H. Park, *Passport Systems, Inc., USA*

N38-5 Nuclear Resonance Fluorescence of U-235 above 3 MeV
G. A. Warren, J. A. Caggiano, *Pacific Northwest National Laboratory, USA*; W. Bertozzi, S. E. Korbly, R. J. Ledoux, W. H. Park, *Passport Systems, Inc, USA*

N38-6 A Measurement of the Flux, Angular Distribution and Energy Spectra of Cosmic Ray Induced Neutrons at Fission Energies
N. Mascarenhas, J. Brennan, K. Krenz, J. Lund, P. Marleau, S. Mrowka
Sandia National Laboratories, USA

N39 Environmental Health and Safety Instrumentation

Thursday, Nov. 1 10:30-11:45, Hibiscus I&II
Session Chair: Christoph Ilgner, *European Organization for Nuclear Research (CERN) and University of Dortmund*

N39-1 Increased Safety for Manual Tasks in the Field of Nuclear Science Using the Technology of Augmented Reality
A. Eursch, G. Reinhart
Institute for Machine Tools and Industrial Management, Germany

N39-2 3D Real-Time in-Core Neutron Flux Mapping with Micro-Pocket Fission Detectors (MPFD)
M. F. Ohmes, J. K. Shultis, D. S. McGregor
Kansas State University SMART Laboratory, USA

N39-3 Dosimetry of High-Energy Neutron Radiation Fields Using Recombination Chambers
N. Golnik[1,2], M. Zielczynski[2]
[1]Warsaw University of Technology, Poland; [2]Institute of Atomic Energy, Poland

N39-4 Low Energy Dosimetry with Photon Counting Pixel Detectors like the Medipix2
T. Michel, G. Anton, M. Boehnel, J. Durst
Institute of Physics, University of Erlangen-Nuernberg, Germany

N39-5 A Radiation Dosimeter Concept for the Lunar Surface Environment
M. J. Christl[1], J. H. Adams[1], E. Kuznetsov[2], T. A. Parnell[2], G. N. Pendleton[3], J. W. Watts[1]
[1]NASA/MSFC, USA; [2]University of Alabama in Huntsville, USA; [3]Dynetics Inc., USA

N40 Computing and Software for Experiments V: Montecarlo Simulation II

Thursday, Nov. 1 10:30-12:00, Kahili I&II
Session Chair: Bruce Faddegon, *University of California San Francisco*

N40-1 GEANT4 Validation of Electron Energy Loss in Nanometric Layers and Simulation of a Position Detector Based on Nanotechnologies
A. Montanari[1], R. Angelucci[2], M. Cuffiani[3,1], G. M. Dallavalle[1], L. Malferrari[1], F. Odorici[1], A. Parisini[2], R. Rizzoli[2], G. P. Veronese[2,1]
[1]Istituto Nazionale di Fisica Nucleare, Italy; [2]Consiglio Nazionale delle Ricerche, Italy; [3]Universita' di Bologna, Italy

N40-2 Simulating Gamma-Ray Spectrometer Response by Coupling a Monte Carlo Simulation to a Deterministic Flux Solution
R. T. Pagh, L. E. Smith, C. J. Gesh, M. W. Shaver, W. R. Kaye
Pacific Northwest National Laboratory, USA

N40-3 Validation of Nuclear Reaction Models in Geant4 for the Purpose of Carbon Ion Radiotherapy
T. Toshito, *High Energy Accelerator Research Organzaition (KEK); CREST ,JST, Japan*
On behalf of the NIRS-HIMAC P152 collaboration

N40-4 Readiness of the CMS Detector Simulation
V. D. Elvira, *Fermilab, USA*
On behalf of the CMS collaboration

N40-5 (invited) Microdosimetry in High-Resolution Cellular Phantoms Using the Very Low Energy Electromagnetic Extension of the Geant4 Toolkit
S. Incerti[1], P. Moretto[1], M. G. Pia[2], H. Seznec[1]
[1]CENBG, France; [2]INFN Genova, Italy, Italy

N40-6 Cell Survival Modelling with the Geant4 Monte Carlo Toolkit
S. Chauvie, *Santa Croce e Carle Hospital, Italy*; S. Incerti, P. Moretto, *CENBG, France*; P. Nieminen, *ESA, The Netherlands*; M. G. Pia, *INFN Genova, Italy, Italy*

N41 Photodetectors and Radiation Imaging III: SiPM

Thursday, Nov. 1 13:30-15:15, Coral I
Session Chair: Michael Squillante, *Radiation Monitoring Devices, Inc.*

N41-1 (invited) Performance Optimisation of Silicon Photomultipliers
D. J. Herbert, A. G. Stewart, P. J. Hughes, J. C. Jackson
SensL, Ireland

N41-2 Recent Progress in the Performance on the Silicon Photomultipliers Produced at FBK-Irst
C. Piemonte, *FBK-irst, Italy*
On behalf of the DASiPM collaboration

N41-3 Silicon Photomultiplier as a Detector of Cherenkov Photons
R. Pestotnik[1], K. Hara[2], T. IIjima[2], S. Korpar[3,1], P. Križan[4,1], Y. Mazuka[2], R. Dolenec[1], A. Petelin[1], M. Yamaoka[4]
[1]Jožef Stefan Institute, Slovenia; [2]Nagoya University, Japan; [3]University of Maribor, Slovenia; [4]University of Ljubljana, Slovenia

N41-4 Study of the Multi Pixel Photon Counter for the GLD Calorimeter
S. Uozumi, *Shinshu University, Japan*
On behalf of the GLD Calorimeter Group / KEKDTP Project Photon Sensor Group

N41-5 Silicon Photon Mulptipliers Light Response Properties
S. Gentile, F. Meddi, C. Bosio, E. Koutznetsova
University of Rome,& Sezione INFN, Italy

N41-6 A Study of Silicon Photomultiplier Sensor Prototypes for Readout of a Scintillating Fiber / Lead Sheet Barrel Calorimeter
C. Zorn, *Jefferson Laboratory, USA*
On behalf of the GlueX Collaboration

N41-7 Silicon Photomultiplier Devices and Concept Studies of Readout for Calorimetric Detectors
G. W. Deptuch, *Brookhaven National Laboratory, USA*; A. Para, *Fermi National Accelerator Laboratory, USA*

N42 High Energy and Nuclear Physics Instrumentation VI: Neutrino and Dark Matter Detectors

Thursday, Nov. 1 13:30-15:30, Coral II
Session Chairs: Marat Gataullin, *California Institute of Technology*
Dimitri Bourilkov, *University of Florida*

N42-1 (invited) Daya Bay Reactor Neutrino Experiment
Y.-F. Wang, *Institute of High Energy Physics, Beijing, P.R. China*
On behalf of the Daya Bay collaboration

N42-2 (invited) EXO: an Enriched Xenon Observatory for Double Beta Decay
J. D. Wodin, *Stanford Linear Accelerator Center, USA*
On behalf of the EXO Collaboration

N42-3 Background Simulations and Detector Design for the KATRIN Experiment
M. L. Leber, *University of Washington, USA*
On behalf of the KATRIN Collaboration

N42-4 Dual-Phase Argon Ionization Detector for Measurement of Coherent Elastic Neutrino Scattering and Medium-Energy Nuclear Recoils
C. D. Winant, A. Bernstein, C. Hagmann, I. Jovanovic, K. Kazkaz, P. Kerr, W. Stoeffl
LLNL, U.S.A.

N42-5 Noise Characterization and Optimization of the Large-Mass Ultra-Low Noise P-Type Modified Electrode HPGe Detector
P. M. De Lurgio[1], J. I. Collar[2], P. S. Barbeau[2], D. E. Reyna[1], G. R. Drake[1]
[1]Argonne National Laboratory, USA; [2]University of Chicago, USA

N42-6 A 60 kg Bubble Chamber for Direct Dark Matter Detection
E. J. Ramberg, *Fermi National Accelerator Laboratory, USA*
On behalf of the COUPP

N42-7 Testing of Materials and Components at Cryogenic Temperatures for a Noble Liquid Dark Matter Detector
L. C. Stonehill, *Los Alamos National Laboratory, USA*
On behalf of the DEAP and CLEAN Collaborations

N43 Trigger and Front-End Systems II

Thursday, Nov. 1 13:30-15:30, Hibiscus I&II

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

N43-1 The GigaFitter for Fast Track Fitting Based on FPGA DSP Arrays
P. Catastini, *Siena University - INFN Pisa, Italy*
On behalf of the SVT Collaboration

N43-2 Performances of a Trigger Based on B-Jets Tagging at CDF
D. Lucchesi, S. Amerio, G. Cortiana, S. Pagan Griso, *University and IFNF of Padova, Italy*; M. Casarsa, *Fermilab, Illinois*; L. Ristori, *INFN-Pisa, Italy*; S. Torre, *INFN-Labratori Frascati, Italy*

N43-3 The ATLAS Level-1 Trigger: Status of the System and Experience from Commissioning with Cosmic-Ray Muons
D. Berge, *CERN, PH Department, Switzerland*
On behalf of the ATLAS first-level trigger community

N43-4 Electronics and Trigger Developments for the Diffractive Physics Proposal at 220m from LHC-ATLAS
J.-F. Genat[1], O. Kepka[2], P. Le Du[1], C. Royon[1]
[1]CEA, France; [2]Institute of Physics, Czech Republic

N43-5 The Services Boards system for the LHCb Muon Detector (Equalization, Timing and Monitoring of the 120k Front End Channels In the LHCb Muon Detector)
V. Bocci, G. Chiodi, S. Di Marco, F. Iacoangeli, F. Messi, R. Nobrega, D. Pinci, W. Rinaldi
INFN Sezione di Roma, Italy

N43-6 Production and Testing of the LHCb Outer Tracker Front End Electronics
A. Pellegrino, *NIKHEF Amsterdam, The Netherlands*
On behalf of the LHCb Outer Tracker Group

N43-7 Development and Implementation of the Level 0 Pixel Trigger System for the ALICE Silicon Pixel Detector
G. Aglieri Rinella, A. Kluge
CERN, European Organization for Nuclear Research, Switzerland

N43-8 A New Readout System for "Digital Hadron Calorimetry" for the International Linear Collider
G. Drake[1], J. Butler[2], T. Cundiff[1], B. Haberichter[1], E. Hazen[2], J. Hoff[3], S. Holm[3], A. Kreps[1], E. May[1], J. Repond[1], D. Underwood[1], A. White[4], S. Wu[2], L. Xia[1], J. Yu[4]
[1]Argonne National Laboratory, USA; [2]Boston University, USA; [3]Fermi National Accelerator Laboratory, USA; [4]University of Texas - Arlington, USA

N44 Radiation Damage Effects I

Thursday, Nov. 1 13:30-15:30, Kahili I&II

Session Chair: Massimo Manghisoni, *Università degli Studi di Bergamo*

N44-1 (invited) Development of Radiation-Tolerant Materials for Tracking Detectors (RD50 Status)
H. F. F. -W. Sadrozinski, *Univ. of California Santa Cruz, USA*
On behalf of the RD50 Collaboration

N44-2 Short Strips for the sLHC: a P-Type Silicon Microstrip Detector in 3D-Technology
S. Kuehn[1], G.-F. Dalla Betta[2], S. Eckert[1], K. Jakobs[1], U. Parzefall[1], A. Pozza[3], A. Zoboli[2], N. Zorzi[3]
[1]University of Freiburg, Germany; [2]INFN and University of Trento, Italy; [3]FBK-irst Trento, Italy

N44-3 Space Charge Sign Inversion and Electric Field Reconstruction in 24 GeV Proton Irradiated MCZ Si P+-n(TD)-N+ Detectors Processed via Thermal Donor Introduction
Z. Li, *Brookhaven National Lab, USA*; E. Verbitskaya, V. Eremin, *Ioffe Physico-Technical Institute of Russian Academy of Sciences, Russia*; J. Härkönen, *Helsinki Institute of Physics, CERN/PH 1211, Switzerland*

N44-4 Capacitance Simulations and Measurements of 3D Pixel Sensors under Proton Exposure
J. E. Metcalfe, M. Hoeferkamp, I. Gorelov, S. Seidel, *University of New Mexico, USA*; S. Parker, *University of Hawaii, USA*; C. Kenney, *Molecular Biology Consortium, USA*

N44-5 Study of Polycrystalline and Single Crystal Diamond Detectors Irradiated with Neutrons up to 1016 cm-2
M. Mikuž[1], V. Cindro[1], I. Dolenc[1], A. Gorišek[1], H. Kagan[2], G. Kramberger[1], I. Mandi [1], W. Trischuk[3], M. Zavrtanik[1]
[1]Jožef Stefan Institute and Department of Physics, University of Ljubljana, Slovenia; [2]Ohio State University, USA; [3]Univesity of Toronto, Canada

N44-6 Total Dose Effects for 0.15µm FD-SOI CMOS Transistors
Y. Ikegami[1], Y. Arai[1], K. Hara[2], M. Hazumi[1], H. Ikeda[3], H. Ishino[4], T. Kohriki[1], H. Miyake[2], A. Mochizuki[2], S. Terada[1], T. Tsuboyama[1], Y. Unno[1]
[1]KEK, Japan; [2]University of Tsukuba, Japan; [3]JAXA, Japan; [4]Tokyo Institute of Technology, Japan

N44-7 The Lifetime of the D0 Silicon Microstrip Tracker and Experiences at the Tevatron
D. Tsybychev
State University of New York at Stony Brook, USA

N45 Scintillators and Scintillation Detectors II: New Materials

Thursday, Nov. 1 16:00-18:00, Coral I

Session Chairs: Pieter Dorenbos, *Delft University of Technology*
Rainer Novotny, *2nd Physics Institute, University Giessen*

N45-1 (invited) Search of Cerium Activated Scintillators Based on Rare Earth Trihalide Compositions
K. S. Shah, J. Glodo, E. van Loef, W. Higgins, *RMD, USA*

N45-2 Thin Film Scintillators for Rapid Screening of Potential Radiation Detection Materials
B. D. Milbrath, J. Caggiano, D. W. Matson, L. C. Olsen
Pacific Northwest National Laboratory, USA

N45-3 Exploratory Research on the Development of Novel Glass Scintillators
D. J. Wisniewski[1,2], L. A. Boatner[1], J. S. Neal[1], J. O. Ramey[1], G. E. Jellison[1]
[1]Oak Ridge National Laboratory, USA; [2]N. Copernicus University, Poland

N45-4 CeBr3-PrBr3 Scintillators
J. Glodo[1], E. V. D. van Loef[1], C. Kyba[2], J. S. Karp[2], K. S. Shah[1]
[1]Radiation Monitoring Devices, Inc., USA; [2]University of Pennsylvania, USA

N45-5 Cerium Bromide Scintillation Detectors
T. Onodera, K. Hitomi, T. Shoji
Tohoku Institute of Technology, Japan

N45-6 New Bright Scintillators from the Ba(Cl,Br)2-Y(Cl,Br)3 System Doped with Ce.
E. D. Bourret-Courchesne, S. M. Hanrahan, Y. D. Porter-Chapman, S. E. Taylor, M. J. Weber, S. E. Derenzo
Lawrence Berkeley National Laboratory, USA

N45-7 Crystal Growth and Scintillating Properties of Pb-Doped LiCaAlF6
A. Novoselov[1], M. Nikl[2], A. Vedda[3], A. Yoshikawa[1]
[1]Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan; [2]Institute of Physics AS CR, Czech Republic; [3]University of Milan-Bicocca, Italy

N46 High Energy and Nuclear Physics Instrumentation VII: Nuclear Physics Instrumentation

Thursday, Nov. 1 16:00-18:00, Coral II
Session Chairs: Robert Pak, *Brookhaven National Laboratory*
Itzhak Tserruya, *Weizmann Institute*

N46-1 PHENIX Forward Upgrade: Responding to Challenges in Nuclear Physics
E. P. Kistenev, *Brookhaven National Laboratory, USA*
On behalf of the PHENIX Forward Upgrade group

N46-2 The First Results from the HERMES Recoil Detector
J. Stewart, *DESY, Germany*
On behalf of the HERMES Collaboration

N46-3 Challenges for Solid State Tracking Detectors in Nuclear Physics Experiments at FAIR
O. A. Kiselev, *Institute of Nuclear Chemistry, Mainz University, Germany*
On behalf of the R3B and EXL collaborations

N46-4 A Focussing Disc DIRC for the PANDA Experiment at FAIR
B. Seitz[1], D. Branford[2], K. Foehl[2], M. Hoek[1], R. Kaiser[1], G. Rosner[1], D. Watts[2]
[1]University of Glasgow, U.K; [2]University of Edinburgh, U.K

N46-5 The New FINUDA Challenge: Gamma-Ray Spectroscopy of Hypernuclei at DAFNE
A. Feliciello, *Istituto Nazionale di Fisica Nucleare - Sezione di Torino, Italy*
On behalf of the HyperGamma Collaboration

N46-6 A Method to Evaluate the Efficacy of a Gamma-Tracking Array
L. Nelson[1], A. J. Boston[1], H. C. Boston[1], J. R. Cresswell[1], M. R. Dimmock[1], I. H. Lazarus[2], J. Ljungvall[3], P. J. Nolan[1], F. Recchia[4], S. V. Rigby[1], J. Simpson[2]
[1]The University of Liverpool, U.K.; [2]STFC Daresbury Laborotory, U.K.; [3]CEA/DSM/DAPNIA/SPhN, France; [4]University and INFN, Italy

N46-7 The GSI HPGe Detector Scanner – a Sophisticated Device Based on PET
I. Kojouharov, S. Tashenov, T. Engert, J. Gerl
GSI, Germany

N46-8 Compact, Efficient Angular Correlation Measurements with Novel, Position-Sensitive Alpha and Gamma Detectors
P. Chowdhury, S. Lakshmi, S. K. Tandel, C. M. Wilson, *University of Massachusetts Lowell, USA*; S. Gros, C. J. Lister, *Argonne National Laboratory, USA*; R. Farrell, M. McClish, K. S. Shah, *Radiation Monitoring Devices, Inc., USA*

N47 Astrophysics and Space Instrumentation III: Sensors

Thursday, Nov. 1 16:00-18:00, Hibiscus I&II
Session Chairs: Helmuth Spieler, *LBNL*
Mark Pearce, *Kungl Tekniska Högskolan, KTH*

N47-1 CCD Phase Dithering: A New Technique for Acquiring Dithered Astrophysical Observations from Space
H. M. Oluseyi, *Florida Institute of Technology, United States*; J. L. Williamson, *The University of Alabama in Huntsville, United States*; D. Rubin, *University of California, Berkeley, United States*; N. A. Roe, A. Karcher, *Lawerence Berkeley National Laboratory, United States*

N47-2 A Back-Illuminated, Fully Depleted 17 Mpixel CCD for Scientific Applications
S. E. Holland, C. J. Bebek, P. J. Daniels, K. Dawson, J. H. Emes, D. E. Groom, S. R. Jelinsky, A. Karcher, W. F. Kolbe, N. P. Palaio, C. Tran, N. A. Roe, G. Wang
Lawrence Berkeley National Laboratory, USA

N47-3 DEPFET Based Focal Plane Instrumentation for X-Ray Imaging Spectroscopy in Space
J. Treis[1,2], P. Lechner[3,2], L. Andricek[4,2], K. Heinzinger[3,2], S. Herrmann[1,2], N. Kimmel[1,2], T. Lauf[1,2], G. Lutz[3,2], R. H. Richter[4,2], M. Porro[1,2], G. Schaller[1,2], M. Schnecke[4,2], F. Schopper[1,2], H. Soltau[3,2], L. Strüder[1,2], S. Wölfel[1,2], G. Segneri[3,2]
1Max-Planck-Institute for extraterrestrial Physics, Germany; 2MPI Halbleiterlabor, Germany; 3PNSensor GmbH, Germany; 4Max-Planck-Institute for Physics, Germany

N47-4 Image Persistence in 1.7um Cut-off HgCdTe Focal Plane Arrays for SNAP
R. M. Smith[1], M. Bonati[1], M. Zavodny[2], G. Rahmer[1]
[1]California Institute of Technology, USA; [2]University of Hawaii, USA

N47-5 High Performance Cross-Strip Detector Technologies High Performance Cross-Strip Detector Technologies
O. Siegmund, A. Tremsin, J. Vallerga
University of California, Berkeley, USA

N47-6 Measurements of Charge Sharing Effects in Pixelated CZT/CdTe Detectors
I. Kuvvetli, C. Budtz-Jørgensen
Technical University of Denmark, Denmark

N47-7 Minimizing the Noise in Thick Modified Horizontal Bridgman CZT Detectors
A. B. Garson III[1], Q. Li[1], I. Jung[1], M. Groza[2], P. Dowkontt[1], R. Bose[1], G. Simburger[1], A. Burger[2], H. Krawczynski[1]
[1]Washington University in St. Louis, USA; [2]Fisk University, USA

N47-8 Photodiode and Inteference Filter Calibration Using a Monochromatic Illumination and Cryogenic Calibration System
N. Mostek, *UC Berkeley / SSL, USA*
On behalf of the SNAP Collaboration

N48 Radiation Damage Effects II

Thursday, Nov. 1 16:00-17:45, Kahili I&II
Session Chair: Zheng Li, *Brookhaven National Lab*

N48-1 X-Ray CCD with Low Noise Charge Injection Structure
G. Prigozhin, B. Burke, M. Bautz, S. Kissel, B. LaMarr
MIT, USA

N48-2 Radiation Hardness Studies in a CCD with Column Parallel Readout
A. Sopczak, *Lancaster University, UK*
On behalf of the LCFI Collaboration

N48-3 Ageing Phenomena in the LHCb Outer Tracker
N. Tuning, A. Pellegrino, *NIKHEF, The Netherlands*

N48-4 Radiation Hard Sensors for the Beam Calorimeter of the ILC
C. Grah, R. Heller, H. Henschel, W. Lange, W. Lohmann, M. Ohlerich, R. Schmidt, *DESY, Germany*; K. Afanaciev, A. Ignatenko, *NCPHEP BSU, Belarus*

N48-5 Radiation-Induced Processes in Scintillators Based on A2B6 Compound
B. V. Grinyov, N. G. Starzhinskiy
Institute for Scintillation Materials of National Academy of Science of Ukraine, Ukraine

N48-6 Second Generation Directional Gamma Radiation Spectrometer
G. Cardoso[1], J. L. Matteson[2], M. A. Capote[1], G. J. Batinica[1], E. Stephan[2], F. Duttweiler[2], T. Skelton[2], T. Gasaway[2], R. E. Rothschild[2], G. Huszar[2], M. R. Pelling[2]
[1]Aguila Technologies, USA; [2]University of California, San Diego, USA

N49 Scintillators and Scintillation Detectors III: Properties

Friday, Nov. 2 08:30-10:00, Coral I
Session Chairs: Hiroyuki Ishibashi, *Inorganic Products R&D Group, Hitachi Chemical Co., Ltd.*
Chuck Melcher, *University of Tennessee*

N49-1 Optical and Scintillation Properties of Heavy Crystal Scintillators
R. Mao, L. Zhang, R.-Y. Zhu
California Institute of Technology, USA

N49-2 Physical Characterization of the LabPETTM LGSO and LYSO Scintillators
C. M. Pepin[1], C. St-Pierre[1], J.-C. Forgues[1], Y. Kurata[2], N. Shimura[2], T. Usui[2], T. Takeyama[3], H. Ishibashi[2], R. Lecomte[1]
[1]Université de Sherbrooke, Canada; [2]Hitachi Chemical Co., Ltd, Japan; [3]Marubeni Specialty Chemicals, USA

N49-3 Neutron Detection via the Cherenkov Effect
Z. W. Bell, L. A. Boatner
Oak Ridge National Laboratory, USA

N49-4 Improving the Efficiency of Plastic Scintillators
I. H. Campbell, B. K. Crone
Los Alamos National Laboratory, USA

N49-5 A Low-Temperature Proton Detector for a Neutron Lifetime Experiment
A. R. Mueller, I. Altarev, H. Angerer, J. F. Hartmann, S. Paul, R. Picker
Technische Universität München, Germany

N49-6 Light Output Response of LYSO(Ce) Crystal to Helium and Carbon Ions
Y. Koba, G. Wakabayashi, M. Imamura, Y. Uozumi, N. Koba, H. Iwamoto, H. Ohkawa, T. Shimazu, *Kyushu University, Japan*; N. Matsufuji, *National institute of radiological sciences, Japan*; P. Evtoukhovitch, V. Kalinnikov, N. Khumutov, N. Kuchinski, A. Moiseenko, D. Mzavia, V. Samoilov, Z. Tsamalaidze, *Joint Institute for Nuclear Research, Russia*

N50 Instrumentation for Medical and Biological Research

Friday, Nov. 2 08:30-10:00, Coral II
Session Chair: Roberto Accorsi, *The Children's Hospital of Philadelphia*

N50-1 Cylindrical Silicon-on-Insulator Microdosimeter: Charge Collection Characteristics
A. L. Ziebell[1], W. H. Lim[2], M. I. Reinhard[3], I. Cornelius[1], D. A. Prokopovich[3], R. Siegele[3], A. S. Dzurak[2], A. B. Rosenfeld[1]
[1]University of Wollongong, Australia; [2]University of New South Wales, Australia; [3]Australian Nuclear Science and Technology Organisation (ANSTO), Australia

N50-2 Performance of CZT-Based Nuclear Radiation Detector System with Integrated Readout for SPECT/MR Small Animal Imaging
S. Azman[1], J. Gjaerum[1], D. Meier[1], T. Muftuler[2], G. Maehlum[1], O. Nalcioglu[2], B. Sundal[1], B. E. Patt[3], M. Szawlowski[3], B. M. W. Tsui[4], D. J. Wagenaar[3], Y. Wang[4]
[1]Gamma Medica - Ideas (Norway) AS, Norway; [2]University of California, USA; [3]Gamma Medica - Ideas (USA), USA; [4]Johns Hopkins University, USA

N50-3 Test of Silicon Microdosimeters on a 100 MeV Proton Therapy Beam
A. Fazzi[1], A. J. Wroe[2], A. Pola[1], S. Agosteo[1], V. Varoli[1], R. Schulte[3], A. B. Rosenfeld[2]
[1]Politecnico di Milano, Italy; [2]University of Wollongong, Australia; [3]Loma Linda University, USA

N50-4 Present and Future Anger Cameras Based on Silicon Drift Detectors
C. Fiorini[1,2], A. Gola[1,2], R. Peloso[1,2], A. Longoni[1,2], P. Lechner[3], L. Strueder[4], A. Owens[5]
[1]Politecnico di Milano, Italy; [2]INFN Sezione di Milano, Italy; [3]PNSensors GmbH, Germany; [4]Max Planck Institut Halbleiterlabor, Germany; [5]European Space Agency, ESTEC, The Netherlands

N50-5 Single Slice Compton Camera
N. Clinthorne[1], D. Burdette[2], E. Chesi[3], E. Cochran[2], K. Honscheid[2], S. Huh[1], H. Kagan[2], C. Lacasta[4], M. Mikuz[5], S. Smith[2], A. Studen[5], P. Weilhammer[3,6]
[1]University of Michigan, USA; [2]Ohio State University, USA; [3]CERN, Switzerland; [4]Consejo Superior de Investigaciones Científicas, Spain; [5]Institut Jozef Stefan, Slovenia; [6]Universtiy of Perugia, Italy

N50-6 Spectrometric Properties of TimePix Pixel Detector for X-Ray Color and Phase Sensitive Radiography
J. Jakubek, J. Dammer, T. Holy, M. Jakubek, S. Pospisil, V. Tichy, J. Uher, D. Vavrik
Institute of Experimental and Applied Physics of the Czech Technical University in Prague, Czech Republic

N51 Accelerators and Beam Line Instrumentation

Friday, Nov. 2 08:30-10:00, Hibiscus I&II
Session Chair: Stephan Friedrich, *Lawrence Livermore National Laboratory*

N51-1 Very High Radiation Detector for the LHC BLM System Based on Secondary Electron Emission
D. Kramer[1,2], B. Dehning[1], G. Ferioli[1], E. B. Holzer[1]
[1]Cern, Switzerland; [2]Technical University of Liberec, Czech Republic

N51-2 The LHC Beam Loss Monitoring System's Data Contribution to Other Systems.
C. Zamantzas, B. Dehning, E. Effinger, J. Emery, G. Ferioli, S. Jackson
CERN, Switzerland

N51-3 Beam Diagnosis Devices of a High Power Proton Beam Line Facility
H. Noumi, K. Agari, M. Ieiri, Y. Igarashi, S. Inaba, Y. Katoh, E. Hirose, M. Minakawa, T. Mitsuhashi, M. Saito, Y. Sato, Y. Suzuki, H. Takahashi, M. Takasaki, K. Tanaka, A. Toyoda, Y. Yamanoi, H. Watanabe
KEK, Japan

N51-4 Preliminary Tests of 1-D Solid State Pixel Array for Small Angle Neutron Scattering at Spallation Neutron Source of Oak Ridge National Laboratory
W. J. McNeil[1], S. L. Bellinger[1], B. J. Blalock[2], C. L. Britton Jr.[2], J. L. Britton[2], S. C. Bunch[2], W. L. Dunn[1], C. M. Henderson[1], T. J. Sobering[3], R. D. Taylor[3], T. C. Unruh[1], D. S. McGregor[1]
[1]Kansas State University, SMART Lab, USA; [2]University of Tennessee, USA; [3]Kansas State University, Electronics Design Lab, USA

N51-5 Out of Core Tests of the North Carolina State University PULSTAR Reactor Positron Beam
J. Moxom, A. G. Hathaway, A. I. Hawari
North Carolina State University, USA

N51-6 A New Wide Energy Range Test Beamline at Fermilab
E. J. Ramberg, *Fermi National Accelerator Laboratory, USA*

N52 Computing and Software for Experiments VI: Astroparticle and Space Science Software

Friday, Nov. 2 08:30-10:00, Kahili I&II
Session Chair: Paolo Calafiura, *Lawrence Berkeley National Laboratory*

N52-1 Neutron induced background in underground laboratories
L. Pandola, *INFN LNGS, Italy*
On behalf of the ILIAS Network

N52-3 Reuse of Existing Software by the DayaBay Experiment
S. Patton, *Lawrence Berkeley National Laboratory, USA*
On behalf of the DayaBay CollaborationN52-4 Monte Carlo Calibration of the Response of the University of Chicago's Cosmic Ray Nuclei Experiment (CRNE) on IMP8 to Electrons above 0.5 MeV
E. I. Novikova[1], W. F. Dietrich[2], J. Collins[3], A. J. Tylka[1], B. F. Phlips[1]
[1]Naval Research Laboratory, USA; [2]University of Chicago, USA; [3]North Carolina State University, USA

N52-5 An Example of Use of SNAPSim, a Software Package for Simulating Dark Energy Missions
L. Faccioli, *Lawrence Berkeley National Laboratory, CA*
On behalf of the SNAP Collaboration

N52-6 Comparison of Integrated Radiation Transport Models with TEPC Measurements for the Average Quality Factors in Space Flights
M.-H. Y. Kim, *Wyle Laboratories, Inc., USA*; H. Nikjoo, *USRA, USA*; J. F. Dicello, V. L. Pisacane, *US Naval Academy, USA*; F. A. Cucinotta, *NASA Johnson Space Center, USA*

N53 Photodetectors and Radiation Imaging IV

Friday, Nov. 2 10:30-12:00, Coral I
Session Chair: David Wehe, *University of Michigan*

N53-1 The Pixel Hybrid Photon Detectors of the LHCb Ring Imaging Cherenkov Counters
T. Blake, *Imperial College, UK*
On behalf of the LHCb RICH Collaboration

N53-2 R&D Status of Readout System for a Large Photocathode HAPD
T. Abe, H. Aihara, M. Iwasaki, H. Miyatake, H. Nakayama, T. Uchida, *University of Tokyo, Japan*; M. Tanaka, *KEK, Japan*; Y. Kawai, H. Kyushima, M. Suyama, *Hamamatsu Photonics, Japan*; Y. Higashi, T. Mizukami, S. Nakano, *Kyoto University, Japan*

N53-3 Large Area APDs for the PANDA-EMC
A. Wilms, *GSI Darmstadt, Germany*
On behalf of the PANDA EMC group

N53-4 X-Ray Response of CZT Ring-Drift Detector
A. G. Kozorezov[1], A. Owens[2], R. den Hartog[2], F. Quarati[2], V. Gostilo[3], V. Kondratjev[3], A. Loupilov[3], J. K. Wigmore[1], A. Webb[4], E. Welter[4]
[1]Lancaster University, UK; [2]European Space Agency, Netherlands; [3]Baltic Scientific Instruments, Latvia; [4]Deutsches Elektronen-Synchrotron, Germany

N53-5 Test of Thick Modified Horizontal Bridgman CZT Detectors with 64 and 225 Pixel
Q. Li[1], A. I. Garson[1], I. Jung[1], M. Groza[2], P. Dowkontt[1], R. Bose[1], G. Simburger[1], A. Burger[2], H. Krawczynski[1]
[1]Washington University in St. Louis, US; [2]Fisk University, US

N53-6 Performance Evaluation of 98 CZT Sensors for Their Use in Gamma Ray Imaging
N. P. Dedek, R. D. Speller, *University College London, UK*; P. Spendley, *e2v technologies, UK*; J. A. Horrocks, *Barts and the London NHS Trust, UK*

N54 Analog and Digital Circuits III: Electronics for Space-borne and Astronomical Detectors

Friday, Nov. 2 10:30-12:00, Coral II
Session Chairs: William Craig, *LLNL*
Jim Lund, *Sandia National Laboratories*

N54-1 The Power Energy ASIC, with Voltage and Time-over-Threshold Read Outs, Suitable for the Measurement of Power Law Space Particle Distributions
N. Paschalidis
The Johns Hopkins University Applied Physics Laboratory, USA

N54-2 ASTEROID: a New 64 Channel ASIC for Source Follower Based Readout of the MIXS DEPFET Arrays on BepiColombo
M. Porro[1,2], L. Bombelli[3,4], C. Fiorini[3,4], S. Herrmann[1,2], G. Segneri[5,2], L. Strueder[1,2], J. Treis[1,2], A. Wassatsch[6,2], S. Woelfel[1,2]
[1]Max Planck Institut fuer Extraterrestrische Physik, Germany; [2]MPI Halbleiterlabor, Germany; [3]Politecnico di Milano, Italy; [4]Italian National Institute of Nuclear Physics (INFN), Italy; [5]PNSensor GmbH, Germany; [6]Max Planck Institut fuer Physik, Germany

N54-3 Mixed Signal pnCCD Readout ASIC for the Future X-Ray Astronomy Mission eROSITA
S. Herrmann[1], W. Buttler[2], R. Hartmann[3], P. Holl[3], N. Meidinger[1], L. Strueder[1]
[1]Max-Planck-Institut für extraterrestrische Physik, Germany; [2]Ingenieurbuero Werner Buttler, Germany; [3]PNSensor GmbH, Germany

N54-4 A CCD Clock Controller ASIC Using Novel Design Techniques Integrated in a CMOS 0.8um SOI High Voltage Process.
J.-P. Walder, *Lawrence Berkeley National Lab, USA*

N54-5 A Precision Voltage and Current Reference Circuit for the SNAP CCD Readout IC
B. Krieger, G. Chao, A. Karcher, S. Kurz, J.-P. Walder
Lawrence Berkeley National Laboratory, USA

N54-6 Front-End ASIC for a Silicon Compton Telescope
G. De Geronimo[1], E. Frost[2], B. F. Phlips[3], E. Vernon[1]
[1]Brookhaven National Laboratory, USA; [2]Praxis, Inc., USA; [3]Naval Research Laboratory, USA

N55 Synchrotron Radiation Instrumentation

Friday, Nov. 2 10:30-12:00, Hibiscus I&II
Session Chairs: D Peter Siddons, *National Synchrotron Light Source*
Niels van Bakel, *Stanford Linear Accelerator Center*

N55-1 First User Results from the HOTWAXS Detector System
D. M. Duxbury[1], J. E. Bateman[1], G. E. Derbyshire[1], G. P. Diakun[2], J. P. A. Fairclough[3], I. Harvey[2], W. I. Helsby[2], G. Sankar[4], E. J. Spill[1], R. Stephenson[1]
[1]STFC Rutherford Appleton Laboratory, UK; [2]STFC Daresbury Laboratory, UK; [3]University of Sheffield, Uk; [4]Royal Institution of GB, UK

N55-2 First Experimental Data from XH, a Fine Pitch Germanium Microstrip Detector for Energy Dispersive EXAFS (EDE)
J. Groves[1], P. N. Luke[2], M. Kogimtzis[1], G. Salvini[1], J. Headspith[1], S. L. Thomas[3], R. C. Farrow[1], J. Evans[4], T. Rayment[5], J. S. Lee[2], W. D. Goward[2], M. Amman[2]

[1]STFC Daresbury Laboratory, UK; [2]Lawrence Berkeley National Laboratory, USA; [3]STFC Rutherford Appleton Laboratory, UK; [4]Diamond Light Source Ltd, UK; [5]University of Birmingham, UK

N55-3 Characterization of Silicon Detectors Utilized in an on-Line Dosimetry System for Microbeam Radiation Therapy
A. M. Baloglow[1,2], M. L. F. Lerch[1,2], M. Reinhard[3], R. Siegele[3], E. Brauer-Krish[4], E. Siegbahn[4], V. Perevertaylo[5], A. Bravin[4], A. B. Rozenfeld[1,2,3]
[1]University of Wollongong, Australia; [2]Center for Medical Radation Physics (CMRP), Australia; [3]Australian Nuclear Science and Technology Organization (ANSTO), Australia; [4]European Synchrotron Radiation Facility (ESRF), France; [5]SPO-BIT, Ukraine

N55-4 pnCCDs for High Speed X-Ray Imaging at Experiments at FLASH, LCLS and XFEL
L. Strüder[1,2,3], U. Pietsch[3], H. Graafsma[4], R. Hartmann[2,5]
[1]MPI für extraterrestrische Physik, Germany; [2]MPI-Halbleiterlabor, Germany; [3]Universität Siegen, Germany; [4]DESY, Germany; [5]PNSensor, Germany

N55-5 X-Ray PMOS Active Matrix Pixel Sensors for the Linac Coherent Light Source
P. Rehak, G. A. Carini, C. Wei, G. De Geronimo, D. P. Siddons, *Brookhaven National Laboratory, U.S.A.*; S. Steen, W. Haensch, J. A. O'Neill, *IBM – T.J. Watson Research Center, U.S.A.*

N55-6 Linear Silicon Drift Detectors (LSDD) for Megaframe X-ray imaging at experiments at FLASH and XFEL
L. Strüder[1,2,3], M. Porro[1,2], A. Walenta[3], K. Hansen[4], A. Castoldi[5], P. Fischer[6], C. Fiorini[5], V. Ré[7]
[1]MPI für extraterrestrische Physik, Germany; [2]MPI-Halbleiterlabor, Germany; [3]Universität Siegen, Germany; [4]DESY, Germany; [5]Politecnico di Milano, INFN, Italy; [6]Universität Mannheim, Germany; [7]University of Bergamo, Italy

N56 Computing and Software for Experiments VII: Software for Detectors

Friday, Nov. 2 10:30-12:00, Kahili I&II
Session Chair: Alessandro Montanari, *Istituto Nazionale di Fisica Nucleare - Sezione di Bologna*

N56-1 Alignment of the Inner Detector of the ATLAS Experiment
J. R. Schieck, *Max-Planck-Institute for Physics, Germany*

N56-2 The Simulation of the CMS Silicon Tracker
R. Ranieri, *CERN, Geneva, Switerland*

N56-3 Parameterization of the LHCb Magnetic Field Map
A. Hicheur, G. Conti
Ecole Polytechnique Federale de Lausanne, Switzerland

N56-4 Realistic Geometry for Track Simulation and Reconstruction in the ATLAS Muon Spectrometer
N. Benekos[1], N. Van Eldik[2], S. M. Goldfarb[3], D. S. Levin[3], E. Moyse[2], D. Rebuzzi[4], A. Salzburger[5], S. Spagnolo[6], I. Logashenko[7], R. Harrington, Jr.[7]
[1]Max Planck Institute, Germany; [2]University of Massachussets, USA; [3]University of Michigan, USA; [4]University of Pavia and INFN, Italy; [5]University of Innsbruck, Austria; [6]Univerity of Salento and INFN Lecce, Italy; [7]Boston University, USA

N56-5 Database Architecture for the Calibration of ATLAS Monitored Drift Tube Chambers
M. Cirilli[1], S. Mc Kee[1], M. Verducci[2], F. Tique Aires Viegas[2], G. Dimitrov[3], D. Orestano[4,5], P. Celio[4], E. Vilucchi[6], P. Bagnaia[7,8], J. Rothberg[9]
[1]University of Michigan, United States; [2]CERN, Switzerland; [3]Lawrence Berkeley National Laboratory, United States; [4]INFN Sezione di Roma Tre, Italy; [5]Università Roma Tre, Italy; [6]INFN Laboratori Nazionali di Frascati, Italy; [7]Università di Roma "La Sapienza", Italy; [8]INFN Sezione di Roma, Italy; [9]University of Washington, United States

N56-6 A Production Database System for LHCb VELO Modules.
G. D. Patel, *University of Liverpool, UK*
On behalf of the LHCb Collaboration

N57 Scintillators and Scintillation Detectors IV: Fundamental Mechanisms

Friday, Nov. 2 13:30-15:30, Coral I
Session Chairs: Carel Van Eijk, *Delft University of Technology*
Hongjie Luo, *Shanghai Institute of Ceramics*

N57-1 First Principle Quantum Description of the Energetics Associated with LaBr3, LaCl3, and Ce Doped Scintillators
M. E. McIlwain, *Idaho National Laboratory, USA*; D. Gao, *Washington State University, USA*

N57-2 Electronic Structure Studies and Predictions for New Ce-Doped Gamma Detector Materials
A. Canning, R. Boutchko, S. Derenzo, L.-W. Wang, M. Weber
Lawrence Berkeley National Laboratory, USA

N57-3 Measurements of NaI:Tl Electron Response Using SLYNCI: Comparison of Different Samples
G. Hull[1], W.-S. Choong[2], W. W. Moses[2], J. D. Valentine[1], S. Payne[1], N. Cherepy[1], B. W. Reutter[2]
1Lawrence Livermore National Laboratory, USA; 2Lawrence Berkeley National Laboratory, USA

N57-4 Self-Absorption in La-Halide Scintillators
P. Dorenbos, W. A. Drozdowski, G. Bizarri
Delft University of Technology, Netherlands

N57-5 Measurement of the LaBr3 and LaCl3 Electron Response
W. W. Moses[1], W.-S. Choong[1], G. Hull[2], S. Payne[2], N. Cherepy[2], J. D. Valentine[2], B. W. Reutter[1]
[1]Lawrence Berkeley National Laboratory, USA; [2]Lawrence Livermore National Laboratory, USA

N57-6 Some Features of Ionizing Radiation Energy Losses in Organic Polycrystalline and Composite Scintillators
N. Z. Galunov[1], N. L. Karavaeva[1], J. K. Kim[2], Y. K. Kim[2], O. A. Tarasenko[1], E. V. Martynenko[1], S. V. Budakovsky[1]
[1]Institute for Scintillation Materials, National Ac.Science of Ukraine, Ukraine; [2]Technology Center for Radiation Safety Hanyang University, Republic of Korea

N57-7 Energy Levels in LSO:Ce,Ca Crystals
K. Yang[1], P. D. Rack[1], L. Eriksson[2,3,4], C. L. Melcher[1]
[1]University of Tennessee at Knoxville, USA; [2]Siemens Medical Solutions Molecular Imaging, USA; [3]Karolinska Institute, Sweden; [4]University of Stockholm, Sweden

N57-8 Scintillation Properties of 2-Inch-Diameter Pr:Lu3Al5O12 (LuAG) Single Crystal
K. Kamada[1,2], K. Tsutsumi[1], Y. Usuki[1], H. Ogino[3], A. Yoshikawa[2]
[1]Furukawa Co., Ltd., Japan; [2]Tohoku University, Japan; [3]The University of Tokyo, Japan

N58 Analog and Digital Circuits IV: Readout Circuits and Techniques

Friday, Nov. 2 13:30-15:30, Coral II
Session Chair: Peter Marleau, *Sandia National Lab*

N58-1 Design and Performance of the 5 GHz Waveform Digitizing Chip DRS3
S. Ritt, *Paul Scherrer Institute, Switzerland*

N58-2 A 35 mW 12 Bits 25 MS/s Pipelined Analog to Digital Converter
D. Dzahini[1], M. Dahoumane[1], E. Lagorio[1], J. Y. Hostachy[1], O. Rossetto[1], H. Ghazlane[2], J. Bouvier[1], L. Gallin-Martel[1]
[1]LPSC-IN2P3, France; [2]CNESTEN, Maroc

N58-3 Minimum Noise Design of Charge Amplifiers with CMOS Processes in the 100 nm Feature Size Range
L. Ratti[1,2], M. Manghisoni[3,2], V. Re[3,2], V. Speziali[1,2], G. Traversi[3,2]
[1]University of Pavia, Italy; [2]INFN, Italy; [3]University of Bergamo, Italy

N58-4 Impact of Gate-leakage Current Noise in sub-100 nm CMOS Front-end Electronics
M. Manghisoni[1,2], L. Gaioni[3,2], L. Ratti[3,2], V. Re[1,2], V. Speziali[3,2], G. Traversi[1,2]
[1]Università degli Studi di Bergamo, Italy; [2]INFN, Italy; [3]Università degli Studi di Pavia, Italy

N58-5 CMOS APS Architectures with Reconfigurable Read-Out Electronics in 0.18µm Bulk Technology
D. Passeri[1,2], A. Marras[3,2], P. Placidi[1,2], P. Delfanti[3,2], D. Biagetti[1,2], L. Servoli[2], P. Ciampolini[3,2]
[1]University of Perugia (Italy), Italy; [2]INFN Perugia (Italy), Italy; [3]University of Parma (Italy), Italy

N58-6 FPGA Based Field Deployable Instrumentation System for Sub Nanosecond Coincidence Spectroscopy for Neutron Time of Flight
S. S. Junnarkar, S. Mitra, *Brookhaven National Laboratory, USA*; R. Fontaine, *Université de Sherbrooke, Canada*

N58-7 A CMOS Pulsed-Reset Preamplifier for Silicon Drift Detectors with on-Chip JFET
C. Fiorini[1,2], L. Bombelli[1,2], A. Gola[1,2], T. Klatka[1,2], R. Peloso[1,2], A. Longoni[1,2], A. Niculae[3]
[1]Politecnico di Milano, Italy; [2]INFN Sezione di Milano, Italy; [3]PNSensors GmbH, Germany

N58-8 Neutron and Gamma Discrimination by Compensation of Long Components in Liquid Scintillators
K. D. Ianakiev, B. S. Alexandrov, C. E. Moss, H. Nguyen, R. B. Williams
Los Alamos National Laboratory, USA

N59 Astrophysics and Space Instrumentation IV: Experiments II

Friday, Nov. 2 13:30-15:30, Hibiscus I&II
Session Chairs: Mark Pearce, *Kungl Tekniska Högskolan, KTH*
Gary Varner, *Univ. of Hawaii*

N59-1 A Bubble Chamber for Dark Matter Detection: the COUPP Project
B. Odom, *University of Chicago, 60637*
On behalf of the COUPP

N59-2 In-Flight Status of the X-Ray Observatory Suzaku
T. Dotani, *Japan Aerospace Exploration Agency, Japan*
On behalf of the Suzaku team

N59-3 The Upcoming Long Duration Balloon Flight of the Nuclear Compton Telescope
M. E. Bandstra[1], S. E. Boggs[1], J. D. Bowen[1], C. B. Wunderer[1], A. Zoglauer[1], M. Amman[2], P. N. Luke[2], H.-K. Chang[3], Y.-H. Chang[4], C.-H. Lin[5], A. Huang[6], J.-L. Chiu[3], Z.-K. Liu[4]
[1]UC Berkeley Space Sciences Laboratory, USA; [2]Lawrence Berkeley National Laboratory, USA; [3]National Tsing Hua University, Taiwan; [4]National Central University, Taiwan; [5]National Space Organization (NSPO), Taiwan; [6]National United University, Taiwan

N59-4 High Sensitivity Balloon-Borne Hard X-Ray/Soft Gamma-Ray Polarimeter PoGOLite
T. Mizuno[1], M. Arimoto[2], M. Axelsson[3], C.-I. Bjornsson[3], G. Bogaert[4], P. Carlson[5], W. Craig[6], O. Engdegard[5], Y. Fukazawa[1], S. Gunji[7], L. Hjalmarsdotter[3], T. Kamae[8], Y. Kanai[2], J. Kataoka[2], J. Katsuta[9], N. Kawai[2], J. Kazejev[5], M. Kiss[5], W. Klamra[5], S. Larsson[3], G. Madejski[8], C. Marini Bettolo[5], J. Ng[8], M. Pearce[5], F. Ryde[3], H. Tajima[8], H. Takahashi[1], T. Takahashi[9], T. Tanaka[1], T. Thurston[10], M. Ueno[2], G. Varner[11], T. Ylinen[5], H. Yoshida[1]
[1]Hiroshima University, Japan; [2]Tokyo Institute of Technology, Japan; [3]Stockholm University, Sweden; [4]Ecole Polytechnique, France; [5]Royal Institute of Technology, Sweden; [6]Lawrence Livermore National Laboratory, USA; [7]Yamagata University, Japan; [8]Stanford Linear Accelerator Center, USA; [9]JAXA, Institute of Space and Astronautical Science, Japan; [10]Thurston Inc., USA; [11]University of Hawaii, USA

N59-5 Experimental Polarimetric Study of a Gamma-Ray CZT Focal Plane Prototype
R. M. Curado da Silva[1,2], E. Caroli[3], J. B. Stephen[3], A. Pisa[4], N. Auricchio[4], S. Del Sordo[3], F. Frontera[4], V. Honkimaki[5], F. Schiavone[3], G. Ventura[3]
[1]Universidade de Coimbra, Portugal; [2]Université catholique de Louvain, Belgium; [3]Istituto di Astrofisica Spaziale e Fisica Cosmica, Italy; [4]Università di Ferrara, Italy; [5]European Synchrotron Radiation Facility, France

N59-6 Caliste-64: Innovative Technology for a CdTe Micro Gamma Camera
A. Meuris, O. Limousin, I. Le Mer, F. Lugiez, O. Gevin, E. Delagnes, *CEA Saclay, FRANCE*; M.-C. Vassal, F. Soufflet, *3D-plus, FRANCE*

N59-7 Astrophysics with the 3-DTI Gamma-Ray Telescope
S. D. Hunter[1], L. M. Barbier[1], P. F. Bloser[2], J. F. Krizmanic[1], J. T. Link[1], G. A. DeNolfo[1], M. L. McConnell[2], J. M. Mitchell[1], J. M. Ryan[2], R. M. Sanbruna[1], S. Son[1]
[1]NASA/Godddard Space Flight Center, USA; [2]University of New Hampshire, USA

N59-8 The Observation of Diffuse Gamma-Ray with an Electron-Tracking Compton Imaging Camera Loaded on Balloon
A. Takada, T. Tanimori, H. Kubo, K. Miuchi, K. Tsuchiya, S. Kabuki, H. Nishimura, K. Hattori, S. Kurosawa, *Kyoto University, Japan*; N. Nonaka, E. Mizuta, *ISAS/JAXA, Japan*; R. Orito, *Kobe University, Japan*; T. Nagayoshi, *Waseda University, Japan*

N60 Computing and Software for Experiments VIII: Medical Physics Software

Friday, Nov. 2 13:30-15:30, Kahili I&II
Session Chair: Takashi Sasaki, *KEK*

N60-1 Geant4 Based Simulation Framework for Particle Therapy System
T. Aso, *Toyama National College of Maritime Technology, Japan*; A. Kimura, *Ashikaga Institute of Technology, Japan*; S. Kameoka, *National Cancer Center, Japan*; K. Murakami, T. Sasaki, *High Energy Accelerator Research Organization, Japan*; T. Yamashita, *Japan Science and Technology Agency, Japan*

N60-2 Improved Accuracy in Simulation of Electron and X-Ray Beams in External Beam Radiotherapy
B. Faddegon, D. Sawkey, J. Chen, *University of California San Francisco, USA*; E. Schreiber, *University of North Carolina, USA*

N60-3 Geant4 Simulations for Microbeam Radiation Therapy (MRT) Dosimetry
J. Spiga[1,2], E. Bräuer-Krisch[2], P. Randaccio[1], A. Bravin[2]
[1]University of Cagliari, Italy; [2]European Synchrotron Radiation Facility, France

N60-5 Optimization of Patient Geometry Based on CT Data in GEANT4 for Medical Application
T. Aso, *Toyama National College of Maritime Technology, Japan*; A. Kimura, *Ashikaga Institute of Technology, Japan*; T. Yamashita, *Japan Science and Technology, Japan*; T. Sasaki, *High Energy Accelerator Research Organization, Japan*

N60-6 Geant4-Based Monte Carlo Simulation of the Leksell Gamma Knife
G. Cuttone[1], R. Foroni[2], V. Mongelli[3], F. Romano[1,4], G. Russo[3], M. G. Sabini[3]
[1]Istituto Nazionale di Fisica Nucleare, Italy; [2]Borgo Trento Hospital, Italy; [3]Cannizzaro Hospital, Italy; [4]University of Catania, Italy

N60-7 Transmission Curves to Primery Beams to Diagnostic Radiology: a Comparison among Barite Concrete, Barite Mortar and Concrete
G. Hoff, S. F. Firmino
Pontifical Catholic University in Rio Grande do Sul, Brazil

N60-8 Requirements in Modeling and Visualization for Geant4-Based Radiotherapy Simulation
A. Kimura, *Ashikaga Institute of Technology, Japan*; A. Saitoh, *Japan Science and Technology Agency, Japan*; T. Aso, *Toyama College of Maritime Technology, Japan*; T. Sasaki, *High Energy Accelerator Research Organization, Japan*; S. Tanaka, *Ritsumeikan University, Japan*

NSS-MIC JOINT PROGRAM

NM1 NSS-MIC Joint I

Tuesday, Oct. 30 13:30-15:30, Coral I & II
Session Chairs: William Moses, *Lawrence Berkeley National Laboratory*
Craig Woody, *Brookhaven National Lab*

NM1-1 Development of a Gamma Camera Based on an 8x8 Array of LaBr3(Ce) Scintillator Pixels Coupled to a 64-Channel Multi-Anode PMT
H. Kubo[1], K. Hattori[1], S. Kabuki[1], S. Kurosawa[1], K. Miuchi[1], T. Nagayoshi[2], H. Nishimura[1], Y. Okada[1], R. Orito[3], A. Takada[1], T. Tanimori[1], K. Tsuchiya[1], K. Ueno[1]
[1]Kyoto University, Japan; [2]Waseda University, Japan; [3]Kobe University, Japan

NM1-2 Emission Spectra of LSO and LYSO Crystal Scintillators Excited by UV Light, X-Ray and -Ray
L. Zhang, R. Mao, R.-Y. Zhu
California Institute of Technology, USA

NM1-3 Development of the Fully-Depleted Thick Back-Illuminated CCD by Hamamatsu
H. Suzuki, M. Masaharu, K. Yamamoto, *HAMAMATSU PHOTONICS K.K., Japan*; S. Miyazaki, *National Astronomical Observatory of Japan, USA*

NM1-4 Integrated Signal Processing of CMOS Geiger Photodiode Arrays
C. J. Stapels[1], E. B. Johnson[1], R. Sia[1], F. L. Augustine[2], J. F. Christin[1]
[1]Radiaiton Monitoring Devices, USA; [2]Augustine Engineering, USA

NM1-5 Spectroscopy and Timing with Silicon Multi-Pixel Photon Counters (MPPC) and LYSO Scintillators
M. Szawlowski[1], D. Meier[2], G. Maehlum[2], D. J. Wagenaar[1], B. E. Patt[1]
[1]Gamma Medica - Ideas (USA), USA; [2]Gamma Medica - Ideas (Norway) AS, Norway

NM1-6 The PILATUS Detectors: Next Generation X-Ray Detectors for Synchrotron, Industrial and Medical Applications
C. Broennimann, *Swiss Light Source, Paul Scherrer Institut, Switzerland*
On behalf of the SLS Detector Group

NM1-7 New Time to Digital Converter, Signal Processing, Data Acquisition, Calibration and Test Hardware for RatCAP Scanner
S. S. Junnarkar, J. Fried, S. Southekal, J. Pratte, S. Maramraju, P. O'Connor, V. Radeka, P. Vaska, C. Woody, D. Schlyer, *Brookhaven National Laboratory, USA*; R. Fontaine, *Université de Sherbrooke, Canada*

NM1-8 Active Coded Mask Imaging
J. Lund, G. Aigeldinger, N. Bowden, N. Hilton
Sandia National Laboratories, USA

NM2 NSS-MIC Joint II

Tuesday, Oct. 30 16:00-18:00, Coral I & II
Session Chairs: Karl Ziemons, *Forschungszentrum Juelich GmbH / Central Institute for Electronics*
Douglas Wagenaar, *Gamma Medica-Ideas, Inc.*

NM2-1 A Radiation Hard Pixel Design for X-Ray Imagers
S. Zelakiewicz, D. Albagli, W. Hennessy, A. Couture
General Electric Global Research Center, USA

NM2-2 A Geant4 Simulation for Iron Overload Detection using NSECT
A. J. Kapadia, A. C. Sharma, B. P. Harrawood, G. D. Tourassi
Duke University, USA

NM2-3 Modeling Charge-Sharing Effects in Pixellated CZT Detectors
K. Iniewski, H. Chen, G. Bindley, *Redlen Technologies, Canada*; I. Kuvvetli, C. Budz-Jorgensen, *Danish National Space Center, Denmark*

NM2-4 A New, Industrial-Scale Method of Generating CZT Detector-Modules Equipped with Novel Electronics for Clinical Applications
U. El-Hanany, *Orbotech Medical Solutions, Israel*

NM2-5 Growth and Characterization of Vapor-Deposited LaBr3: Ce Films
V. V. Nagarkar, S. R. Miller, I. K. Shestakova, B. Singh, S. Thacker, V. Gaysinskiy
RMD Inc., USA

NM2-6 Suppression of Afterglow and Hysteresis in CsI:Tl by Co-Doping with Sm2+: Fabrication of Microcolumnar Films for High-Resolution
V. V. Nagarkar, V. Gaysinskiy, E. E. Ovechkina, S. R. Miller, S. Cool, S. Thacker, *RMD Inc., USA*; C. Brecher, A. Lempicki, *ALEM Associates, USA*

NM2-7 Novel Front-End Pulse Processing Scheme for PET System Based on Pulse Width Modulation and Pulse Train Method
K. Shimazoe, H. Takahashi, B. Shi, *Graduate School of Engineering,the University of Tokyo, Japan*; T. Furumiya, O. Jyunichi, Y. Kumazawa, *Shimadzu Corporation, Japan*; H. Murayama, *National institute of radiological sciences, Japan*

NM2-8 Optimization of Design Parameters of a Prototype CCD-Based Lens-Coupled Imaging System for the Detection of Beta Particles in a Microfluidic Chip
J. S. Cho, N. T. Vu, Z. T. Yu, R. W. Silverman, H. R. Tseng, A. F. Chatziioannou
UCLA Crump Institute, U.S.A.

MEDICAL IMAGING CONFERENCE (MIC)

Welcome to the 2007 IEEE Medical Imaging Conference! This year's conference represents the largest edition of the MIC ever: more than 670 papers were submitted to the conference. In order to handle this large number of papers, we have made a few changes to the program format. However, we have tried to retain the elements that have made the MIC the premier technical meeting on instrumentation and reconstruction for medical imaging modalities involving ionizing radiation.

Eric C. Frey
MIC Program Chair

This year the scientific program is now 4 full days: Wednesday October 31st through Saturday, November 3rd. Before the MIC program proper starts, there are two joint NSS-MIC oral sessions on the afternoon of Tuesday, October 30th. The MIC starts the following morning with 2 plenary sessions followed by 20 oral and 4 poster sessions. One change made to accommodate more papers is that all oral sessions are now in parallel. We realize that this means there may be two talks or sessions of interest at the same time; we have arranged the sessions to minimize conflicts by pairing hardware and software sessions from different modalities. In the 20 MIC oral sessions, 4 MIC poster, and 2 joint NSS-MIC sessions there are a total of 152 oral and 420 poster presentations. One exciting new addition to the conference is refresher courses. These are free 45-50 minute review lectures given each morning at 7:30 a.m. by an expert in a field where there have been a number of recent advances. The MIC banquet, scheduled for the evening of Friday, November 2nd, will provide a chance to make new friends and talk with old ones.

Magnus Dahlbom
MIC Deputy Program Chair

We would like to thank the 9 MIC Assistant Chairs and the 235 reviewers who provided more than 2000 reviews of the contributed papers. These reviews were the basis for selecting papers for oral or poster presentation.

It is our belief that the changes to the conference program needed to accommodate the growth in submissions have resulted in a stronger scientific program that provides the opportunity to exchange information and ideas with an even larger group of colleagues. We also hope you will find some time to enjoy the beautiful setting and surroundings at this conference site.

M01 MIC Plenary I

Wednesday, Oct. 31 08:30-09:45, Coral IV & V
Session Chair: Eric Frey, *Johns Hopkins University*

M01-1 (invited) Welcome and Introduction
E. C. Frey, *Johns Hopkins University, USA;* M. Dahlbom, *University of California at Los Angeles, USA*

M01-2 (invited) The Scintillating Future of Multi-Modality Cardiac Imaging
H. W. Strauss, *Memorial Sloan Kettering Cancer Center, USA*

M02 MIC Plenary II

Wednesday, Oct. 31 10:30-11:45, Coral IV
Session Chair: Magnus Dahlbom, *David Geffen School of Medicine at UCLA*

M02-1 (invited) MIC Awards Presentation
P. E. Kinahan, *University of Washington, USA*

M02-2 (invited) To be announced.

M03 Instrumentation: Detectors with Depth of Interaction Capability

Wednesday, Oct. 31 13:30-15:30, Coral IV
Session Chairs: Craig Levin, *Stanford University School of Medicine*
Wai-Hoi Wong, *University of Texas M.D. Anderson Cancer Center*

M03-1 DOI Measurement with Continuous Scintillation Crystals: a Primary Performance Evaluation
C. W. Lerche[1], A. Ros[2], A. Munar[3], F. Sánchez[2], R. Gadea[1], R. J. Colom[1], J. F. Toledo[1], V. Herrero[1], A. Sebastiá[1], D. Abellán[4], C. Correcher[4], A. J. González[4], J. M. Benlloch[4]
[1]Universidad Politecnica de Valencia, Spain; [2]Instituto de Fisica Corpuscular, Spain; [3]Universidad Jaume I, Spain; [4]GEM Imaging S.A., Spain

M03-2 Performance of Axial 3-D PET Detector Modules with Wave Length Shifter Readout
P. M. Weilhammer, A. Braem, C. Joram, J. Seguinot, *CERN, Switzerland*; R. De Leo, E. Nappi, *INFN, Sezione di Bari, Italy*; W. Lustermann, D. Schinzel, *ETH Zurich, Switzerland*; I. Johnson, D. Renker, *Paul Scherrer Institute, Switzerland*; S. Albrecht, *University Hospital Geneva, Switzerland*

M03-3 A Novel Scintillation Detector Using Decay Time Differences for Continuous Depth-of-Interaction Information
H. Du, Y. Yang, S. R. Cherry
University of California, Davis, USA

M03-4 DOI Calibration for PET Detectors with Dual-Ended Readout by PSAPDs
Y. Yang[1], J. Qi[1], Y. Wu[1], S. S. James[1], R. Farrell[2], P. A. Dokhale[2], K. S. Shah[2], S. R. Cherry[1]
[1]University of California at Davis, USA; [2]Radiation Monitoring Devices Inc., USA

M03-5 Design Considerations of Phoswich Detectors for High Resolution Positron Emission Tomography
L. A. Eriksson[1,2,3], C. L. Melcher[4], M. Eriksson[2], R. Grazioso[1]
[1]Siemens Medical Solutions, Molecular Imaging, USA; [2]Karolinska Institute, Sweden; [3]University of Stockholm, Sweden; [4]University of Tennessee, USA

M03-6 Investigation of Depth of Interaction Encoding for a Pixelated LSO Array with a Single Multi-Channel PMT
Y. Yang, Y. Wu, S. R. Cherry
University of California at Davis, USA

M03-7 Characterization of Depth of Interaction PET Detectors Using 0.5 mm and 0.7 mm LSO Arrays.
S. St. James[1], Y. Yang[1], Y. Wu[1], R. Farrell[2], P. Dokhale[2], K. S. Shah[2], S. R. Cherry[1]
[1]University of California-Davis, USA; [2]Radiation Monitoring Devices Inc, USA

M03-8 A DOI-Dependent Extended Energy Window Method to Control Balance of Scatter and True Events
E. Yoshida[1], K. Kitamura[2,1], K. Shibuya[1], F. Nishikido[1], T. Hasegawa[3], T. Yamaya[1], H. Murayama[1]
[1]National Institute of Radiological Sciences, Japan; [2]Shimadzu Corporation, Japan; [3]Kitasato University, Japan

M04 Reconstruction: X-ray CT

Wednesday, Oct. 31 13:30-15:30, Coral V
Session Chairs: Hiroyuki Kudo, *University of Tsukuba*
Xiaochuan Pan, *The University of Chicago*

M04-1 Enhanced 4D Heart Model based on High Resolution Dual Source Gated Cardiac CT Images
W. P. Segars, *Duke University, USA*; B. M. W. Tsui, *Johns Hopkins University, USA*

M04-2 Prospectively Gated Cardiac CT
D. Heuscher, S. Zabic, *Philips Medical Systems, USA*

M04-3 Performance and properties of Motion Compensated Derivative Backprojection Filtering Algorithms
K. Taguchi, *Johns Hopkins University, USA*

M04-4 Lateral (xy) Direction Balanced Flying Focal Spot Helical Cone-Beam CT Algorithm
I. A. Hein, A. A. Zamyatin
Toshiba Medical Research Institute USA, USA

M04-5 Extended Reconstructible Volume in Reduced Saddle Scan
D. Xia, S. Cho, X. Pan, *The University of Chicago, U.S.A.*

M04-6 Separate CT-Reconstruction for 3D Wavelet Based Noise Reduction Using Correlation Analysis
A. Borsdorf[1,2], R. Raupach[2], J. Hornegger[1]
[1]Friedrich-Alexander-University Erlangen-Nuremberg, Germany; [2]Siemens Medical Solutions, Germany

M04-7 A 3D Study Comparing Filtered Backprojection, Weighted Least Squares, and Penalized Weighted Least Squares for CT Reconstruction
M. Iatrou, B. DeMan, K. Khare, T. M. Benson
GE Global Research Center, USA

M04-8 Maximum Likelihood Resolution Recovery in X-Ray CT with an Extended Focal Spot
J. W. Stayman, *Xoran Technologies, 48103*

M05 Instrumentation: Detectors

Wednesday, Oct. 31 16:00-18:00, Coral IV
Session Chairs: John Aarsvold, *Emory Universtiy & Atlanta Veterans Affairs Medical Center*
Ronald Jaszczak, *Duke University Medical Center*

M05-1 Development of a Small Filed-of-View LaBr3(Ce) Gamma Camera for Low Energy Single Photon Imaging
S. Yamamoto, *Kobe City College of Technology, Japan*; J. Hatazawa, *Osaka University Graduated School 0f Medicine, Japan*

M05-2 Micro-Machined Retroreflector for Improving Light Yield in Ultra-High Resolution Gamma Cameras
J. W. T. Heemskerk[1,2], M. A. N. Korevaar[1,2], P. Schotanus[3], K. M. Ligtvoet[4], F. J. Beekman[1,2]
[1]Image Sciences Institute, University Medical Center Utrecht, the Netherlands; [2]Rudolf Magnus Institute of Neuroscience, University Medical Center Utrecht, the Netherlands; [3]Scionix Radiation Detectors and Crystals, the Netherlands; [4]University Medical Center Utrecht, the Netherlands

M05-3 Fast Photomultipliers for TOF PET
T. Szcz niak, M. Moszy ski, L. Swiderski, A. Nassalski, *Soltan Institute for Nuclear Studies, Poland*; P. Lavoute, M. Kapusta, *Photonis, France*

M05-4 Study of TlBr and CdTe Orthogonal Strip Detectors for Developing a High Resolution Small Animal PET Scanner
S. Sinha, G. S. Mitchell, S. L. Bowen, Y. Wu, S. R. Cherry, *University of California Davis, USA*; H. Kim, L. J. Cirignano, K. S. Shah, *Radiation Monitoring Devices Inc., USA*

M05-5 Accurately Positioning Events in a High-Resolution PET System That Uses 3D CZT Detectors
G. Pratx, C. S. Levin, *Stanford University, USA*

M05-6 Physical Performance of a Prototype 3D PET Scanner using CdTe Detectors
N. Yanagita, Y. Morimoto, T. Ishitsu, A. Suzuki, W. Takeuchi, T. Seino, I. Takahashi, Y. Ueno, K. Amemiya, S. Inoue, *Central Research Laboratory, Hitachi, Ltd., Japan*; M. Suzuki, F. Kozawa, *Hitachi Works, Hitachi, Ltd., Japan*; N. Kubo, *School of Medicine, Hokkaido University, Japan*; N. Tamaki, *Graduate School of Medicine, Hokkaido University, Japan*

M05-7 Prototype of High Resolution PET Using Resistive Electrode Position Sensitive CdTe Detectors
Y. Kikuchi[1], K. Ishii[1], S. Matsuyama[1], A. Terakawa[1], H. Yamazaki[2], J. Hatazawa[3], K. Kotani[1]
[1]Graduate School of Engineering, Tohoku University, Japan; [2]Cyclotron and radioisotope center, Tohoku University, Japan; [3]Graduate School of Medicine, Osaka University, Japan

M05-8 Evaluation of the Spectroscopic Performance of Small Pixel, CZT Detectors with a Digital Shaping Amplifier
K. A. Wangerin, Y. Du, *GE Global Research, USA*

M06 Reconstruction: Motion Effects and Compensation

Wednesday, Oct. 31 16:00-18:00, Coral V
Session Chairs: Dimitris Visvikis, *U650 INSERM, LaTIM*
Paul Kinahan, *University of Washington*

M06-1 Modeling Respiratory Motion Variations in the 4D NCAT Phantom
W. P. Segars, *Duke University, USA*; S. Mori, G. T. Y. Chen, *Massachusetts General Hospital, USA*; B. M. W. Tsui, *Johns Hopkins, USA*

M06-2 Segmenting and Tracking Diaphragm and Heart Regions in Gated-CT Datasets as an Aid to Developing a Predictive Model for Respiratory Motion-Correction
S. J. Martin[1], J. Dey[2], M. A. King[2], B. F. Hutton[1]
[1]University College London, UK; [2]University of Massachusetts Medical School, USA

M06-3 Respiratory Gated PET Derived From Raw PET Data
A. L. Kesner, N. Detorie, M. Dahlbom, J. Czernin, D. H. S. Silverman
University of California, Los Angeles, USA

M06-4 Compensation of Patient Motion in PET Using a Rotator and List-Mode Reconstruction
Y. Chen, S. J. Glick, M. A. King
University of Massachusetts Medical School, U.S.A.

M06-5 Quantitative Evaluation of Respiratory Gated Whole-Body PET/CT Imaging Incorporating Respiration Variability
P. E. Kinahan[1], A. M. Alessio[1], W. P. Segars[2], L. MacDonald[1], J. Busch[1], S. Kohlmyer[3], S. Wollenweber[3]
[1]University of Washington, USA; [2]Duke University, USA; [3]GE Healthcare Technology, USA

M06-6 Improved Kinetic Parameter Estimation Using Accurate Motion Modeling Within Statistical Reconstruction for Dynamic PET
A. Rahmim[1], K. Dinelle[2], S. C. Lidstone[3], S. Blinder[3], J.-C. C. Cheng[2], G. Topping[2], O. G. Rousset[1], D. F. Wong[1], V. Sossi[2]
[1]Johns Hopkins University, USA; [2]University of British Columbia, Canada; [3]Pacific Parkinson's Research Centre, Canada

M06-7 Patient Motion Correction in Computed Tomography by Reconstruction on a Moving Grid
R. Boutchko, K. Balakrishnan, B. W. Reutter, G. T. Gullberg
Lawrence Berkeley National Lab, USA

M06-8 Body Deformation Correction for SPECT Tomography
S. Gu, M. A. Gennert, *Worcester Polytechnic Institute, U.S.A*; M. A. King, *Umass Medical School, U.S.A.*

M07 X-ray CT Instrumentation and Methods

Thursday, Nov. 1 08:30-10:00, Coral IV
Session Chairs: Katsuyuki Taguchi, *Johns Hopkins University*
Marc Kachelriess, *Institute of Medical Physics (IMP)*

M07-1 Fast and Accurate Scatter Simulation for Computed Tomography
S. K. Basu, D. Harrison, R. A. Thompson, B. De Man
General Electric Global Research Center, USA

M07-2 Inverse Geometry CT: the Next Generation CT Architecture?
B. De Man[1], S. Basu[1], P. Fitzgerald[1], D. Harrison[1], M. Iatrou[1], K. Khare[1], J. LeBlanc[1], B. Senzig[2], C. Wilson[1], Z. Yin[1], N. Pelc[3]
[1]GE Global Research, USA; [2]GE Healthcare, USA; [3]Stanford University, USA

M07-3 An Experimental CT System for Data Collection in Novel Geometries
S. K. Basu, D. Harrison, T. Rumsey, P. Fitzgerald, D. Beque, J. Short, E. Tkaczyk, C. Wilson, B. Tower, B. De Man, P. Edic, J. LeBlanc
General Electric Global Research Center, 12309

M07-4 Image Quality Evaluation of Motion-Contaminated Calcified Plaques in Cardiac CT
M. T. King, M. Giger, K. Suzuki, X. Pan
University of Chicago, USA

M07-5 Processing for Spectral CT Based on Energy-Binning Photon-Counting Detectors
J.-P. Schlomka[1], E. Roessl[1], G. Martens[1], T. Istel[1], C. Baeumer[1], G. Zeitler[1], R. Dorscheid[1], A. Livne[2], N. Wainer[2], R. Proksa[1]
[1]Philips Research Europe, Germany; [2]Philips Medical Systems, Israel

M07-6 Phase Contrast Based Micro CT and Synchrotron Radiation CT for High Resolution Long Term Cell Tracking in Small Animals
R. H. Menk[1], E. Schultke[2], F. Arfelli[3], L. Rigon[4], D. Dreossi[1], A. Round[5], S. Rigley[2], E. Bovell[6], G. Tromba[1], N. Sodini[1], C. Hall[7]
[1]Sincrotrone Trieste, Italy; [2]University of Saskatchewan, Canada; [3]University Trieste and INFN, Italy; [4]The Abdus Salam International Centre for Theoretical Physics, Italy; [5]Molecular Biology Laboratory, Germany; [6]Sir Charles Gairdner Hospital, Australia; [7]Monash University, Australia

M08 Reconstruction: PET Time-of-Flight and Attenuation Compensation

Thursday, Nov. 1 08:30-10:00, Coral V
Session Chairs: Andrew Reader, *The University of Manchester*
Sung-Cheng (Henry) Huang, *UCLA David Geffen School of Medicine*

M08-1 Windowed Image Reconstructions for TOF-PET
C.-M. Kao, *The University of Chicago, USA*

M08-2 An Improved Kernel for Analytical Time-of-Flight PET Reconstruction
C. C. Watson
Siemens Medical Solutions Molecular Imaging, USA

M08-3 A New Exact Fourier Rebinning Method for Time-of-Flight PET
S. Cho, Q. Li, S. Ahn, R. M. Leahy
University of Southern California, USA

M08-4 Determining Timing Resolution from TOF-PET Emission Data
S. Vandenberghe[1], S. Matej[2], M. E. Daube-Witherspoon[2], J. S. Karp[2], I. Lemahieu[1]
[1]Ghent University, Belgium; [2]UPENN, USA

M08-5 Impact of Attenuation Correction Strategies on the Quantification of HRRT PET Studies
F. H. P. van Velden[1], R. W. Kloet[1], B. N. M. van Berckel[1], H. W. A. M. de Jong[2], A. A. Lammertsma[1], R. Boellaard[1]
[1]VU University Medical Center, The Netherlands; [2]University Medical Center Utrecht, The Netherlands

M08-6 Assessment of Contrast Agent Concentration Dependent Artifacts in Single and Dual Energy Attenuation Corrected PET/CT Images
N. S. Rehfeld, J. Kupferschlaeger, C. Pfannenberg, B. Pichler
University of Tuebingen, Germany

M09 X-ray Imaging Instrumentation and Methods

Thursday, Nov. 1 10:30-12:00, Coral IV
Session Chairs: Stephen Glick, *Univ. of Massachusetts Medical School*

M09-1 Correlated Counting and Energy Resolving Properties of Photon Counting X-Ray Detectors like the Medipix Detectors
M. Böhnel, J. Durst, T. Michel, G. Anton
Institute of Physics, Germany

M09-2 First Measurements of Material Reconstruction in X-Ray Imaging with the Medipix2 Detector
M. Firsching, T. Michel, G. Anton
Universität Erlangen-Nürnberg, Germany

M09-3 CIX – a Simultaneously Counting and Integrating X-Ray Detector
J. Fink[1], E. Kraft[1], P. Fischer[2], M. Koch[1], H. Krüger[1], I. Peric[2], N. Wermes[1], C. Herrmann[3], M. Overdick[3], W. Rütten[3]
[1]University of Bonn, Germany; [2]University of Mannheim, Germany; [3]Philips Research Laboratories, Germany

M09-4 Photon Counting Energy Dispersive Detector Arrays for X-Ray Imaging
J. S. Iwanczyk, W. C. Barber, N. E. Hartsough, E. Nygard
DxRay, Inc., USA

M09-5 Viable X-Ray Phase-Contrast Technology for Mammography
A. L. Damato, R. C. Lanza
Massachusetts Institute of Technology, USA

M09-6 Histogram-Driven Multi-Dimensional Adaptive Filtering (HD-MAF)
D. Ertel, M. Kachelriess, W. A. Kalender
Institute of Medical Physics, Germany

M10 Reconstruction: Iterative Methods

Thursday, Nov. 1 10:30-12:00, Coral V
Session Chairs: Johan Nuyts, *K.U.Leuven, Belgium*
Jingyan Xu, *Johns Hopkins University*

M10-1 Blob-Based Super-Resolution Reconstruction Using Iterative Lanczos-Hybrid Regularization
E. Y. T. Ho, A. E. Todd-Prokropek
University College London, United Kingdom

M10-2 Mesh Model Based Projection Operator for Emission Tomography
R. D. Gonzalo, J. G. Brankov
Illinois Institute of Technology, IL

M10-3 Quantitative Reconstruction Using Combined Voxel and Volume-of-Interest Models Obtained from High-Resolution Anatomical Images
Y. Du, B. He, E. C. Frey
Johns Hopkins Medical Institutions, U.S.A

M10-4 Accelerated Iterative Image Reconstruction Methods Based on Block-Circulant System Matrix Derived from a Polar Image Representation
J.-D. Leroux, V. S. Selivanov, R. Lecomte, R. Fontaine
Université de Sherbrooke, Canada

M10-5 Limiting Iterations Vs. Post Smoothing for Noise Control in PET
T. G. Turkington[1,2], J. M. Wilson[2], J. E. Bowsher[1], D. R. Gilland[3]
[1]Duke University Medical Center, USA; [2]Duke University, USA; [3]University of Florida, USA

M10-6 Signal-to-Noise Ratio Equalized Filtered Back-Projection for Emission Tomography
C. C. Watson
Siemens Medical Solutions Molecular Imaging, USA

M11 Small Animal Imaging and Imagers: MicroSPECT

Thursday, Nov. 1 13:30-15:30, Coral IV
Session Chairs: Freek Beekman, *University Medical Center*
Yuchuan Wang, *Johns Hopkins Medical Institutions*

M11-1 Pinhole Camera with Light-Spread Suppression and Depth-of-Interaction Elimination Through Optical Cone Beam Light Collimation
F. J. Beekman, M. A. Korevaar, J. W. Heemskerk
University Medical Center Utrecht, netherlands

M11-2 A Silicon SPECT System for Molecular Imaging of the Mouse Brain
S. Shokouhi[1], M. A. Fritz[1], B. S. McDonald[1], D. W. Wilson[2], T. E. Peterson[1]
[1]Vanderbilt University, USA; [2]University of Arizona, USA

M11-3 Ultra-High Resolution Aperture Design for Ultra-High Resolution SPECT Systems for Small Animal Imaging
G. Fu, J.-W. Tan, L.-J. Meng
University of Illinois at Urbana-Champaign, USA

M11-4 Evaluation and Optimization of Multi-Pinhole Collimator Design for Atherosclerotic Plaque Detection in Small Animal SPECT Using a Channelized Hotelling Observer Study
G. S. Mok, Y. Wang, B. M. Tsui
Johns Hopkins Medical Institutions, USA

M11-5 SPECT Image Reconstruction Aspects for a Pre-Clinical SPECT-MRI System
Y. Wang[1], D. Wagenaar[2], D. Meier[2], B. E. Patt[2], B. M. Tsui[1]
[1]Johns Hopkins Medical Institutions, USA; [2]Gamma Medica - Ideas Inc., USA

M11-6 Design and Development of a High Performance Stationary Full Ring SPECT Based on High Resolution Detector Modules for Small Animal Imaging
B. M. W. Tsui, Y. Wang, G. S. P. Mok, *Johns Hopkins University, USA*; A. Weisenberger, S. Majewski, *Thomas Jefferson National Accelerator Facility, USA*

M11-7 High-Sensitivity Low-Resolution Small Animal SPECT with Uncollimated Detectors
G. S. Mitchell, S. R. Cherry, *UC Davis, USA*

M11-8 Imaging Performance of an Sub-Hundred Micron Resolution SPECT/CT System
L.-J. Meng, G. Fu, *University of Illinois at Urbana-Champaign, USA*; C. Pelizzari, X. Pan, C.-T. Chen, *Universiyt of Chocago, USA*

M12 Reconstruction: PET Algorithms and Evaluation

Thursday, Nov. 1 13:30-15:30, Coral V
Session Chairs: Arman Rahmim, *Johns Hopkins University*
Jinyi Qi, *University of California, Davis*

M12-1 Image Reconstruction Algorithm for a Half-Ring PET-Insert System
D. Pal, D. B. Keesing, J. A. O'Sullivan, S. Komarov, Y. C. Tai
Washington University in St. Louis, USA

M12-2 PET Image Reconstruction with a Bayesian Projector for Multi-Electronic Collimation Schemes
G. Chinn, C. S. Levin, *Stanford School of Medicine, USA*

M12-3 A Feasible Method to Correct System Matrix for microPET Image Reconstruction Using Artificial Neural Network
K.-H. Su[1], L.-C. Wu[2], R.-S. Liu[2,3], S.-J. Wang[2,3], J.-C. Chen[1,4]
[1]National Yang-Ming university, ROC; [2]National PET/Cyclotron Center, Taipei Veterans General Hospital, ROC; [3]National Yang-Ming University Medical School, ROC; [4]Departments of Education and Research, Taipei City Hospital, ROC

M12-4 Simultaneous Update Iterative Algorithm for Variance Reduction on Random Coincidences in PET
V. Y. Panin, M. Chen, C. Michel
Siemens Medical Solutions, USA

M12-5 Fully Automated Partial Volume Correction in PET Based on a Wavelet Approach Without the Use of Anatomical Information
N. Boussion[1], M. Hatt[1], A. Reilhac[2], D. Visvikis[1]
[1]INSERM U650 LaTIM, France; [2]CERMEP, France

M12-6 Experimental Comparison of Lesion Detectability for Four Fully-3D PET Reconstruction Schemes
D. J. Kadrmas[1], M. E. Casey[2], N. F. Black[1], J. J. Hamill[2], V. Y. Panin[2], M. Conti[2]
[1]University of Utah, USA; [2]Siemens Medical Solutions, USA

M12-7 Performance of Algorithms for Rapid Multi-Tracer PET
N. F. Black, D. J. Kadrmas, *University of Utah, USA*

M12-8 Reproducibility of Quantifying Tracer Uptake with PET/CT for Evaluation of Response to Therapy
R. K. Doot, Y. Saletore, D. A. Mankoff, P. E. Kinahan
University of Washington, USA

M13 MIC POSTER I

Thursday, Nov. 1 16:00-18:00, South pacific I-V and Poster Tent
Session Chairs: Hideo Murayama, *National Institute of Radiological Sciences*
Dan Kadrmas, *University of Utah*

M13-1 Calibration of a Dual-Scintillator-Readout PET Detector: A Practical and Accurate Method to Calibrate the Depth-of-Interaction Function of All Scintillator Crystals
Y. Shao, H. Li, R. Yao, *State University of New York at Buffalo, US*; T. Ma, *Tsinghua University, P.R. China*

M13-5 PET Quantification Inaccuracy of Non-Uniform Tracer Distributions for Radiation Therapy
A. S. Kirov, C. Danford, C. R. Schmidtlein, E. Yorke, J. L. Humm, H. I. Amols
Memorial Sloan-Kettering Cancer Center, USA

M13-9 Development of a Position-Sensitive Detector for TOF-PET
T. Moriya, T. Omura, M. Watanabe, T. Yamashita
Hamamatsu Photonics K.K., Japan

M13-13 Verification of Neural Network Based Algorithm for Crystal Identification of PET Block Detector
D. Hu, T. Gremillion
Siemens Medical Solutions, Molecular Imaging, USA

M13-17 A Hybrid DOI Detector with High Packing Fraction for the PET Component of a Dedicated Breast PET/CT System
A. J. Chaudhari[1], Y. Yang[1], R. Farrell[2], P. A. Dokhale[2], K. S. Shah[2], S. R. Cherry[1], R. D. Badawi[3]
[1]University of California, Davis, USA; [2]Radiation Monitoring Devices Inc, USA; [3]UC Davis Medical Center, USA

M13-21 Performance Evaluation of the ClearPETTM, a PET Scanner for Small and Medium Size Animals
P. Sempere-Roldan[1], O. Dietzel[2], C. Pautrot[1], A. Wagner[2]
[1]Raytest France, France; [2]Raytest Germany, Germany

M13-25 A Comparison of the Imaging Properties of a 3- and a 4-Ring Biograph PET-Scanner Using a Novel Extended NEMA Phantom
C. Jonsson, R. Odh, P. Schnell, S. A. Larsson
Nuclear Medicine, Karolinska University Hospital, Sweden

M13-29 Field of View Alignment on a Multimodality PET/CT Scanner for Small Animals
J. J. Vaquero, J. Pascau, M. Abella, A. Sisniega, E. Lage, M. Soto-Montenegro, M. Desco
Hospital GU Gregorio Marañón, Spain

M13-33 Study of Photonis XP1470 Nine-Channel Photomultiplier Tube for Applications in High Resolution PET Imagers
V. Popov, S. Majewski, J. Proffit, J. McKisson, B. Kross, A. Weisenberger
Thomas Jefferson National Accelerator Facility, USA

M13-37 Dependence of Timing Resolution on Crystal Size for TOF PET
C. L. Kim[1], K. C. Burr[2], S. Dolinsky[2], D. L. Mcdaniel[1]
[1]GE Healthcare, USA; [2]GE Research, USA

M13-41 Estimating Live-Time for New PET Scanner Configurations
L. R. MacDonald, R. E. Schmitz, A. M. Alessio, R. L. Harrison, T. K. Lewellen, P. E. Kinahan
University of Washington, USA

M13-45 PET Resolution and Image Quality Optimization Study for Different Detector Block Geometries and DOI designs
Y. Zhang, W.-H. Wong, S. Liu, J. Liu, S. Kim, H. Baghaei, H. Li, R. Ramirez, Y. Wang
The Univ. of Texas, M. D. Anderson Cancer Center, USA

M13-49 Simultaneous Light and Charge Reconstruction of 511 keV Photon in Liquid Xenon
D. Bryman[1], L. Kurchaninov[2], P. Lu[1], F. Retiere[2], A. Sher[2]
[1]UBC, Canada; [2]TRIUMF, Canada

M13-53 A Simple Smart Time-to-Digital Convertor Based on Vernier Method for a High Resolution LYSO MicroPET
X. Kang, S. Wang, Y. Liu, X. Sun, R. Zhou, T. Ma, Z. Wu, Y. Jin
Tsinghua University, China

M13-57 A Data Acquisition and Event Processing Module for Small Animal SPECT Imaging
B. E. Atkins, D. W. Austin, R. A. Mintzer, S. B. Siegel, S. S. Gleason
Siemens Molecular Imaging, USA

M13-61 Tomographic Approach to Single-Photon Breast Cancer Imaging with a Dedicated Dual-Head Camera with VAOR (SPEMT): Detector Characterization
N. Belcari, A. Del Guerra, M. Camarda, L. Spontoni, S. Vecchio, *University of Pisa, Italy*; P. Bennati, M. N. Cinti, R. Pani, *University of Rome, Italy*; R. Campanini, E. Iampieri, N. Lanconelli, *University of Bologna, Italy*

M13-65 A Low Cost Data Acquisition System for Small Field of View Gamma Cameras
J. L. Smith, *McMaster University, Canada*; T. H. Farncombe, *Hamilton Health Sciences, Canada*

M13-69 In Vivo and Dynamic Imaging of Charged Particles from Radionuclides at High Resolution
L. Chen, L. S. Gobar, N. G. Knowles, G. D. Stevenson, A. F. Gmitro, H. H. Barrett
University of Arizona, USA

M13-73 A Model-Based Correction for the Contamination from Emission Activity in Singles-Mode Transmission Data
E. Vandervoort, V. Sossi
University of British Columbia, CANADA

M13-77 Methods for Parkinson's Rat Model PET Image Analysis with Regions of Interest
G. J. Topping, K. Dinelle, S. McCormick, R. Kornelsen, V. Sossi
University of British Columbia, Canada

M13-81 Verification of Concepts for DOI Determination in a Three-layer Small Animal PET
S. I. Kwon[1], J. S. Lee[1], M. Ito[2], K.-S. Sim[2], G. S. Lee[1], K. S. Park[1], J. T. Rhee[3], S. J. Hong[4]
[1]Seoul National University College of Medicine, S. Korea; [2]Korea University, S. Korea; [3]Konkuk University, S. Korea; [4]Gachon University of Medicine and Science, S. Korea

M13-85 First Measurements with SiliPET: a Small Animal PET Scanner Based on Stacks of Silicon Detectors
N. Auricchio[1,2], G. Zavattini[1,2], G. Di Domenico[1,2], A. Gola[3,2], M. Frigerio[3], C. Fiorini[3,2], M. Ionica[2]
[1]Universita' di Ferrara, Italy; [2]INFN, Italy; [3]Politecnico di Milano, Italy

M13-89 Internals and Evaluation of the miniPET-II Detector Module
J. Imrek[1], G. Hegyesi[1], G. Kalinka[1], J. Molnár[1], D. Novák[1], L. Balkay[2], M. Emri[2], S. A. Kis[2], G. Opposits[2], L. Trón[2], T. Bükki[3], Z. Szabó[2], A. Kerek[4]
[1]Institute of Nuclear Research, Hungary; [2]University of Debrecen, Hungary; [3]MEDISO Ltd, Hungary; [4]Royal Institute of Technology, Sweden

M13-93 Simulation of a Pinhole-Collimator Insert for Small Animal PET Using GATE
Z. Cao[1], C. A. Cardi[1], P. D. Acton[1,2], M. L. Thakur[1]
[1]Thomas Jefferson University, USA; [2]Johnson & Johnson Pharmaceutical R&D, USA

M13-97 Improved Pose Measurement and Tracking System for Motion-Correction of Awake, Unrestrained Small Animal SPECT Imaging
J. S. Goddard, J. S. Baba, *Oak Ridge National Lab, USA*; M. F. Smith, A. G. Weisenberger, *Jefferson Lab, USA*

M13-101 A High Resolution and High Sensitivity Small Animal SPECT System Based on H8500
X. Sun, S. Wang, T. Ma, R. Zhou, X. Li, Z. Zhang, Y. Liu, Z. Wu, Y. Jin
Tsinghua Univ., China

M13-105 Multi-Modality Phantom Development
J. S. Huber, Q. Peng, W. W. Moses
Lawrence Berkeley National Lab, USA

M13-109 FPGA Electronics for OPET: a Dual-Modality Optical and PET Imaging Tomograph
A. Douraghy[1], F. R. Rannou[2], G. Alexandrakis[3], R. W. Silverman[1], A. F. Chatziioannou[1]
[1]University of California Los Angeles, USA; [2]Universidad de Santiago de Chile (USACH), Chile; [3]University of Texas at Arlington, USA

M13-113 Evaluation of Monolithic Detector Blocks for High-Sensitivity PET Imaging of the Human Brain
P. Rato Mendes[1], P. Bruyndonckx[2], J. Navarrete[1], J. M. Perez[1], L. Zhi[2]
[1]CIEMAT, Spain; [2]VUB, Belgium

M13-117 Design Study of a MRI Compatible Ultra-High Resolution SPECT for in Vivo Mice Brain Imaging
L.-J. Meng, J. W. Tan
University of Illinois at Urbana-Champaign, USA

M13-121 Evaluation of Deformable Registration Methods for MR-CT Atlas Alignment
V. Scheel[1,2], M. Hofmann[1,3,4], N. S. Rehfeld[1], M. S. Judenhofer[1], C. D. Claussen[1], B. Pichler[1]
[1]University of Tuebingen, Germany; [2]University of Koblenz-Landau, Germany; [3]Max Planck Institute for Biological Cybernetics, Germany; [4]Wolfson Medical Vision Laboratory of Oxford, United Kingdom

M13-125 Multi Resolution Medical Image Registration Using Maximization of Mutual Information & Optimization by Genetic Algorithm
M. Bhattacharya, *Indian Institute of Information Technology & Management, India*; A. Das, *University of Calcutta, India*

M13-129 Three-dimensional image reconstruction for CCD camera based Optical Computed Tomography Scanner
H. M. T. Thomas, D. Devakumar, P. B. Ravindran
Christian Medical College, India

M13-133 Collimator Design Principles for Rotating Multi-Segment Slant-Hole SPECT
C. Liu, J. Xu, B. Tsui
The Johns Hopkins Medical Institutions, USA

M13-137 Gamma-Guided Breast Biopsy Procedure Using Stereotactic Imaging
B. L. Welch[1], D. Banks[1], R. Brem[2], L. Fairchild[1], T. St. Saviour[1]
[1]Dilon Technologies, USA; [2]George Washington University, USA

M13-141 Multi Head Compton Camera System for Nuclear Medicine: Prototype System Study
R. Kohara, T. Shirahata, T. Nakazawa, O. Miyazaki, *Hitachi Medical Corporation, Japan*; T. Tanimori, H. Kubo, K. Miuchi, S. Kabuki, *Kyoto University, Japan*; Y. Fujibayashi, T. Mori, *University of Fukui, Japan*

M13-145 LYSO as a Scintillator for Standard CT Scanner and Photon Counting
O. Buchinsky, A. Livne, Y. Berman, A. Fuksman, A. Gringaus, N. Wainer
Philips Medical Systems Technologies, Israel

M13-149 An Intraoperative Multimodal Probe for Brain Tumor Surgery
L. Menard[1,2], F. Bogalhas[1], S. Palfi[3,4], L. Pinot[1], S. Pitre[1], M.-A. Duval[1,5], R. Siebert[1], Y. Charon[1,2]
[1]Laboratoire IMNC, France; [2]Université Paris Diderot - Paris 7, France; [3]CHU Henri Mondor, France; [4]URA CEA-CNRS 2210, France; [5]Université d'Evry Val d'Essonne, France

M13-153 Influence of Mo/Sb Co-Doping on Scintillation
J. Xie, C. Ye, W. Xiong, H. Yuan, L. Chen, J. Liao
Shanghai Institute of Ceramics Chinese Academy of Sciences, P.R.China

M13-157 DOI Encoding on the PET Detector Using 2 X 2 PMT Array
N. Inadama[1], H. Murayama[1], T. Yamaya[1], F. Nishikido[1], K. Shibuya[1], E. Yoshida[1], C. F. Lam[1], K. Takahashi[2,1], A. Ohmura[3,1]
[1]National Institute of Radiological Sciences, Japan; [2]Chiba University, Japan; [3]Waseda University, Japan

M13-161 Design Studies for a High Performance, LSO-Based "Demonstration" Time-of-Flight PET Camera
W. W. Moses, W.-S. Choong
Lawrence Berkeley National Laboratory, USA

M13-165 A Novel Method Improving the Imaging Resolution of a Table-top Compton Camera
H. Seo[1], J. H. Jeong[1], S. H. Lee[1], J. H. Lee[2], C. S. Lee[2], J. S. Lee[3], C. H. Kim[1]
[1]Hanyang University, Korea; [2]Chung-Ang University, Korea; [3]Seoul National University, Korea

M13-169 Optimization of a Pixellated CdZnTe/CdTe Detector for a Multi-Modality Imaging System
P. Guerra[1], D. G. Darambara[2], D. Visvikis[3], A. Santos[1]
[1]Universidad Politecnica de Madrid, Spain; [2]The Institute of Cancer Research / Royal Marsden Foundation Trust, United Kingdom; [3]U650 INSERM, France

M13-173 An Elemental Analysis and Imaging Based on the Compton-Profile Measurement
J. Y. Kim, J. H. Lee, C. S. Lee
Chung-Ang University, Korea

M13-177 Automatic Tube Current Selection for Obtaining Desired Image Noise and Consistent Image Quality in Cardiac CT Imaging Across Patient Population
J. Li, *GE Healthcare China, China*; W. Qi, X. Du, *Peking University People's Hospital, China*

M13-181 Geometric Model & Control of Universal Benchtop CT System
D. Bequé, *GE Global Research, Germany*; D. D. Harrison, S. K. Basu, P. F. Fitzgerald, *GE Global Research, US*

M13-185 xCAT: a Mobile, Flat-Panel Volumetric X-Ray CT for Head and Neck Imaging
W. B. Zbijewski, J. W. Stayman
Xoran Technologies, Inc., USA

M13-189 Compositional Images from the Diffraction Enhanced Imaging Technique
M. O. Hasnah, *Qatar University, Qatar*; Z. Zhong, *Brookhaven National Laboratory, USA*; L. D. Chapman, *University of Saskatchewan, CANADA*

M13-193 Development of a Digital Panoramic X-Ray Imaging System of Multifocal Image Layers for Dental Applications
S. Lee, S. I. Choi, H. S. Cho, J. E. Oh, H. M. Cho, K. Y. Kim, O. D. Oh, *Yonsei University, South Korea*; B. S. Lee, *Konkuk University, South Korea*; S. Kim, *Cheju National University, South Korea*

M13-197 The Development of Phantoms Specific to the Different Sources of Image Contrast Produced Using Analyser Based Imaging Techniques
S. T. Crittell[1], M. G. Ibison[1], K. C. Cheung[2], M. Farahmand[1], R. Hodgson[1], S. V. Rigby[1], S. Wilkinson[2], A. Bravin[3], M. Fernández[3], D. Gould[1], R. D. Page[1], L. Porra[3], C. Nemoz[3], P. J. Nolan[1], H. Requardt[3]
[1]The University of Liverpool, UK; [2]CCLRC Daresbury Lab, UK; [3]ESRF, France

M13-201 Reduced-Scan Schemes for XFCT
P. J. La Riviere, P. Vargas, *The University of Chicago, USA*; M. Newville, S. Sutton, *Argonne National Laboratory, USA*

M13-205 Design of a Multi-Projection Imaging System for Chest Radiography
A. Chawla, E. Samei, S. Boyce, *Duke University, USA*

M13-209 Implementation of Noise Reduction for PET Using Hybrid Nonlinear Wavelet Shrinkage Method
A. Ishikawa, K. Kitamura, T. Mizuta, K. Tanaka, M. Amano, Y. Inoue
SHIMADZU Corporation, JAPAN

M13-213 GPU Acceleration of MOLAR for HRRT List-Mode OSEM Reconstruction
W. C. Barker, S. Thada, *National Institutes of Health, USA*

M13-217 Simulation Based-Evaluation of NEG-ML Iterative Reconstruction of Low Count PET Data
L. Brèzes-Besset[1], J. Nuyts[2], R. Boellaard[3], I. Buvat[4], C. Michel[5], C. Pierre[1], N. Costes[1], A. Reilhac[1]
[1]CERMEP - imagerie du vivant, France; [2]Katholieke Universiteit Leuven, Belgium; [3]University Hospital Vrije, The NEtherlands; [4]U678 INSERM, France; [5]SIEMENS Medical Solution, USA

M13-221 Parallel Implementation of 3-D Dynamic RAMLA with Intra-node Image Update for the jPET-D4
C. F. Lam[1], T. Yamaya[1], T. Obi[2], E. Yoshida[1], N. Inadama[1], K. Shibuya[1], F. Nishikido[1], H. Murayama[1]
[1]National Institute of Radiological Sciences, Japan, Japan; [2]Tokyo Institute of Technology, Japan

M13-225 MIRGrid: a Grid System for Medical Image Reconstruction
M. Schellmann, D. Böhm, S. Wichmann, S. Gorlatch
University of Münster, Germany

M13-229 Impact of Metal Artifacts Due to EEG Electrodes in Brain PET Imaging
C. Lemmens[1], M.-L. Montandon[2], J. Nuyts[1], O. Ratib[2], H. Zaidi[2]
[1]KULeuven, Belgium; [2]Geneva University Hospital, Switzerland

M13-233 Convergence Properties of Direct Parametric Estimation of Linear Models in Dynamic PET
C. Tsoumpas[1,2], F. E. Turkheimer[2], K. Thielemans[1]
[1]Hammersmith Imanet, United Kingdom; [2]Imperial College London, United Kingdom

M13-237 Fast 3D Image Reconstruction Method Based on SVD Decomposition of a Block-Circulant System Matrix
J.-D. Leroux, V. S. Selivanov, R. Lecomte, R. Fontaine
Université de Sherbrooke, Canada

M13-241 Evaluation of Fully 3D Image Reconstruction Methods for a Dual-Head Small-Animal PET Scanner
C.-M. Kao[1], Y. Dong[2], Q. Xie[1,3]
[1]The University of Chicago, USA; [2]Illinois Institute of Technology, USA; [3]Huazhong University of Science and Technology, China

M13-245 Optimization of MLEM Image Reconstruction for the RatCAP PET Tomograph – an Analysis of the Statistical Quality of the System Response Matrix
S. S. Southekal, *Stony Brook University, USA*; M. L. Purschke, D. J. Schlyer, C. L. Woody, P. Vaska, *Brookhaven National Laboratory, USA*

M13-249 Uniform Attenuation Correction Using the Frequency-Distance Principle
G. L. Zeng, *University of Utah, USA*

M13-253 Segmentation of the Left Ventricle in Myocardial Perfusion SPECT Using Variational Level Set Formulation
S. Choi, H. Kim, J. Oh, Y. Seol, T. Kang, K. Sun, M. Kim
korea University, Korea

M13-257 Small Field-of-View (FOV) SPECT/CT for Cardiology: Theory and Preliminary Clinical Evaluation
E. Sabondjian[1,2], R. Z. Stodilka[1,2,3], T. Belhocine[4], M. King[5], F. S. Prato[1,2,3]
[1]Lawson Health Research Institute, Canada; [2]The University of Western Ontario, Canada; [3]St. Joseph's Health Care, Canada; [4]London Health Sciences Centre – South Street Campus, Canada; [5]London Health Sciences Centre – University Hospital Campus, Canada

M13-261 Detecting Cardiac Motion Defects from Simulated Gated SPECT Images
J. Tang[1], T.-S. Lee[1], W. P. Segars[2], B. M. W. Tsui[1]
[1]Johns Hopkins University, USA; [2]Duke University, USA

M13-265 Evaluation of the Potential for Attenuation and Scatter Correction in SPECT Imaging of the Rat Myocardium
A. C. Sauve, W.-S. Choong, K. Balakrishnan, R. Buchko, B. W. Reutter, G. T. Gullberg
LBL, USA

M13-269 Empirical Effects of Angular Sampling and Background Content on Image Quality in Dedicated Breast SPECT
K. L. Perez, S. J. Cutler, M. P. Tornai
Duke University, USA

M13-273 Fully Three-Dimensional Image Reconstruction for Compton Imaging Using Ordered Subsets of Conical Projection Data
S. M. Kim, J. S. Lee, *Seoul National University College of Medicine, Korea*; S.-J. Lee, *Paichai Univerisity, Korea*

M13-277 CT Image Reconstruction Using Hexagonal Grids
M. Knaup[1], S. Steckmann[1], O. Bockenbach[2], M. Kachelriess[1]
[1]Institute of Medical Physics (IMP), Germany; [2]Mercury Computer Systems, Germany

M13-281 Real Time Adaptive Filtering for Computed Tomography Applications
O. Bockenbach, *Mercury Computer Systems, Germany*; M. Knaup, M. Kachelriess, *Institute for Medical Physics, Germany*

M13-285 Image Noise Properties in Circular Sinusoid Cone-Beam CT
D. Xia, S. Cho, X. Pan, *The University of Chicago, U.S.A.*

M13-289 A Jacobi-like Solution to the Model Based Tomographic X-Ray Perfusion Imaging
S. Serowy, O. Gurvit, M. Skalej, G. Rose
Otto-von-Guericke-University Magdeburg, Germany

M13-293 Polyenergetic Statistical Reconstruction with a Realistic X-Ray Spectrum Estimation
L. Zhang, G. Zhang, Z. Chen, Y. Xing, J. Cheng
Tsinghua University, China

M13-297 Implementation of a Circle and Helix Reconstruction Algorithm for 256-Slice CT
A. A. Zamyatin, B. S. Chiang, *Toshiba Medical Research Institute USA, USA*; A. Katsevich, *University of Central Florida, USA*

M13-301 Limited-Angle Tomography for Multiple-Image Radiography
K. Majidi, J. G. Brankov, M. N. Wernick
Illinois Institute of Technology, USA

M13-305 Temporal Resolution Equivalent of Multi-Harmonic Phase Analysis of Gated Myocardial Perfusion SPECT Studies
J. Chen, T. L. Faber, C. D. Cooke, E. V. Garcia
Emory University, USA

M13-309 Registration Methods for Histological Slides and Ex Vivo MRI of Prostate
H. Park[1], S. Kwee[2], G. P. Thibault[3], R. Stack[3], I. A. Sesterhenn[4], K. Potter[4], C. R. Meyer[1]
[1]University of Michigan, USA; [2]Hamamatsu/Queen's PET Imaging Center, USA; [3]Tripler Army Medical Center, USA; [4]Armed Forces Institute of Pathology, USA

M13-313 Investigation of Effects of Volume-of-Interest Mis-Registration on Accuracy of Organ Activity Estimates from Quantitative Planar Processing
N. Song, B. He, E. C. Frey
Johns Hopkins Medical Institution, 21287

M13-317 Event-by-Event Motion Compensation for Small Animal PET
V. Zhou[1], A. Kyme[1], S. Meikle[1], R. Fulton[1,2]
[1]Sydney University, Australia; [2]Royal Prince Alfred Hospital, Australia

M13-321 Consistency Driven Respiratory Phase Alignment and Motion Compensation in PET/CT
A. Alessio[1], S. Kohlmyer[2], P. Kinahan[1]
[1]University of Washington, USA; [2]GE Healthcare, USA

M13-325 Non-Iterative Quantitative SPECT Reconstructions of Thyroid Tumours with Reduced Size of the System Matrix
S. Shcherbinin, A. Celler
The University of British Columbia, Canada

M13-329 Model Parameter Estimation and Tissue Mixture Segmentation by a MAP-EM Algorithm
Z. Liang, S. Wang, H. Lu, J. Wang
State University of New York at Stony Brook, USA

M13-333 Quantitative Simultaneous Tc-99m/I-123 Cardiac SPECT Using Monte Carlo Based Joint Ordered-Subset Expectation Maximization (MC-JOSEM) Approach
J. Ouyang, X. Zhu, G. El Fakhri
Brigham and Women's Hospital, Harvard Medical School, U.S.A

M13-337 Investigation of the Performance and Image Contrast of an LSO Pet Scanner at Its Minimum Detectable Activity Level
N. Karakatsanis, *National Technical University of Athens, Greece*; Q. Bao, N. Vu, A. Chatziioannou, *University of California, Los Angeles, USA*

M13-341 New Medical Imaging Method Using a Combined Convolution and Lyapunov Stability Technique
P. L. Gueye, *Hampton University, USA*

M13-345 An New Unsupervised Method for the Segmentation of Rodent Whole-Body Dynamic PET Images: Comparison to Other Methods
R. Maroy, C. Comtat, R. Trébossen, B. Tavitian, *CEA, France*

M13-349 Quantification of the Normal Range of Myocardial Blood Flow and Flow Reserve with 82Rubidium Versus 13N-Ammonia PET
J. M. Renaud[1,2], M. Lortie[1], J. DaSilva[1], R. S. Beanlands[1], R. A. deKemp[1]
[1]University of Ottawa Heart Institute, Canada; [2]Carleton University, Canada

M13-353 Comparison of Simplified Methods for Quantitative Analysis of FDDNP PET Data
K.-P. Wong, V. Kepe, G. W. Small, N. Satyamurthy, J. R. Barrio, S.-C. Huang
David Geffen School of Medicine, University of California, Los Angeles, USA

M13-357 Registration-Based Method for Determining Relative PET/MR Image Handedness
C. M. Laymon, S. K. Ziolko, C. R. Becker, J. M. Mountz, J. C. Price
University of Pittsburgh, USA

M13-361 High-Transparency Coded Apertures in Planar Nuclear Medicine Imaging: Experimental Results
D. M. Starfield, D. M. Rubin, T. Marwala
University of the Witwatersrand, South Africa

M13-365 A Hybrid Approach for Fast Simulation of X-Ray Computed Tomography
M. R. Ay[1], P. Ghafarian[1,2], H. Zaidi[3]
[1]Medical Sciences/ University of Tehran, Iran; [2]Shahid Beheshti University, Iran; [3]Geneva University Hospital, Switzerland

M13-369 Simulation of Algorithms for Pulse Timing in FPGAs
M. D. Haselman, S. Hauck, T. K. Lewellen, R. S. Miyaoka
University of Washington, USA

M13-373 3D Simulation of Induced Signals in the Medipix Detector
B. Kreisler, G. Anton, J. Durst, T. Michel
Institut of Physics, Germany

M13-377 Differences Between Dose to Water and Dose to Polyacrylamide and Ferrous-Sulphate Gel Dosimeters in a Variety of Calibration Techniques, via the Monte Carlo Method.
P. N. Johnston, M. L. Taylor, R. D. Franich, *Royal Melbourne Institute of Technology, Australia*; J. V. Trapp, *Queensland University of Technology, Australia*

M13-381 Examination of Different X-Ray Tube Concepts with the Simulation Package ROSI
A. B. Loehr, G. Anton, J. R. Durst, T. Michel, F. Sukowski, *Institute of Physics, Germany*; P. Schardt, *Siemens, Germany*; J. Giersch, *Ludwig-Maximilians University, Germany*

M13-385 Estimating Fisher Information and Modified Uniform Cramer-Rao Bounds
N. Clinthorne, *University of Michigan, USA*

M13-389 Validation of GATE Monte Carlo Simulation of the Performance Characteristics of a GE eXplore VISTA Small Animal PET System
C. C. Yang, *National Yang-Ming University, Taiwan*; J. Seidel, B. M. W. Tsui, *Johns Hopkins Medical Institutions, USA*

M13-393 Feasibility of Quantitative Y-86 PET : Impact of Accurate Modeling of Cascade Gamma Rays and Scatter Correction
X. Zhu, G. El Fakhri, *Brigham and Women's Hospital, USA*

M13-397 Hybrid Monte Carlo Simulation in Positron Emission Tomography
O. Sarrhini, M. Bentourkia, *Sherbrooke University, Canada*

M13-401 Quantitative Simultaneous in-111/ Tc-99m Planar Imaging in a Long-Bone Infection Phantom
X. Zhu, M.-A. Park, V. H. Gerbaudo, S. C. Moore
Brigham and Women's Hospital, USA

M13-405 Robust Non-Rigid Image Registration Using Adaptive Normalized Convolution and Incomplete Image Information
Z. Zhou, B. Qin, *Shanghai Jiao Tong University, China*

M13-409 Java-Based Plugin for Renal Depth Measurement
A. M. Marques da Silva, C. R. Brambilla, M. V. Costa, *NIMed PUCRS, Brazil*; G. M. Burkhardt, J. A. Borges, *Radiopharmacus, Brazil*

M13-413 Metabolic Activity-Oriented 4D Fusion for Visual Characterization and Quantitative Assessment of Neck and Lung Lesions in F18-FDG PET
J. Zhang, N. C. Hall, M. H. Shah, M. V. Knopp
The Ohio State University Medical Center, USA

M14 Instrumentation: Applications of Solid State Photodetectors

Friday, Nov. 2 08:30-10:00, Coral IV
Session Chairs: Bruce Hasegawa, *University of California, San Francisco*
Bernd Pichler, *University of Tuebingen*

M14-1 Data acquisition system design for a 1 mm3 resolution PSAPD-based PET system
P. D. Olcott[1], F. Lau[1], T. T. Tumer[2], V. B. Cajipe[2], M. Clajus[2], S. Volkovskii[2], C. S. Levin[1]
[1]Stanford University, USA; [2]NOVA R&D, Inc, USA

M14-2 Noise Analysis of PSAPD PET Detector Front-End Multiplexing Circuits
F. W. Y. Lau, P. D. Olcott, M. A. Horowitz, C. S. Levin
Stanford University, U.S.

M14-3 Development of low noise optoelectronic integrated readout with n-i-p a-Si:H photodiode array for Positron emission tomography (PET)
A. Nardulli
ETH Swiss Federal Institute of Technology, Switzerland

M14-4 Silicon Photomultipliers and SiPM Matrices as Photodetectors for Scintillator Readout in Nuclear Medicine
G. Llosa[1], N. Belcari[1], M. G. Bisogni[1], G. Collazuol[2], A. Del Guerra[1], S. Marcatili[1], S. Moehrs[1], C. Piemonte[3]
[1]University of Pisa and INFN Pisa, Italy; [2]Scuola Normale Superiore and INFN Pisa, Italy; [3]Fondazione Bruno Kessler-irst, Italy

M14-5 Evaluation of Silicon Photomultipliers as Novel PET Detector
A. Kolb[1], M. S. Judenhofer[1], C. D. Claussen[1], E. Lorenz[2], B. J. Pichler[1]
[1]Clinic of Radiology - University of Tuebingen, Germany; [2],

M14-6 Performance Evaluation of SSPM for DOI Compatible PET Detector
P. Dokhale, M. McClish, R. Robertson, G. Entine, K. Shah
Radiation Monitoring Devices, USA

M15 Task Based Image Optimization and Evaluation

Friday, Nov. 2 08:30-10:00, Coral V
Session Chairs: Stephen Moore, *Brigham & Women's Hospital*
Xin He, *Johns Hopkins Medical Institutions*

M15-1 Toward Realistic Ideal Observer (IO) Estimation - an IO Estimation Method for a Realistic SPECT Imaging Simulator and a Cardiac Torso Phantom
X. He, B. S. Caffo, E. C. Frey
Johns Hopkins Medical Institutions, USA

M15-2 Estimation of Lesion Position in CT Image Reconstruction
S. J. LaRoque, E. Y. Sidky, X. Pan
University of Chicago, USA

M15-3 Accurate Computation of the Hotelling Observer for the Evaluation of Image Reconstruction Algorithms in Helical, Cone-Beam CT
E. Y. Sidky, S. J. LaRoque, X. Pan
University of Chicago, USA

M15-4 A Numerical Observer Study of MAP with Anatomical and Functional Priors for Lesion Detection
C. Chan[1], R. Fulton[2,1], D. Feng[1,3], W. D. Cai[1], S. Meikle[1]
[1]The University of Sydney, Australia; [2]Royal Prince Alfred Hospital, Australia; [3]The Hong Kong Polytechnic University, China

M15-5 Impact of Respiratory Motion on the Detection of Small Pulmonary Nodules in SPECT Imaging
M. S. Smyczynski[1], H. C. Gifford[1], A. Lehovich[1], J. E. McNamara[1], W. P. Segars[2], B. M. W. Tsui[3], M. A. King[1]
[1]University of Massachusetts Medical School, USA; [2]Duke University Medical Center, USA; [3]Johns Hopkins University School of Medicine, USA

M15-6 Development of a PET Protocol to Equalize Noise for PET/CT Leg Acquisitions
J. M. Wilson[1], T. G. Turkington[1,2]
[1]Duke University, USA; [2]Duke University Medical Center, USA

M16 ECT/MR Imagers and Imaging

Friday, Nov. 2 10:30-12:00, Coral IV
Session Chairs: Kevin Wells, *University of Surrey*
Simon Cherry, *University of California-Davis*

M16-1 Investigation of Solid-State Photomultipliers for Simultaneous Acquistion of PET and MRI
S. J. Hong[1], I. C. Song[2], S. I. Kwon[2], M. Ito[3], K.-S. Sim[3], G. S. Lee[2], K. S. Park[2], J. T. R. Rhee[4], J. S. Lee[2]
[1]Gachon University of Medicine and Science, S. Korea; [2]Seoul National University College of Medicine, S. Korea; [3]Korea University, S. Korea; [4]Konkuk University, S. Korea

M16-2 Development of MRI Simulation Tools for Investigation of the Use of MR Images to Improve SPECT Reconstruction in Small Animal SPECT-MRI
S. Chen, Y. Wang, B. M. W. Tsui
Johns Hopkins Medical Institutions, USA

M16-3 A Simultaneous PET/MRI Scanner Based on the RatCAP
D. Schlyer[1], P. Vaska[1], D. Tomasi[1], C. Woody[1], S. H. Maramraju[2], S. Southekal[2], J.-F. Pratte[1], S. Junnarkar[1], M. Purschke[1], S. Krishnamoorthy[2], A. Kriplani[2], S. Stoll[1]
[1]Brookhaven National Laboratory, USA; [2]Stony Brook University, USA

M16-4 Performance Evaluation of an MR Compatible PET Insert
Y. Wu[1], C. Catana[2], R. Farrell[3], P. A. Dokhale[3], K. S. Shah[3], J. Qi[1], S. R. Cherry[1]
[1]UC Davis, USA; [2]Massachusetts General Hospital, USA; [3]Radiation Monitoring Devices Inc., USA

M16-5 Simultaneous Small Animal in Vivo PET/MR Imaging in a 7 Tesla Magnet: First Studies in Oncology and Cardiology
M. S. Judenhofer[1], H. F. Wehrl[1], S. B. Siegel[2], D. F. Newport[2], M. Becker[3], W.-I. Jung[3], R. E. Nutt[2], C. D. Claussen[1], B. J. Pichler[1]
[1]Clinic of Radiology - University of Tübingen, Germany; [2]Siemens Preclinical Solutions, USA; [3]Bruker BioSpin MRI, Germany

M16-6 MR-Based PET Attenuation Correction – Method and Validation
M. Hofmann[1,2,3], F. Steinke[2], V. Scheel[1,4], G. C. Charpiat[2], M. Brady[3], B. Schoelkopf[2], B. J. Pichler[2]

[1]University of Tuebingen, Germany; [2]Max-Planck Institute for Biological Cybernetics, Germany; [3]University of Oxford, United Kingdom; [4]University of Koblenz-Landau, Germany

M17 Dynamic Imaging

Friday, Nov. 2 10:30-12:00, Coral V
Session Chairs: Christiaan Schiepers, *David Geffen School of Medicine at UCLA*
Richard Carson, *Yale University*

M17-1 Fully 4D Image Reconstruction by Estimation of an Input Function and Spectral Coefficients
A. J. Reader, J. C. Matthews, *The University of Manchester, United Kingdom*; F. C. Sureau, C. Comtat, R. Trébossen, *Service Hospitalier Frédéric Joliot, France*; I. Buvat, *UMR 678 INSERM - UPMC, France*

M17-2 A Minimal Factor Overlap Method for Resolving Ambiguity in Factor Analysis of Dynamic Cardiac PET
R. Klein[1,2], A. Adler[3], R. S. Beanlands[1], M. Bentourkia[4], R. A. deKemp[1]
[1]University of Ottawa Heart Institute, Canada; [2]University of Ottawa, Canada; [3]Carleton University, Canada; [4]University of Sherbrooke, Canada

M17-3 Factor Analysis (FA) and Kinetic Modeling (KM) for PET: Are They Relevant for Clinical Applications?
C. Schiepers, S.-C. Huang, M. Dahlbom
David Geffen School of Medicine at UCLA, USA

M17-4 Patient Specific Noise-Equivalent-Counts from Repeated, Dose Varying [O-15]H2O PET Scans
M. D. Walker, J. C. Matthews, M.-C. Asselin, A. Saleem, P. Price, T. Jones
University of Manchester, UK

M17-5 Controlling Familywise Error Rate for Matched Subspace Detection in Dynamic FDG PET
Z. Li, Q. Li, D. Pantazis, X. Yu, R. M. Leahy
Signal Image Processing Inst., USA

M17-6 Analysis of Penalized Likelihood Reconstruction for PET Kinetic Quantification
G. Wang, J. Qi, *University of California, Davis, USA*

M18 MIC POSTER II

Friday, Nov. 2 13:30-15:00, South Pacific I-V and Poster Tent

Session Chairs: Yong Choi, *Samsung Medical Center, Sungkyunkwan University*
Michael Ljungberg, *Medical Radiation Physics, Lund University*

M18-2 Monte Carlo Simulation Study on the Time Resolution of LSO Detector Block for Time-of-Flight PET
J. Liu, S. Liu, H. Li, Y. Wang, S. Kim, Y. Zhang, H. Baghaei, R. Ramirez, W.-H. Wong
University of Texas MD Anderson Cancer Center, USA

M18-6 High-Resolution LSO Detectors for Human PET Systems Using PQS Decoding Technology
R. A. Ramirez, S. Liu, J. Liu, Y. Zhang, S. Kim, H. Baghaei, H. Li, Y. Wang, W.-H. Wong
University of Texas, M. D. Anderson Cancer Center, U.S.A.

M18-10 Application of Hamamatsu S8550APD Array to the Common PET/CT Detector
A. Nassalski, M. Moszy ski, A. Syntfeld-Ka uch, L. Swiderski, T. Szcz niak, D. Wolski, T. Batsch
Soltan Institute for Nuclear Studies, Poland

M18-14 A Low Dead Time Method to Differentiate Scintillator with Different Decay Time for DOI PET
J. Liu, H. Li, S. Liu, Y. Wang, S. Kim, Y. Zhang, H. Baghaei, R. Ramirez, W.-H. Wong
University of Texas MD Anderson Cancer Center, USA

M18-18 Possibility Evaluation for the Three to Four Layers DOI Detector Using GSOs
S. Yamamoto, *Kobe City College of Technology, Japan*; N. Shimura, H. Ishibashi, *Hitachi Chemical, Japan*

M18-22 Preliminary Study of a DOI-PET Detector with Optical Imaging Capability
K. Takahashi[1,2], N. Inadama[2], H. Murayama[2], T. Yamaya[2], E. Yoshida[2], F. Nishikido[2], K. Shibuya[2], I. Oda[3], H. Kawai[1]
[1]Chiba University, Japan; [2]National institute of radiological sciences, Japan; [3]Shimadzu Corporation, Japan

M18-26 A Moving Heart Phantom for Dual Gated Cardiac PET/CT Studies
H. T. Sipila, M. Teras, T. Kokki, J. Knuuti
Turku University Central Hospital, FINLAND

M18-30 PETonCHIP: Architecture of a High-Resolution, Fully Digital Positron Emission Tomography Scanner for Small Animal Imaging
P. Guerra[1], G. Sportelli[1], J. E. Ortuño[1], M. J. Ledesma-Carbayo[1], J. J. Vaquero[2], M. Desco[2], A. Santos[1]
[1]Universidad Politecnica de Madrid, Spain; [2]Hospital G.U. Gregorio Marañol, Spain

M18-34 Evaluation of Free-Running ADCs for High Resolution PET Data Acquisition
H. Peng, P. D. Olcott, A. M. K. Foudray, C. S. Levin
School of Medicine, Stanford University, USA

M18-38 A Low-Cost Motion-Monitoring System Using Consumer Camcorders
K. Balakrishnan, R. Boutchko, W.-S. Choong, B. W. Reutter, G. T. Gullberg
Lawrence Berkeley National Laboratory, USA

M18-42 Overview of an MR Compatible PET Detector Concept Using Undivided LSO Blocks and Machine Learning Algorithms
P. Bruyndonckx[1], C. Lemaître[1], D. Schaart[2], M. Maas[2], D. J. van der Laan[2], S. Tavernier[1]
[1]Vrije Universiteit Brussel, Belgium; [2]delft University of Technology, the Netherlands

M18-46 Roadmap to Fully-Digital PET/CT Scanners
R. Fontaine, J.-B. Nichaud, J.-D. Leroux, N. Viscogliosi, J. Riendeau, H. Semmaoui, F. Lemieux, C. Yousefzadeh, M.-A. Tétrault, B. Philippe, M. Bergeron, C. Pepin, J. Cadorette, R. Lecomte
Université de Sherbrooke, Canada

M18-50 A Positron Emission Mammography System Based on 4mm Straw Detectors
L. Sun, C. S. Martin, A. Athanasiades, J. L. Lacy
Proportional Technologies, inc, U. S. A.

M18-54 Preliminary Assessment of Multislit-Slat Collimation for Cardiac SPECT
S. D. Metzler[1], R. Accorsi[1,2], A. S. Ayan[1], J. R. Novak[1], R. M. Lewitt[1], R. J. Jaszczak[3,4]
[1]University of Pennsylvania, USA; [2]Children's Hospital of Philadelphia, USA; [3]Duke University Medical Center, USA; [4]Duke University, USA

M18-58 Development of Multi-Pinhole Collimator for Stationary SPECT System
B. J. Min[1], Y. Choi[1], N.-Y. Lee[2], J. H. Jung[1], K. J. Hong[1], Y. B. Ahn[3], J. Joung[4]
[1]Samsung Medical Center, Sungkyunkwan University School of Medicine, Korea; [2]Institute of Basic Sciences, Inje University, Korea; [3]Kon-Kuk University, Korea; [4]Siemens Medical Solutions USA, Inc., USA

M18-62 Iterative Region-of-Interest Reconstruction of Truncated Projections with Slit-slat Collimation
J. R. Novak[1], R. Accorsi[2], A. S. Ayan[1], S. D. Metzler[1]
[1]University of Pennsylvania, USA; [2]The Children's Hospital of Philadelphia, USA

M18-66 Performance Evaluation of a New Gamma Imager for Small Animal SPECT Applications
E. Lage, J. J. Vaquero, J. Villena, Á. de Carlos, G. Tapias, M. Desco
Hospital GU Gregorio Marañón, Spain

M18-70 Rotating-Gantry-Based Micro-CT for Small Animal Imaging
S. Y. Lee, M. H. Cho, D. H. Lee
Kyung Hee University, Korea

M18-74 Reduction of Micro-SPECT Streak Artifacts from Imperfect System Modeling
S. C. Moore[1,2], M. MacKnight[3], M.-A. Park[1,2], R. E. Zimmerman[1,2]
[1]Brigham & Women's Hospital, USA; [2]Harvard Medical School, USA; [3]Dana Farber Cancer Institute, USA

M18-78 Calibration of Pinhole MicroSPECT System Using Line Sources
R. Zhou, T. Ma, Y. Liu, Z. Wu, S. Wang, Y. Jin
Tsinghua University, China

M18-82 A Simplified Geometric Calibration Method for Rotating Triple Head Pinhole SPECT System Using Point Sources
J. H. Kim, J. S. Lee, W. W. Lee, Y. K. Kim, S. E. Kim, D. S. Lee
Seoul National University College of Medicine, South Korea

M18-86 Experimental Condition and Registration Method for the Tumor Detection of Lung Metastasis Small Animal PET and CT Whole Body Images
S. K. Woo, K. M. Kim, T. S. Lee, J. Y. KIm, J. H. Jung, K. S. Woo, W. S. Jung, J. H. Kang, G. J. Cheon, C. W. Choi, S. M. Lim
Korea Institute of Radiological and Medical Science, Korea

M18-90 In Vivo Multipinhole Helical SPECT of a Mouse Thyroid
J. Qian[1], R. E. Blue[1], E. L. Bradley[1], S. Majewski[2], M. S. Saha[1], M. F. Smith[2], A. G. Weisenberger[2], R. E. Welsh[1]
[1]College of William and Mary, USA; [2]Thomas Jefferson National Accelerator Facility, USA

M18-94 Simulation Tests for the Multiple Compton Coincidence Imaging System
A. M. Celler, *University of British Columbia, Canada*; A. Sitek, *Harvard Medical School and Brigham and Women's Hospit, USA*

M18-98 A Study of the Effects of Magnetic Fields on the Image Resolution of PET Scanners
D. Burdette[1], D. Albani[1], E. Chesi[2], N. Clinthorne[3], E. Cochran[1], K. Honscheid[1], S. Huh[3], H. Kagan[1], M. Knopp[1], C. Lacasta[4], M. Mikuz[5], P. Schmalbrock[1], A. Studen[5], P. Weilhammer[2,6]
[1]The Ohio State University, USA; [2]CERN, Switzerland; [3]University of Michigan, USA; [4]IFIC/CSIC-UVEG, Spain; [5]Institut Jozef/Stefan/ University of Ljubljana, Slovenia; [6]Universita degla Studi di Perugia, Italy

M18-102 Performance Evaluation of a High-Resolution Positron Emission Tomograph Based on Monolithic Scintillator Detectors
M. C. Maas[1], D. J. van der Laan[1], H. W. A. M. de Jong[2], D. R. Schaart[1], P. Bruyndonckx[3], C. Lemaître[3], C. W. E. van Eijk[1]
[1]Delft University of Technology, The Netherlands; [2]VU University Medical Centre, The Netherlands; [3]Vrije Universiteit Brussel, Belgium

M18-106 Dual-scale Medical Image Registration Based on Steerable Wavelet
X. Wang[1], D. D. Feng[1,2]
[1]The University of Sydney, Australia; [2]Hong Kong Polytechnic University, China

M18-110 Diagnostic of Approach Using an Electron Compton Gamma-Ray Camera Based on Small Animal and Phantom Experiments
S. Kabuki[1], K. Hattori[1], H. Kawashima[1], H. Kimura[1], R. Kohara[2], A. Kubo[3], H. Kubo[1], S. Kurosawa[1], E. Kunieda[3], K. Miuchi[1], Y. Miyazaki[2], T. Nagayoshi[1], T. Nakahara[3], Y. Nakamoto[1], T. Nakazawa[2], H. Hishimura[1], K. Ogawa[4], T. Okada[1], Y. Okada[1], R. Orito[1], H. Saji[1], T. Shirahata[2], A. Takada[1], T. Tanimori[1], K. Togashi[1], M. Ueda[1], K. Ueno[1], E. Yamamoto[2]
[1]Kyoto University, Japan; [2]Hitachi Medical Corporation, Japan; [3]Keio University School of Medicine, Japan; [4]Hosei University, Japan

M18-114 Combining Freehand Ultrasound with PET for Multimodal Cardiovascular Imaging
K. P. Schäfers[1], S. Hold[2], M. Mienkina[2], G. Schmitz[2], N. Lang[1]
[1]University Hospital Münster, Germany; [2]Ruhr-Universität Bochum, Germany

M18-118 Silicon Photomultiplier Performance Tests in Magnetic Resonance Pulsed Fields
R. C. Hawkes[1], A. J. Lucas[1], J. W. Stevick[1], G. Llosa[2,3], S. Marcatili[2,3], C. Piemonte[4], A. Del Guerra[2,3], T. A. Carpenter[1]
[1]University of Cambridge, UK; [2]University of Pisa, Italy; [3]Sezione di Pisa, Italy; [4]Fondazione Bruno Kessler-irst, Italy

M18-122 Influence of PET Down-Scatter Effect on SPECT Imaging in PET and SPECT Dual-Tracer Applications
T. Ma[1,2], Y. Shao[1], R. Yao[1], P. Manchiraju[1]
[1]Department of Nuclear Medicine, State University of New York at Buffalo, U.S.; [2]Tsinghua University, P.R.China

M18-126 Simultaneous PET/SPECT Imaging with the Small Animal Scanner YAP-(S)PET
A. Bartoli, S. Fabbri, N. Belcari, A. Del Guerra
University od Pisa, Italy

M18-130 Thermographic Assessment of Cold Stimulation on Autonomic Vascular Reactions
S. C. Edwards, *Norco High School, USA*

M18-134 Gated Tomographic Imaging in Ectomography Using a Dynamic Heart Phantom
I. Valastyan[1,2], D. Bone[3], L.-A. Brodin[3], H. Elmquist[1,4], J. Imrek[2], A. Kerek[1], J. Molnar[2], D. Novak[2], T. Ribbe[4]
[1]Royal Institute of Technology, Sweden; [2]Institute of Nuclear Research of the Hungarian Academy of Sciences, Hungary; [3]Karolinska University Hospital, Sweden; [4]Karolinska Institute, Sweden

M18-138 3D Dose Reconstruction in Radiation Treatment with the Beer-Lambert Law
P. L. Gueye, *Hampton University, USA*
On behalf of the CAMI collaboration

M18-142 Design and Performance of a New Pixellated-LSO/ PSPMT Gamma-Ray Detector for High Resolution PET Imaging
R. A. Mintzer, S. B. Siegel, *Siemens Molecular Imaging, USA*

M18-146 Comparative Characterization of ZnSe(O) and ZnSe(Al,O) Based Scintillators Applicable for Medical Computer Tomography
V. D. Ryzhikov, S. M. Galkin, B. V. Grinyov, S. V. Naidenov, *Institute for scintillation crystals, Ukraine*; P. Lecoq, *CERN, Switzerland*

M18-150 Multi Head Compton Camera System for Nuclear Medicine: Simulation Study
T. Shirahata[1], R. Kohara[1], T. Nakazawa[1], T. Tanimori[2], K. Ogawa[3], H. Kubo[2], S. Kabuki[2], O. Miyazaki[1]
[1]Hitachi Medical Corporation, Japan; [2]Kyoto University, Japan; [3]Hosei University, Japan

M18-154 Impact of Ce Concentration on Light Emission Properties of Lu2xGd2(1-x)SiO5:Ce (LGSO) Scintillators
Y. Kurata[1], H. Yamamoto[2], Y. Yokoyama[2], T. Usui[1], S. Shimizu[1], N. Shimura[1], H. Ishibashi[1]
[1]Hitachi Chemical Co., Ltd. Yamazaki Works(Katsuta), Japan; [2]Tokyo University of Technology, Japan

M18-158 MR-Compatible Blood Sampler for PET
J. Breuer[1], R. Grazioso[2], J. Corbeil[2], N. Zhang[2], L. Eriksson[2], M. Schmand[2], K. Wienhard[1]
[1]Max-Planck-Institut Fuer Neurologische Forschung, Germany; [2]Siemens Molecular Imaging USA Inc., USA

M18-162 Avalanche Amorphous Selenium Photoconductor for PET Imager Dedicated to Breast Cancer.
A. Reznik, M. Wronski , J. Rowlands
Sunnybrook Health Sciences Centre, Canada

M18-166 CMOS Compatible Through Wafer Interconnects for Medical Imaging Detectors
G. Vogtmeier[1], C. Drabe[2], R. Dorscheid[1], R. Steadman[1], A. Wolter[2]
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M18-170 Recent Developments from the UCL Compton Camera
W. Ghoggali[1], J. Gabathuse[1], N. P. Dedek[1], A. Olivo[1], G. J. Royle[1], I. H. Lazarus[2], R. D. Speller[1]
[1]University College London, United Kingdom; [2]Science & Technology Facilities Council, Daresbury Laboratory, United Kingdom

M18-174 Three-Dimensional Compton Imaging of Radioactive, Distributed Sources
S. Mattafirri[1,2], K. Vetter[1,2], L. Mihailescu[1], S. G. Prussin[2]
[1]LLNL, USA; [2]UC Berkeley, USA

M18-178 Withdrawn

M18-182 Quantitative Imaging with Low Dose CT in PET/CT System
S. Nam[1,2], J. Y. Jung[1,2], H.-M. Cho[1,2], C.-L. Lee[1,2], H.-J. Kim[1,2]
[1]College of Health Science, Yonsei University, South Korea; [2]Yonsei university, South Korea

M18-186 Phantom Based Flow Analysis by Means of Dynamic Angiography, CFD and Laser-Doppler-Velocimetry
T. Bölke, S. Seshadhri, O. Gurvit, R. Bade, B. Preim, G. Janiga, M. Skalej, G. Rose
Otto-von-Guericke-University of Magdeburg, Germany

M18-190 A Completely Automated CAD System for Nodule Detection in Lung Low Dose CTs Based on Region Growing and Active Contour Models
G. Gargano[1,2], *[1]Università degli Studi di Bari, Italy; [2]Istituto Nazione di Fisica Nucleare (INFN), Italy*
On behalf of the Magic V Collaboration

M18-194 Fabrication of a Direct-Type Silicon Pixel Detector for a Large Area Hybrid X-Ray Imaging Device
K.-S. Park[1], T.-W. Kim[2], Y.-S. Yoon[1], J.-M. Park[1], J.-Y. Kang[1], J.-G. Koo[1], B.-W. Kim[1], J. Kosonen[2], K.-S. No[3]
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M18-198 Monte Carlo Performance Characterization of a Digital Breast Tomosynthesis System Based on an a-Se Detector
A. K. Ma, D. G. Darambara, *The Institute of Cancer Research, UK*; S. Gunn, E. Bullard, A. Stewart, *Dexela Ltd, UK*; K. Bliznakova, N. Pallikarakis, *University of Patras, Greece*

M18-202 X-Ray Phase Imaging: New Approaches and Results
T. Weitkamp[1], A. Rack[1], L. Helfen[1], D. Wegrzynek[2], E. Chinea-Cano[2], C. Streli[3], P. Wobrauschek[3], C. David[4], F. Pfeiffer[4], T. Baumbach[1]
[1]Forschungszentrum Karlsruhe, Germany; [2]International Atomic Energy Agency, Austria; [3]Atominstitut der Österreichischen Universitäten, Austria; [4]Paul Scherrer Institut, Switzerland

M18-206 Ultra Fast Frame Based Parallel Reconstruction (FBPR) for Dynamic 3D PET Study
I. K. Hong[1], H. K. Kim[2], Y. B. Kim[2], Z. H. Cho[2,3]
[1]Korea Polytechnic University, Korea; [2]Gachon University of Medicine and Science, Korea; [3]University of California, USA

M18-210 Ultra Fast 3D Incremental Backprojection for Parallel Beam Geometries
I. Hong, *Korea Polytechnic University, Korea*; Z. Cho, *Gacho Univ. of Med. & Sci., Korea*

M18-214 List Mode 3D PET Reconstruction Using an Exact System Matrix and Polar Voxels
R. E. Ansorge, *University of Cambridge, UK*

M18-218 Virtual Scanner Geometry for Iterative 3D PET Reconstruction Adaptable to Complex and Irregular Scanner Topologies
J. J. Scheins, M. Axer, U. Pietrzyk, H. Herzog
Institute of Neuroscience and Biophysics - Medicine, Germany

M18-222 Ultrafast EM-OSLE for Cluster Reconstruction in Fully 3D PET
I. Hong, *Korea Polytechnic University, Korea*; Z. Cho, *Gachon Univ. of Med. and Sci., Korea*

M18-226 Quantitative Brain Imaging Using the New, Fast Iterative Histogram-Mode Reconstruction for the HRRT PET Scanner
J. Johansson, V. Oikonen, M. Teräs
Turku PET Centre, Finland

M18-230 A Non-Iterative Method for Emission Tomographic Image Reconstruction with Resolution Recovery
V. C. Soon, M. A. Miller, G. D. Hutchins
Indiana University School of Medicine, USA

M18-234 Respiratory Motion Correction in Cardiovascular PET/CT Imaging Using Optical Flow Algorithms Combined with EM Listmode Reconstructions
T. Kösters, M. Dawood, F. Büther, K. P. Schäfers, F. Wübbeling
University of Münster, Germany

M18-238 Comparison of Two 3D Implementations of TOF Scatter Estimation in 3D PET
M. Iatrou, R. M. Manjeshwar, *GE Global Research Center, USA*; C. W. Stearns, *GE Healthcare Technologies, USA*

M18-242 System Modeling of Small Bore DOI-PET Scanners for Fast and Accurate 3D Image Reconstruction
H. Takahashi[1], T. Yamaya[2], T. Kobayashi[1,2], K. Kitamura[3], T. Hasegawa[4,2], H. Murayama[2], M. Suga[1]
[1]Chiba University, Japan; [2]National Institute of Radiological Sciences, Japan; [3]Shimadzu Corporation, Japan; [4]Kitasato University, Japan

M18-246 Reconstruction of Multi-Pinhole SPECT Data with Correction of Attenuation, Scatter, and Detector Intrinsic Resolution
B. Feng, B. Bai, A. M. Smith
Siemens Preclinical Solutions, USA

M18-250 An Evaluation of Iterative Reconstruction Strategies on Mediastinal Lesion Detection Using Hybrid Ga-67 SPECT Images
N. F. Pereira[1], H. C. Gifford[2], H. Pretorius[2], M. S. Smyczynski[2], T. Farncombe[3], P. Schneider[2], R. Licho[2], M. A. King[2]
[1]University of Massachusetts, USA; [2]University of Massachusetts Medical School, USA; [3]Hamilton Health Sciences, Canada

M18-254 Impact of the Choice of Functional Regions in Targeted Fully 3D SPECT Reconstruction
Z. El Bitar[1], D. Hill[2], V. Breton[1], I. Buvat[3]
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M18-258 JAVA-Based Plugin for Tomographic Reconstruction in SPECT
A. M. Marques da Silva, M. A. Andrade, M. V. S. Costa
PUCRS, Brasil

M18-262 Implementation of a Fully 3D Iterative Reconstruction of Combined Parallel- and Cone-Beam Collimator SPECT
H. Ye[1], K. Andrzej[2,1], E. D. Lipson[1,2], D. H. Feiglin[2]
[1]Syracuse University, US; [2]SUNY-Upstate Medical University, US

M18-266 Practical Statistical Models for Region-of-Interest Tomographic Reconstruction
E. A. Rashed, H. Kudo, *University of Tsukuba, Japan*; T. Zeniya, H. Iida, *National Cardiovascular Center, Japan*

M18-270 Gain of KL-Domain Adaptive FBP Reconstruction for 4-D Dynamic CT
J. Wang[1], H. Lu[2], T. Li[3], Z. Liang[1]
[1]State University of New York at Stony Brook, USA; [2]The Fourth Military Medical University, China; [3]University of Texas Southwestern Medical Center, USA

M18-274 Electronic Readout Noise Compensation in Iterative X-Ray CT Reconstruction
J. Xu, B. M. W. Tsui, *Johns Hopkins University, USA*

M18-278 Image Reconstruction in Dual Source CT (DSCT)
H. Bruder, K. Stierstorfer, M. Petersilka, R. Raupach, T. Flohr
Siemens, Medical Solutions, Germany

M18-282 Long Object Problem in Reverse Helical Cone-Beam CT
S. Cho, D. Xia, C. A. Pelizzari, X. Pan
The University of Chicago, USA

M18-286 3D Filtered Backprojection for Curved Detector Axial Cone-Beam Data on a PlayStation 3
T. M. Benson, W. Dixon, S. Basu, *GE Global Research, USA*

M18-290 Image Reconstruction from Few Views by Non-Convex Optimization
E. Y. Sidky[1], R. Chartrand[2], X. Pan[1]
[1]University of Chicago, USA; [2]Los Alamos National Laboratory, USA

M18-294 Reduction of Streak Artifacts in Circular Cone Beam CT Using Scanograms
Y. Zou, A. A. Zamyatin, B. S. Chiang, M. D. Silver
Toshiba Medical Research Institute USA, USA

M18-298 A Free Geometry CT for Peripheral ROI Imaging
Y. Xing, L. Zhang, *Tsinghua University, china*

M18-302 Correction of Oral Contrast Artefacts in CT-Based Attenuation Correction of PET Images Using an Automated Segmentation Algorithm
J. H. Bidgoli[1], M. R. Ay[1], S. Sarkar[1], A. Ahmadian[1], H. Zaidi[2]
[1]Medical Sciences/University of Tehran, Iran; [2]Geneva University Hospital, Switzerland

M18-306 Evaluation of Quantitative 90Y SPECT from Experimental Phantom Studies
D. Minarik, K. Sjögreen-Gleisner, M. Ljungberg
Lund University, Sweden

M18-310 Improved Numerical Integration for Analytically Based Scatter Correction in SPECT
T. D. Humphries[1], A. Celler[2], M. Trummer[1]
[1]Simon Fraser University, Canada; [2]University of British Columbia, Canada

M18-314 An Optical Tracking System for Motion Correction in Small Animal PET
A. Z. Kyme, V. W. Zhou, S. R. Meikle, R. R. Fulton
Sydney University, Australia

M18-318 Respiratory Motion Correction in PET with Super-Resolution Techniques and Non-Rigid Registration
J. L. Rubio-Guivernau[1], M. J. Ledesma-Carbayo[1], F. Lamare[2], J. E. Ortuño[1], P. Guerra[1], D. Visvikis[2], A. Santos[1], G. Kontaxakis[1]
[1]Universidad Politécnica de Madrid, Spain; [2]U650 INSERM, France

M18-322 Effect of Patient Motion in a Clinical Comparison of Dual-Cone-Beam and Fan-Beam Sequential Transmission Imaging for Cardiac SPECT
P. H. Pretorius[1], M. A. King[1], B. Feng[2], K. L. Johnston[1], S. T. Dahlberg[1]
[1]University of Massachusetts Medical School, USA; [2]Siemens Medical Solutions, USA

M18-326 Estimation of Rigid Body Motion and Respiration Motion of the Heart for SPECT Motion Correction
J. Mitra, J. E. McNamara, K. Johnson, J. Dey, M. A. King
University of Massachusetts, USA

M18-330 Motion Correction for Gated PET Using Sinogram Registration
N. C. Detorie, M. Dahlbom
University of California, Los Angeles, USA

M18-334 Analysis of Asymmetric Cascade-Gamma in PET I-124 Imaging
D. A. Sebok[1], B. Line[2], M. Smith[2], C.-H. Tung[1], D. Gagnon[1]
[1]Philips Medical Systems, USA; [2]University of Maryland Medical System, USA

M18-338 A New Algorithm for Scaling of PET Scatter Estimates Using all Coincidence Events
K. Thielemans[1], R. M. Manjeshwar[2], C. Tsoumpas[3], F. P. Jansen[2]
[1]Hammersmith Imanet Ltd, UK; [2]GE Global Research, USA; [3]Imperial College London, UK

M18-342 A Java Distributed Acquisition System for PET and SPECT Imaging
J. E. McKisson, W. Hammond, J. Proffitt, A. G. Weisenberger
Thomas Jefferson National Accellerator Facility, USA

M18-346 Sensitivity in PET: Neural Networks as an Alternative to Compton Photons Analysis
J.-B. Michaud[1], C.-A. Brunet[1], M. Rafecas[2], R. Lecomte[1], R. Fontaine[1]
[1]*University of Sherbrooke, Canada;* [2]*Universitat de València, Spain*

M18-350 Quantitative Accuracy of PET for Image-Based Kinetic Analysis
Y. Seo, B.-K. Teo, C. Schreck, S. L. Bacharach, B. H. Hasegawa
University of California, San Francisco, USA

M18-354 Evaluation of Maximum a posteriori (MAP) Reconstruction on microPET Scanner
Q. Bao[1], B. Bai[2], Q. Li[3], A. M. Smith[2], A. Chatziioannou[1]
[1]*University of California, Los Angeles, United States;* [2]*Siemens Preclinical Solutions, United States;* [3]*University of Southern California, United States*

M18-358 The Influence of Photon Attenuation on Tumor-to-Background and Signal-to-Noise Ratios for SPECT Imaging
E. J. Soares[1], M. A. King[2], C. L. Byrne[3], H. C. Gifford[2], A. Lehovich[2]
[1]*Holy Cross College, USA;* [2]*University of Massachusetts Medical School, USA;* [3]*University of Massachusetts Lowell, USA*

M18-362 Comparison of PET and Simultaneous Dual-Isotope SPECT for Estimation Tasks in Normal and Parkinson Disease Brains
C. M. Trott, G. El Fakhri, B. Guerin
Brigham and Women's Hospital, Harvard Medical School, USA

M18-366 Performance Evaluation of Carbon-Interspaced Antiscatter Grids in Mammography : Empirical Formula and Monte Carlo Simulation Studies
H.-K. Lee[1], D.-Y. Jang[1], D.-I. Kim[1], J.-H. Lee[2], T.-E. Choi[1,3], C.-J. Park[1], C. Im[4]
[1]*The Catholic University of Korea, South Korea;* [2]*Jungwon Precision Ind. Co., South Korea;* [3]*Ewha Womans University, South Korea;* [4]*Hanyang University, South Korea*

M18-370 A Monte Carlo Investigation in to the the Fundamental Limitations of Digital Beta-Autoradiography: Considerations for Detector Design
J. Cabello, K. Wells, *University of Surrey, United Kingdom*

M18-374 Monte Carlo Modeling of a Triple Photon Energy Absorptiometry Technique
A. Darafsheh, A. Kamali-Asl, M. R. Aghamiri
Shahid Beheshti University, Iran

M18-378 A Simulation and Assessment Framework for the Comparison of Digital Mammography Imaging Technology
M. Yip, D. Rodriguez, E. Lewis, L. Tang, K. Wells, *University of Surrey, UK*; K. C. Young, *Royal Surrey County Hospital, UK*

M18-382 Validation of PeneloPET Against Two Small Animal PET Scanners
S. España[1], J. L. Herraiz[1], E. Vicente[1], E. Herranz[1], J. J. Vaquero[2], M. Desco[2], J. M. Udias[1]
[1]*Facultad de Ciencias Físicas (Universidad Complutense de Madrid), Spain;* [2]*Hospital GU, Spain*

M18-386 Fast, Accurate and Versatile Monte Carlo Method for Computing System Matrix
J.-D. Leroux, C. Thibaudeau, R. Lecomte, R. Fontaine
Université de Sherbrooke, Canada

M18-390 Acceleration of GATE SPECT Simulations
J. De Beenhouwer, S. Staelens, S. Vandenberghe, I. Lemahieu
Ghent University, Belgium

M18-394 The Development and Application of a Realistic Simulation Dataset for Simultaneous Cardiac and Respiratory Gated ECT/CT
T.-S. Lee[1], W. P. Segars[2], B. M. W. Tsui[1]
[1]*Johns Hopkins University, USA;* [2]*Duke University, USA*

M18-398 Prostate Imaging with 18F-Fluorocholine Using a Whole-Body Positron Emission Tomograph
S. A. Kwee[1], G. P. Thibault[2], R. S. Stack[2], M. N. Coel[1], B. Furusato[3], I. A. Sesterhenn[3]
[1]*The Queen's Medical Center, USA;* [2]*Tripler Army Medical Center, USA;* [3]*Armed Forces Institute of Pathology, USA*

M18-402 Automatic Lung Segmentation in Computed-Tomography Images with Accurate Handling of the Hilar Region
G. De Nunzio, *University of Salento, Italy*
On behalf of the MAGIC-V Collaboration

M18-406 Dosimetry of Regressing Tumors in I-131 Internal Emitter Therapy Using Patient Data from Multiple, Integrated CT-SPECT Images
S. J. Wilderman, H. Amro, Y. K. Dewaraja
University of Michigan, MI

M18-410 3D Ultrasound Model Base Segmentation and Volume Measurement Methods:Ultrasound Thyroid Phantom and Clinical Study
Y. H. Na[1], X. G. Xu[1], A. Lyshchik[2], A. R. Brill[2]
[1]*Rensselaer Polytechnic Institute, USA;* [2]*Vanderbilt University School of Medicine, USA*

M18-414 QCT Measurement of Cortical Bone Repair in Osteopenic Ovariectomized Rats Treated with PTH
H. Liu, *Eli Lilly and Company, USA*

M18-418 Design Considerations for a Limited Angle, Dedicated Breast, TOF PET Scanner
S. Surti, J. S. Karp, *University of Pennsylvania, USA*

M18-422 A Compact and High Sensitivity Positron Detector Using Dual-Layer Thin GSO Scintillators for a Small Animal PET Blood Sampling System
Y. Sakamoto[1], S. Yamamoto[2,3], K. Shimizu[3], K. Minato[1], M. Senda[3]
[1]*Nara Institute of Science and Technology, Japan;* [2]*Kobe City College of Technology, Japan;* [3]*Institute of Biomedical Research and Innovation, Japan*

M19 MIC POSTER III

Friday, Nov. 2 16:00-18:00, South pacific I-V and Poster Tent

Session Chairs: Andrew Goertzen, *University of Manitoba*
Scott Metzler, *University of Pennsylvania*

M19-3 Study of Finding DOI for a Pr:LuAG Scintillator with a Number of Lateral Grooves around the Axis
S. Kobayashi[1], K. Kamada[1,2], Y. Usuki[2], T. Yanagida[1], H. Ogino[3], A. Yoshikawa[1]
[1]Institute of Multidisciplinary Research for Advanced Materials, Tohoku University, Japan; [2]Material Research Laboratory, Furukawa Co. Ltd., Japan; [3]School of Engineering, University of Tokyo, Japan

M19-7 Timing Resolution Improved by DOI Information in a Four-Layer LYSO PET Detector
K. Shibuya1, F. Nishikido1, N. Inadama1, E. Yoshida1, C. F. Lam1, T. Tsuda2, T. Yamaya1, H. Murayama1
[1]National Institute of Radiological Sciences, Japan; [2]Shimadzu Corporation, Japan

M19-11 Four-Layer DOI Detector with a Multi Pixel APD by Light Sharing Method for Small Animal PET
F. Nishikido[1], N. Inadama[1], K. Takahashi[2], K. Shibuya[1], E. Yoshida[1], T. Yamaya[1], C. F. Lam[1], I. Oda[3], H. Murayama[1]
[1]National institute of radiological sciences, Japan; [2]Shimadzu Corporation, Japan; [3]Chiba University, Japan

M19-15 Performance Characteristics of a High Resolution Transformable PET in Brain/Breast and Wholebody Modes
W.-H. Wong, H. Li, H. Baghaei, Y. Wang, S. Kim, Y. Zhang, R. Ramirez, J. Liu, S. Liu
University of Texas M.D. Anderson Cancer Center, Texas

M19-19 A Proposal of Open PET Geometries
T. Yamaya, T. Inaniwa, S. Minohara, E. Yoshida, N. Inadama, F. Nishikido, K. Shibuya, C. F. Lam, H. Murayama
National Institute of Radiological Sciences, Japan

M19-23 Maximum-Likelihood Estimation of 3D Event Position in Monolithic Scintillation Crystals II: Calibration Method and Experimental Results
S. K. Moore, W. C. Hunter, L. R. Furenlid, H. H. Barrett
University of Arizona, USA

M19-27 Development of a High Resolution Whole-Body DOI PET System
A. Ohtani, K. Tanaka, K. Kitamura, T. Mizuta, Y. Inoue, H. Tonami, J. Ohi
Shimadzu Corporation, Japan

M19-35 Design Study of a High-Resolution Breast-Dedicated PET System Built from Cadmium Zinc Telluride Detectors
H. Peng, P. D. Olcott, G. Pratx, A. M. K. Foudray, G. Chinn, C. S. Levin
School of Medicine, Stanford University, USA

M19-39 Performance Measurements of CMOS SSPM as PET Detector
P. Dokhale, M. McClish, R. Robertson, C. Stapels, J. Christian, G. Entine, M. Squillante, K. Shah
Radiation Monitoring Devices, USA

M19-43 Implementation of a Mobile Cardiac PET Imager for the Emergency Room and Intensive Care Unit
A. G. Weisenberger[1], S. Majewski[1], D. Gilland[2], W. Hammond[1], B. Kross[1], V. Popov[1], J. Proffitt[1], J. E. McKisson[1], M. F. Smith[1]
[1]Thomas Jefferson National Accelerator Facility, USA; [2]University of Florida, USA

M19-47 A Comparison of Methods to Calculate the Energy Spectrum of a PET System Operating in Coincidence Mode
A. L. Goertzen, *University of Manitoba, Canada*; J. Y. Suk, C. J. Thompson, *Montreal Neurological Institute, Canada*

M19-51 Development of a Phantom to Simulate a Wide-Range of Body Sizes
S. J. Lokitz[1], J. M. Wilson[2], T. G. Turkington[1,2]
[1]Duke University Medical Center, USA; [2]Duke University, USA

M19-55 Minimum Deconvolution and 0-90° Subset, New Algorithms for Emission Tomography with Large Hole Collimator.
C. Jeanguillaume[1,2], H. Rakotonirina[1], G. Metrard[1], F. Bouchet[1], J. J. Lejeune[1]
[1]CHU d'Angers, France; [2]Université d'Angers, France

M19-59 SPECT Detector Spatial Resolution
H. Wieczorek, *Philips Research Europe, Germany*

M19-63 Comparison of Circular and Polygonal Planar Orbits for SPECT Scanning
R. Accorsi, *The Children's Hospital of Philadelphia, USA*; A. S. Ayan, S. D. Metzler, *The University of Pennsylvania, USA*

M19-67 Performance Comparison of Subtractive Resistive Readout with Conventional Resistive Readout for a High-Resolution Compact Gamma Camera
Y. Qi, M. Zhang, *Shanghai Institute of Applied Physics, China*; R. F. Wojcik, *Ray Visions Inc., USA*

M19-71 Development and Performance Evaluation of Cost-Effective Micro-CT
S. K. Heo, S. M. Youn, M. K. Cho, H. K. Kim, *Pusan National University, South Korea*; T. Graeve, *Rad-icon Imaging Corp., USA*; H. Cho, *Yonsei University, South Korea*

M19-75 Micro-CT in a Dual-Modality Fluorescence/Computed Tomography System for Small Animal Imaging
H. Zhang, H. Li, G. Hu, G. Hu, J. Bai
Tsinghua University, CHINA

M19-79 Characterization of LaBr3:Ce Scintillator Optimized for Spatial Resolution in Low-Energy Gamma Detection
F. Cusanno[1], E. Cisbani[2], M. L. Magliozzi[1], F. Garibaldi[2]
[1]INFN Sezione di Roma, Italy; [2]Istituto Superiore di Sanita', ITALY

M19-83 Design and Fabrication of Small Phantoms Using Stereolithography
M.-A. Park[1,2], R. E. Zimmerman[1,2], J. T. Vannah[3], S. C. Moore[1,2]
[1]Brigham and Women's Hospital, USA; [2]Harvard Medical School, USA; [3]Longwood Small Animal Imaging Facility, Beth-Israel Deaconess Medical Center, USA

M19-87 Multiple Nuclide Imaging in Live Mouse Using Semiconductor Compton Camera for Multiple Molecular Imaging
S. Motomura, Y. Kanayama, H. Haba, Y. Watanabe, S. Enomoto
RIKEN, Japan

M19-91 Digital Autoradiography Imaging Using CMOS Technology: First Tritium Autoradiography with a Back-Thinned CMOS Detector and Comparison of CMOS Imaging Performance with Autoradiography Film
J. Cabello, K. Wells, A. Bailey, I. Kitchen, *University of Surrey, United Kingdom*; A. Clark, M. Prydderch, R. Turchetta, *Rutherford Appleton Laboratory, United Kingdom*

M19-95 Experimental Evaluation of the Bilinear Transformation Used in the CT-Based Attenuation Correction for Small Animal PET Imaging
J. Yu, J. Seidel, M. G. Pomper, B. M. W. Tsui
Johns Hopkins Medical Institutions, US

M19-99 Small-Animal PET Registration Method with Intrinsic Validation Designed for Large Datasets
J. Pascau[1], J. D. Gispert[2], M. L. Soto-Montenegro[1], A. Rodríguez-Ruano[1], V. García-Vázquez[1], A. Udías[1], J. J. Vaquero[1], M. Desco[1]
[1]Hospital General Universitario Gregorio Marañón, Spain; [2]Parc de Recerca Biomèdica de Barcelona, Spain

M19-103 Spatial Resolution of a Small Cubic LYSO Scintillator Crystal Detector with Depth-of-Interaction Capabilities in a Small Animal PET Scanner
L. S. Perera, M. L. F. Lerch, A. B. Rosenfeld, *Centre for Medical Radiation Physics, University of Wollongong, Australia*; S. R. Meikle, J. Chan, *Univerisity of Sydney, Australia*

M19-107 Fusion of Myocardial Perfusion Data with CT Coronary Angiography
T. L. Faber, C. A. Santana, J. Chen, E. V. Garcia
Emory University, USA

M19-111 Detector Design for Combined Optical/SPECT Using a Position-Sensitive PMT
J. H. Jung, Y. Choi, K. J. Hong, B. J. Min, S. Park, J. Y. Choi, Y. S. Choe, K.-H. Lee, B.-T. Kim
Samsung Medical Center, Sungkyunkwan University School of Medicine, South Korea

M19-115 Coincidence Timing Analysis of APD Based PET Detectors
M. W. Lenox, A. McFarland, Z. Burbar, C. Hayden
Siemens Molecular Imaging, USA

M19-119 Performance Evaluation of a Small Field-of-View, Mobile PET/SPECT System
M. T. Studenski[1], J. G. Parker[1], D. R. Gilland[1,2], S. Majewski[3], W. Hammond[3]
[1]Univeristy of Florida, USA; [2]University of Florida, USA; [3]Thomas Jefferson National Accelerator Facility, USA

M19-123 Investigation of PET/MRI Image Fusion Schemes for Enhanced Breast Cancer Diagnosis
K. G. Baum[1], K. Rafferty[2], M. Helguera[1], D. H. Feiglin[1], A. Krol[3]
[1]Rochester Institute of Technology, USA; [2]Honeoye Falls-Lima High School, USA; [3]SUNY Upstate Medical University, USA

M19-127 Initial Patient Study with Dedicated Dual-Modality SPECT-CT Mammotomography
P. Madhav[1,2], D. J. Crotty[1,2], K. L. Perez[2], S. J. Cutler[1,2], R. L. McKinley[2], T. Wong[1,2], M. P. Tornai[1,2]
[1]Duke University, USA; [2]Duke University Medical Center, USA

M19-131 Development of Dental Tomosynthesis System
M. K. Cho, H. K. Kim, S.-S. Kim, *Pusan National University, South Korea*; T. W. Kim, S. T. Kim, S. H. Shin, *Vatech Co., Ltd., South Korea*

M19-135 Experimental Verification of a Hand Held Electronically-Collimated Radiation Detector
K. L. Matthews II, W. Hill, B. M. Smith
Louisiana State University, USA

M19-139 Simulation Study of a PET Insert Device for Breast Cancer Imaging
D. B. Keesing[1], S. Komarov[1], D. Pal[1], J. A. O'Sullivan[1], M. Janecek[2], H. Wu[1], Y.-C. Tai[1]
[1]Washington University in St. Louis, USA; [2]Lawrence Berkeley National Laboratory, USA

M19-143 2D Dosimetry with a New Scintillating System: the DosiMap
A.-M. Frelin[1], J.-M. Fontbonne[2], G. Ban[2], A. Batalla[3], P. Boher[4], M. Braud[4], J. Colin[2], M. Labalme[2], T. Leroux[4], A. Vela[3]
[1]Laboratoire de technologie des détecteurs, CEA Saclay, France; [2]Laboratoire de Physique Corpusculaire, France; [3]Centre Régional de Lutte Contre le Cancer François Baclesse, France; [4]ELDIM, France

M19-147 New Directions for dMiCE – a Depth-of-Interaction Detector Design for PET Scanners
T. K. Lewellen, L. R. MacDonald, R. S. Miyaoka, W. McDougald
University of Washington, USA

M19-151 Sophisticated 32 X 32 X 4-Layer DOI Detector for High Resolution PEM Scanner
H. Tonami, J. Ohi, K. Kitamura, M. Satoh, T. Tsuda, Y. Kumazawa
Shimadzu Corporation, Japan

M19-155 Monte Carlo Simulations on the Gas Ionization Chamber with Position-Sensitive Scintillation Detector for Locating the Distal Dose Falloff in Proton Therapy
J.-W. Kim, *National Cancer Center, Korea*; B. H. Kang, D. Kim, *Seoul National University, Korea*

M19-159 ML Positioning of Scintillation Events: Preliminary Experiments
W. Xi[1], J. Seidel[1], J. Kakareka[2], J. Proffitt[3], D. Weisenberger[3], S. Majewski[3], T. Pohida[2], M. V. Green[1], P. Choyke[2]
[1]SAIC-Frederick, Inc., USA; [2]National Institutes of Health, USA; [3]Thomas Jefferson National Accelerator Facility, USA

M19-163 Investigation on Optimum Optical Conditions and Positioning Scheme for an Ultra-High Resolution Solid-State Gamma Camera
J. Joung[1], D. Henseler[1], W. Metzger[2], K. Lee[3], B. J. Min[4], Y. Choi[4], M. Schmand[1], M. Andreaco[1]
[1]Siemens Medical Solution, USA; [2]Siemens AG, Germany; [3]Korea University, Korea; [4]Sungkyunkwan University, Korea

M19-167 Optimization of a Rotating Modulation Collimator for NSECT Imaging
A. C. Sharma, A. J. Kapadia, B. P. Harrawood, G. D. Tourassi
Duke University, NC

M19-171 A Prototype CZT-Based PET Scanner for High Resolution Mouse Brain Imaging
P. Vaska[1], A. Bolotnikov[1], P. O'Connor[1], Y.-G. Cui[1], J.-F. Pratte[1], A. Dragone[1], J. Fried[1], D. Kim[2], S. Krishnamoorthy[3], F. A. Dilmanian[1], R. B. James[1]

[1]*Brookhaven National Laboratory, USA;* [2]*Myongji University, South Korea;* [3]*Stony Brook University, USA*

M19-175 SNR performance comparison of Dual-Layer Detector and Dual-kVp spectral CT
B. J. Heismann, S. Wirth, *Siemens Medical, Germany*

M19-179 Cross Scatter in Dual Energy / Dual Source CT
Y. Kyriakou, M. Meyer, D. Ertel, W. A. Kalender
Institute of Medical Physics, Germany

M19-183 Tomosynthesis Through a Time Delay Integration Sensor
I. Frosio, N. A. Borghese
Computer Science Dept. - University of Milan, Italy

M19-187 Optimization of Energy Window Widths in Basis Material Decomposition Using a Multi-window Photon-counting X-ray Detector
X. Wang, J. Xu, E. C. Frey
Johns Hopkins University, the Unitest States

M19-191 Impact of X-Ray Tube Voltage, Field Size and Object Thickness on Scattered Radiation Distribution in Diagnostic Radiology: a Monte Carlo Investigation
P. Ghafarian[1,2], M. R. Ay[2], H. Ghadiri[2], S. Sarkar[2], H. Zaidi[3]
[1]*Shahid Beheshti University, Iran;* [2]*Medical Sciences/University of Tehran, Iran;* [3]*Geneva University Hospital, Switzerland*

M19-195 A High Performance 1024 X 1024 Digital X-Ray Panel with Integrated Readout Electronics for Non-Destructive Testing and Medical Imaging Applications
P. Pan, S. Petronio, J. Schlesselmann, N. Aziz, *FLIR Systems, Inc., United States*; A. Chen, W. Shieh, H.-K. Tsai, *Prime View Internationl CO.,LTD, Taiwan R.O.C.*

M19-199 Imaging Characteristics for Direct and Mobile Type Indirect Digital Radiographic Systems
H.-M. Cho, J.-Y. Jung, C.-L. Lee, S. Nam, H.-J. Kim
Yonsei University, Korea

M19-203 X-Ray Compton Scattering Tomography Method for Nondestructive Evaluation and Medical Diagnostics
P. Paki Amouzou, W. Mengesha, T. Jannson, R. Pradhan
Physical Optics Corporation, USA

M19-207 Gap Filling Strategies for 3D-FBP Reconstruction of HRRT PET Studies
F. H. P. van Velden, R. W. Kloet, A. A. Lammertsma, R. Boellaard
VU University Medical Center, The Netherlands

M19-211 New Concurrent Acquisition and Reconstruction (CAR) System for PET Study
I. K. Hong[1], H. K. Kim[2], Z. Burbar[3], Y. B. Kim[2], Z. H. Cho[2,4]
[1]*Korea Polytechnic University, Korea;* [2]*Gachon University of Medicine and Science, Korea;* [3]*Siemens Medical Solutions, USA;* [4]*University of California, USA*

M19-215 A Fast Statistical Image Reconstruction Algorithm for TOF-PET Using DRAMA (dynamic RAMLA) Strategy
E. Tanaka, K. Ote, T. Isobe, M. Watanabe, T. Yamashita
Hamamatsu Photonics K.K., Japan

M19-219 Determination of the System Matrix Used in List-Mode EM Reconstruction of PET
Y. Chen, S. J. Glick
University of Massachusetts Medical School, U.S.A.

M19-223 A Penalized Algebraic Reconstruction Technique (pART) for PET Image Reconstruction
L. Zhang, S. Vandenberghe, S. Staelens, I. Lemahieu
Ghent University, Belgium

M19-227 Revised Consistency Conditions for PET Data
J. L. Herraiz[1], S. España[1], E. Vicente[1], E. Herranz[1], J. J. Vaquero[2], M. Desco[2], J. M. Udias[1]
[1]*Universidad Complutense de Madrid, Spain;* [2]*Hospital GU "Gregorio Marañón", Spain*

M19-231 Dual Gating Method for Eliminating Motion-Related Inaccuracies in Cardiac PET
T. Kokki, M. Teräs, H. T. Sipilä, T. Noponen, J. Knuuti
Turku PET Centre, Finland

M19-235 Improved Image Reconstruction in Small Animal PET Using a Priori Estimation of Single-Pixel Events
S. España[1], J. L. Herraiz[1], E. Vicente[1], E. Herranz[1], J. J. Vaquero[2], M. Desco[2], J. M. Udias[1]
[1]*Facultad de Ciencias Físicas (Universidad Complutense de Madrid), Spain;* [2]*Hospital GU, Spain*

M19-239 Evaluation of Theoretical Prediction of ROI Quantification Performance for MAP Reconstruction
L. Fu, J. Qi, *University of California, Davis, U.S.A*

M19-243 Fully 3D List-Mode OSEM on PC Graphics Hardware: Quantitative Studies
G. Pratx, G. Chinn, C. S. Levin
Stanford University, USA

M19-247 On the Convergence of Blind Deblurring Reconstruction Algorithm
H. Li, *M.D. Anderson Cancer Center, USA*

M19-251 Direct 3D-Reconstruction from a Single 2D-Image Obtained Through a Coded-Aperture
X. Hubert, S. Legoupil, *CEA, FRANCE*; N. Paragios, *ECP, FRANCE*

M19-255 Spatially-Adaptive Analytical Reconstruction for Gated Quantitative SPECT in KL Domain
Y. Fan[1], H. Lu[1], Z. Liang[2], J. Wang[1]
[1]*Fourth Millitary University, China;* [2]*State University of New York, Stony Brook, USA*

M19-259 Four-Dimensional Gated Cardiac SPECT Reconstruction and Evaluation Study
M. Jin, Y. Yang, J. G. Brankov, M. N. Wernick, *Illinois Institute of Technology, USA*; B. Feng, H. K. Pretorius, M. A. King, *University of Massachusetts Medical School, USA*

M19-263 Quantitative Evaluation of Half-Cone-Beam Data Acquisition Trajectories in Triple-Camera Brain SPECT
R. Ter-Antonyan[1], R. J. Jaszczak[1,2], J. E. Bowsher[1], K. L. Greer[1], S. D. Metzler[3]
[1]*Duke University Medical Center, USA;* [2]*Duke University, USA;* [3]*University of Pennsylvania, USA*

M19-267 An Optimized Reprojection Method with Least Angle-Dependent Error
R. Guedouar, B. Zarrad
Higher School of Health Sciences and Techniques, Tunisia

M19-271 On the Aliasing Artifacts in Direct Fourier Methods
J. Cheng, H. Gao, L. Zhang, Y. Xing, Z. Chen, Y. Xiao
Tsinghua University, China

M19-275 Comparison of Reconstruction Algorithms to Extend CT Reconstruction Field-of-View
B. Li, J. Hsieh, *General Electric Healthcare, USA*

M19-279 Combined Algorithmic and Hardware Acceleration for Ultra-Fast Backprojection
J. Brokish[1], Y. Bresler[1,2]
[1]InstaRecon, Inc., USA; [2]University of Illinois at Urbana-Champaign, USA

M19-283 3D ROI Imaging with a Detector Smaller than the Imaged Object
J. Bian, X. Pan, *The University of Chicago, USA*

M19-287 GPU-Based 3D Cone-Beam CT Image Reconstruction: Application to Micro CT
X. Zhao[1], J. Bian[2], E. Y. Sidky[2], S. Cho[2], P. Zhang[1], X. Pan[2]
[1]Capital Normal University, P. R. China; [2]The University of Chicago, USA

M19-291 Real-Time Cone-Beam CT Image Reconstruction Using a Mercury's Dual Cell-Based System (DCBS) and a Sony's Playstation 3 (PS3) Cluster
M. Knaup, M. Kachelriess
University of Erlangen-Nuremberg, Germany

M19-295 Noise Property of the Hilbert Transform
X. Han, D. Xia, E. Y. Sidky, X. Pan
The University of Chicago, USA

M19-299 3D Analytic Cone-Beam Reconstruction for Less than a Full Scan Using a Multi-Source CT System
Z. Yin, B. De Man, *GE Global Research, USA*

M19-303 Evaluation of Three Analytical Methods for Reconstruction from Cone-Beam Data on a Short Circular Scan
F. Dennerlein, F. Noo, *University of Utah, USA*; S. Hoppe, J. Hornegger, *University of Erlangen, Germany*; G. Lauritsch, *Siemens AG, Medical Solutions, Germany*

M19-307 A Segmentation Algorithm for Heterogeneous Tumor Delineation in PET
M. Hatt[1], C. Roux[2], D. Visvikis[1]
[1]INSERM, France; [2]GET-ENST, France

M19-311 Respiratory-Motion Errors in Quantitative Myocardial Perfusion with PET/CT
M. Shkvorets, R. A. deKemp, R. G. Wells
University of Ottawa Heart Institute, Canada

M19-315 The Impact of VOI Definition on Activity Estimation Accuracy in Quantitative SPECT and Planar Imaging Methods
B. He, E. C. Frey, *Johns Hopkins Medical Institutions, USA*

M19-319 CT Contrast Agent in Cardiac PET/CT: Influence on Tracer Quantification and Effective Correction Schemes
F. Büther, M. Dawood, O. Schober, K. P. Schäfers
University Hospital of Münster, Germany

M19-323 A Novel Algorithm of Local Contrast Enhancement for Medical Image
H. Y. Yang, *Mail, Taiwan*

M19-327 Collimator-Detector Response Compensation in Quantitative SPECT Reconstruction
S. Liu, *McMaster University, Canada*; T. H. Farncombe, *Hamilton Health Sciences, Canada*

M19-331 Resolution Kernel for Long Range Positron Emitters
X. Liu, K. Shoghi, R. Laforest
Washington University, School of Medicine, USA

M19-335 Recombining Respiratory Gated PET Frames
A. L. Kesner, M. Dahlbom, J. Czernin, D. H. S. Silverman
University of California, Los Angeles, USA

M19-339 Influence of Random and Scatter Corrections in the Quantification Properties of Small Animal PET Scanners
E. Vicente[1], M. Soto-Montenegro[2], S. Espana[1], J. L. Herraiz[1], E. Herranz[1], J. J. Vaquero[2], M. Desco[2], J. M. Udias[1]
[1]Universidad Complutense, Spain; [2]Hospital GU Gregorio Marañón, Spain

M19-343 Absolute Quantitation of Myocardial Blood Flow Using Dynamic Rb-82 PET : Validation in N-13 Ammonia and Microspheres
G. El Fakhri[1], A. Sitek[1], T. Yasuda[2], A. Kardan[2], C. Mekkaoui[3], A. J. Fischman[2], M. Coughlan[1], R. E. Carson[3], A. J. Sinusas[3], M. F. Di Carli[1]
[1]Harvard Medical School and Brigham & Women's Hospital, USA; [2]Massachusetts General Hospital, USA; [3]Yale University School of Medicine, USA

M19-347 A Unified System Identification Approach to Dynamic PET Parametric Imaging
C. Deng, P. Shi
Hong Kong University of Science and Technology, China

M19-351 Quantifying Myocardial Perfusion in MRI Using Model-Free Maximum Likelihood Deconvolution (MLD): Theory, Simulations, and Preliminary Clinical Evaluation
B. Lewden[1], R. Z. Stodilka[1,2,3], M. Jerosch-Herold[4], F. S. Prato[1,2,3]
[1]Lawson Health Research Institute, Canada; [2]University of Western Ontario, Canada; [3]St Joseph's Health Care, Canada; [4]University of Minnesota, USA

M19-355 Movement Correction of FDDNP PET Studies for Brain Amyloid Imaging
Z. Zhou, S.-C. Huang, W. Shao, M. Wardak, M. Dahlbom, L. Smid, V. Kepe, G. W. Small, J. R. Barrio
David Geffen School of Medicine, University of California Los Angeles, USA

M19-359 Optimization of Pinhole Imaging System Using Ideal Observer for Detection and Localization
L. Zhou[1], P. Khurd[2], S. Kulkarni[1], G. Gindi[1]
[1]Stony Brook University, USA; [2]University of Pennsylvania, USA

M19-363 Rapid Optimization of SPECT Scatter Correction Using Model LROC Observers
S. P. Kulkarni[1], P. Khurd[2], L. Zhou[1], G. Gindi[1]
[1]State University of New York at Stony Brook, USA; [2]University of Pennsylvania, USA

M19-367 Monte Carlo Simulations Studies in Small Animal PET Using GATE
S. Branco[1], S. Jan[2], P. Almeida[1]
[1]Instituto de Biofisica e Engenharia Biomédica, Portugal; [2]Service Hospitalier Frédéric Joliot, France

M19-371 SIMIND based Pinhole Imaging: Development and Validation
K. Sundin, M. Ljungberg, *Lund University, Sweden*

M19-375 Improvement of Image Quality via Collimator Material for High Energy Photons in Nuclear Medicine- Using MCNP
A. Rajaee[1], A. Kamali Asl[2], M. Shahriari[2], M. Athari[1]
[1]Science and Research Branch, Islamic Azad university, Iran; [2]Beheshti university, Iran

M19-379 Influence of Energy Indexing Algorithm and Electron Substeps on MCNP4C Electron Transport: Application to Simulation of X-Ray Spectra in Diagnostic Radiology and Mammography
M. R. Ay[1], H. Ghadiri[1], P. Ghafarian[1,2], S. Sarkar[1], H. Zaidi[3]
[1]Medical Sciences/ University of Tehran, Iran; [2]Shahid Beheshti University, Iran; [3]Geneva University Hospital, Switzerland

M19-383 A Generalized Simulation Description Language
R. L. Harrison, P. E. Kinahan, T. K. Lewellen
University of Washington Medical Center, USA

M19-387 Simulate Your Own PET Data - a Web Interface for SORTEO
R. S. Ali[1], A. Reilhac[2], M. Brady[1]
[1]Oxford University, UK; [2]CERMEP, France

M19-391 Effect of Iodine-Based Contrast Agents in the Dosimetry of microCT Studies: a Monte Carlo Simulation
M. Rodriguez-Villafuerte, C. Montaño, A. Martinez-Davalos
Instituto de Fisica, Universidad Nacional Autónoma de México, Mexico

M19-395 Monte Carlo Simulations for Design Optimization of a Compton Camera Imager for Dosimetry in Radionuclide Therapy
H. Jackson[1], A. B. Brill[1], K. Nurdan[2], T. E. Peterson[1], A. H. Walenta[2]
[1]Vanderbilt University, USA; [2]University of Siegen, Germany

M19-399 Image Processing Method for Analyzing Cerebral Blood-Flow Using SPECT and MRI
H. Kudo, M. Nomura, T. Asada, T. Takeda
University of Tsukuba, Japan

M19-403 CT Number Uncertainty in Proton Radiation Therapy
H. Li, *M.D. Anderson Cancer Center, USA*

M19-407 A Nonlinear Projection Scheme for Fast Rigid Registration
V. Daum, D. A. Hahn, J. Hornegger
University of Erlangen-Nuremberg, Germany

M19-411 PET Imaging with 62Cu-ETS in a Human Clinical Trial at the University of Wisconsin-Madison
J. L. Lacy, L. Guerrero, *Proportional Technologies, Inc, USA*; R. Chiu, L. Hall, C. K. Stone, *University of Wisconsin-Madison, USA*

M19-415 Image-Guided Surgery Planning for Breast Reconstruction Flap Design
P. Huang, L. Gu, H. Xu, J. Dong, J. Liu, W. Pei, B. Li, J. Zhang, J. Song
Shanghai Jiao Tong University, China

M19-419 Quantitative Assessment of FDG Continuous Infusion in Rat Tumors Simultaneously Treated with Phodynamic Therapy
M. Bentourkia, P. Boubacar, V. Bérard, J. E. van Lier, R. Lecomte
Université de Sherbrooke, Canada

M20 Instrumentation: Application Specific Imagers

Saturday, Nov. 3 08:30-10:00, Coral IV
Session Chairs: Yuan-Chuan Tai, *Washington University in St. Louis*
Raymond Raylman, *Dept of Radiology/West Virginia University*

M20-1 Molecular Breast Imaging with Directly Opposing Compact Gamma Cameras
P. G. Judy[1], B. Welch[2], S. Majewski[3], N. L. Dinion[1], M. J. More[1], M. B. Williams[1]
[1]University of Virginia, VA; [2]Dilon Technologies, Inc., VA; [3]Thomas Jefferson National Accelerator Facility, VA

M20-2 Comparison of Reduced Angle and Fully 3D Acquisition Sequencing and Trajectories for Dual-Modality Mammotomography
S. J. Cutler[1,2], D. J. Crotty[1,2], P. Madhav[1,2], K. L. Perez[1], M. P. Tornai[1,2]
[1]Duke University Medical Center, USA; [2]Duke University, USA

M20-3 Feasibility Studies for Extracting an Input Function for Quantitative Positron Emission Tomography Using a Wrist Scanner
A. Kriplani[1], D. Schlyer[2], P. Vaska[2], J. Logan[2], C. Woody[2], S. Southekal[1], S. Stoll[2], S. Junnarkar[2], J.-F. Pratte[2]
[1]Stony Brook University, USA; [2]Brookhaven National Laboratory, USA

M20-4 Serial Digital Autoradiography with a Silicon Strip Detector as a High Resolution Imaging Modality for TRT Dosimetry
A. Orbom[1], M. Dahlbom[2], T. Olafsen[2], A. M. Wu[2], S.-E. Strand[1]
[1]Lund University, Sweden; [2]David Geffen School of Medicine, University of California - Los Angeles, USA

M20-5 Performance of an Integrated Microfluidic Chip and Position Sensitive APD for the Detection of Beta Emitting Probes in Cell Cultures
N. T. Vu[1], Z. T. F. Yu[1], R. W. Silverman[1], R. Farrell[2], K. S. Shah[2], H. R. Tseng[1], A. F. Chatziioannou[1]
[1]UCLA Crump Institute, USA; [2]Radiation Monitoring Devices, USA

M20-6 Geiger Photodiodes for Diffuse Optical Correlation Tomography
R. Sia[1], C. J. Stapels[1], E. B. Johnson[1], T. Durduran[2], C. Zhou[2], G. Yu[2], A. G. Yodh[2], S. L. Augustine[3], J. F. Christian[1]
[1]Radiation Monitoring Devices, Inc., US; [2]University of Pennsylvania, US; [3]Augustine Engineering, US

M21 Reconstruction: Analytical Methods and Theory

Saturday, Nov. 3 08:30-10:00, Coral V
Session Chairs: Grant Gullberg, *Lawrence Berkeley National Laboratory*
Patrick La Riviere, *Dept. of Radiology, The University of Chicago*

M21-1 Tiny A Priori Knowledge Solves the Interior Problem
H. Kudo, *University of Tsukuba, Japan*; M. Courdurier, *University of Washington, U.S.A.*; F. Noo, *University of Utah, U.S.A.*; M. Defrise, *Vrije Universiteit Brussel, Belgium*

M21-2 List-Mode Data Reconstruction via the Finite Hilbert Transform of the Derivative of the Backprojection
G. L. Zeng, *University of Utah, USA*

M21-3 Implementation of the Derivative Back Projection - Finite Hilbert Inverse Algorithm in Projection Reconstruction MRI
J. K. Barral, N. J. Pelc, J. M. Pauly, D. G. Nishimura
Stanford University, USA

M21-4 Constriction of Cone-Beam Artifacts by the Z-Smart Reconstruction Method
F. Dennerlein, F. Noo, *University of Utah, USA*; J. Hornegger, *University of Erlangen, Germany*; G. Lauritsch, *Siemens AG, Medical Solutions, Germany*

M21-5 Evaluation of the Impact of View Differentiation and Backprojection Weight in Circle-plus-Line Cone-Beam Tomography
S. Hoppe[1], F. Dennerlein[2], G. Lauritsch[3], J. Hornegger[1], F. Noo[2]
[1]University of Erlangen-Nuremberg, Germany; [2]University of Utah, USA; [3]Siemens AG, Medical Solutions, Germany

M21-6 Attenuation Corrected Tensor Tomography – Attenuation Helps in the Case of Insufficient Measurements
Q. Huang, G. T. Gullberg
Lawrence Berkeley National Lab, USA

M22 Instrumentation: System Design and Evaluation

Saturday, Nov. 3 10:30-12:00, Coral IV
Session Chairs: Anna Celler, *Department of Radiology, University of British Columbia*
Steven Meikle, *University of Sydney*

M22-1 PlanTIS: a Positron Emission Tomograph for Imaging C11 Transport in Plants
M. Streun, T. Hombach, S. Jahnke, M. Khodaverdi, H. Larue, S. Minwuyelet, C. Parl, G. Roeb, S. Weber, U. Schurr, K. Ziemons
Forschungszentrum Juelich, Germany

M22-2 Comparison of In-beam and Off-beam PET Experiments at Hard Photons
D. Möckel[1], T. Kluge[1], J. Pawelke[1], W. Enghardt[2,1]
[1]Institute of Radiation Physics, Forschungszentrum Dresden-Rossendorf, Germany; [2]Technische Universität Dresden, OncoRay - Radiation Research in Oncology, Germany

M22-3 The Design and Feasibility Study of an Affordable High-Resolution 100-Cm Long PET
W.-H. Wong, H. Li, H. Baghaei, Y. Zhang, S. Liu, Y. Wang, J. Liu, S. Kim, R. Ramirez
University of Texas M.D. Anderson Cancer Center, USA

M22-4 Timing Measurements from a TOF PET Scanner Using Local PMT Triggering
C. C. Kyba, R. I. Wiener, F. M. Newcomer, R. Van Berg, N. Dressnandt, J. S. Karp
University of Pennsylvania, USA

M22-5 Fisher Information-Based Evaluation of Image Quality for Time-of-Flight PET
K. Vunckx, C. Lemmens, J. Nuyts, *K.U.Leuven, Belgium*

M22-6 A Semiconductor Compton Camera System in SPECT Mode
A. N. Grint, A. J. Boston, H. C. Boston, R. J. Cooper, J. R. Cresswell, M. Farahmand, A. R. Mather, P. J. Nolan, D. P. Scraggs, G. H. Turk, M. Dimmock, L. Nelson, *Liverpool University, England*; I. Lazarus, *STFC Daresbury, England*; T. Beveridge, J. Gillam, A. Berry, C. J. Hall, R. Lewis, *Monash University, Australia*

M23 Reconstruction: Bayesian Methods

Saturday, Nov. 3 10:30-12:00, Coral V
Session Chairs: Gene Gindi, *SUNY at Stony Brook*
Evren Asma, *General Electric Global Research*

M23-1 An Anatomically Based Adaptive Prior for MAP Reconstruction in Emission Tomography
C. Chan[1], R. Fulton[2,1], D. Feng[1,3], D. W. Cai[1], S. Meikle[1]
[1]The University of Sydney, Australia; [2]Royal Prince Alfred Hospital, Australia; [3]The Hong Kong Polytechnic University, China

M23-2 New Anatomical-Prior-Based Image Reconstruction Method for PET/SPECT
Y. Mameuda, H. Kudo, *University of Tsukuba, Japan*

M23-3 The Use of Mutual Information and Joint Entropy for Anatomical Priors in Emission Tomography
J. L. Nuyts, *K.U.Leuven, Belgium*

M23-4 A Nonparametric Bayesian Approach for PET Reconstruction
E. Barat, C. Comtat, T. Dautremer, T. Montagu, R. Trébossen
CEA, France

M23-5 PET Image Reconstruction with Shape Prior Using Multiphase Level Set Method
J. Liao, J. Qi, *University of California, Davis, USA*

M23-6 Potential Equivalance of Sinogram and Image-Domain Penalized-Likelihood Methods
P. J. La Riviere, P. Vargas, *The University of Chicago, USA*

M24 Small Animal Imaging and Imagers: MicroPET

Saturday, Nov. 3 13:30-15:30, Coral IV
Session Chairs: Arion Chatziioannou, *UCLA Crump Institute*
Robert Miyaoka, *University of Washington*

M24-1 The Feasibility of Performing Longitudinal Measurements in Mice Using Small Animal PET Imaging and a Microfluidic Blood Sampling Device
H.-M. Wu, A. S. Yu, H.-D. Lin, W. Ladno, S.-C. Huang, M. E. Phelps
University of California, Los Angeles, USA

M24-2 Performance Characterization of a High-Sensitivity Small-Animal PET Scanner
C.-M. Kao[1], Q. Xie[1,2], Y. Dong[3], L. Wan[2], C.-T. Chen[1]
[1]The University of Chicago, USA; [2]Huazhong University of Science and Technology, China; [3]Illinois Institute of Technology, USA

M24-3 Performance of the SmartPET Small Animal Positron Emission Tomography System
R. J. Cooper, A. J. Boston, H. C. Boston, J. R. Cresswell, A. N. Grint, A. R. Mather, P. J. Nolan, D. C. Oxley, D. P. Scraggs, *The University of Liverpool, UK*; I. Lazarus, *STFC Daresbury Laboratory, UK*; A. Berry, T. Beveridge, J. Gillam, C. J. Hall, R. A. Lewis, *Monash University, Australia*

M24-4 The Design and Performance of the 2nd-Generation RatCAP Awake Rat Brain PET System
P. Vaska[1], C. L. Woody[1], D. J. Schlyer[1], V. Radeka[1], P. O'Connor[1], J.-F. Pratte[1], S. Junnarkar[1], M. Purschke[1], S. Southekal[2], S. P. Stoll[1], W. Schiffer[1], D. Lee[2], J. Fried[1], W. Lenz[1], S. Krishnamoorthy[2], A. Kriplani[2], S. Maramraju[2], R. Lecomte[3], R. Fontaine[3]
[1]Brookhaven National Laboratory, USA; [2]Stony Brook University, USA; [3]University of Sherbrooke, Canada

M24-5 Performance Evaluation of the LabPET™ APD-Based Digital PET Scanner
M. Bergeron[1], J. Cadorette[1,2], M. D. Lepage[2], G. Robert[2], V. Selivanov[2], M.-A. Tétrault[1], N. Viscogliosi[1], R. Fontaine[1], T. Dumouchel[3], S. Thorn[3], J. DaSilva[3], R. A. deKemp[3], R. Lecomte[1]
[1]Université de Sherbrooke, Canada; [2]Gamma Medica-Ideas Inc, Canada; [3]University of Ottawa Heart Institute, Canada

M24-6 Quantification Issues in Imaging Data of MADPET-II Small Animal Scanner Using a System Matrix Based on Monte Carlo Techniques
I. Torres-Espallardo[1], V. C. Spanoudaki[1], M. Rafecas[2], S. I. Ziegler[1]
[1]Klinikum rechts der Isar, Nuklearmedizin, Technical University of Munich, Germany; [2]IFIC (CSIC- Universidad de Valencia), Spain

M24-7 A Micro-Insert System for microPET and Its Initial Performance
H. Wu, D. Pal, J. A. O'Sullivan, Y.-C. Tai
Washington University in St. Louis, USA

M24-8 Initial Studies of PET and SPECT Dual-Tracer Imaging with a MicroPET and an Inserted Collimator
Y. Shao[1], R. Yao[1], T. Ma[2], P. Manchiraju[1]
[1]State University of New York at Buffalo, US; [2]Tsinghua University, P.R. China

M25 Reconstruction: SPECT

Saturday, Nov. 3 13:30-15:30, Coral V
Session Chairs: Yong Du, *Johns Hopkins Medical Institutions*
Gengsheng Zeng, *University of Utah*

M25-1 3D-OSEM Reconstruction from Truncated Data in Pinhole SPECT
T. Zeniya[1], H. Watabe[1], A. Sohlberg[1], T. Inomata[1], H. Kudo[2], H. Iida[1]
[1]National Cardiovascular Center Research Institute, Japan; [2]University of Tsukuba, Japan

M25-2 Attenuation Correction in SPECT Images Reconstructed on Multi-Resolution Point Clouds
R. Boutchko[1], A. Sitek[2], G. T. Gullberg[1]
[1]Lawrence Berkeley National Lab, USA; [2]Brigham Hospital and Harvard Medical School, USA

M25-3 Correction for Photon Attenuation Without Transmission Measurements Using Compton Scatter Information in SPECT
A. Sitek, S. C. Moore, M. Foley Kijewski
Brigham and Women's Hospital and Harvard Medical School, USA

M25-4 Simultaneous 99mTc/201Tl/123I Triple-Isotope Cardiac SPECT Imaging
Y. Du, E. C. Frey, *Johns Hopkins Medical Institutions, USA*

M25-5 Fully 4-D Dynamic Cardiac SPECT Image Reconstruction Using Spatiotemporal B-Spline Voxelization
B. W. Reutter[1], G. T. Gullberg[1], R. Boutchko[1], K. Balakrishnan[1], E. H. Botvinick[2], R. H. Huesman[1]
[1]Lawrence Berkeley National Laboratory, USA; [2]University of California, USA

M25-6 Choosing Anatomical-Prior Strength for MAP SPECT Reconstruction to Maximize Lesion Detectability
A. Lehovich, H. C. Gifford, M. A. King
U. Mass Medical School, USA

M25-7 Impact of Mismatched Detector-Blur Models on Ga-67 SPECT Tumor Detection
H. C. Gifford, M. A. King
University Massachusetts Medical School, USA

M25-8 Quantitative SPECT Imaging Methods on Tumor Activity Quantification: a Monte Carlo Simulation Study
B. He, Y. Du, E. C. Frey
Johns Hopkins Medical Institution, USA

M26 MIC POSTER IV

Saturday, Nov. 3 16:00-18:00, South pacific I-V and Poster Tent

Session Chairs: Juan José Vaquero, *Unidad de Medicina y Cirugía Experimental, Hospital GU Gregorio Marañón*
Arkadiusz Sitek, *Brigham and Women's Hospital and Harvard Medical School*

M26-4 Real Time Digital Implementation of the High-Yield-Pileup-Event-Recover Method
J. Liu, H. Li, Y. Wang, S. Kim, Y. Zhang, S. Liu, H. Baghaei, R. Ramirez, W.-H. Wong
University of Texas MD Anderson Cancer Center, USA

M26-8 Monte Carlo Simulation of Light Transport Process in Detector Block for PET Camera
S. Liu, J. Liu, H. Li, Y. Zhang, R. Ramirez, S. Kim, Y. Wang, H. Baghaei, W.-H. Wong
The University of Texas, M. D. Anderson Cancer Center, USA

M26-12 PET Gantry Simulation: Concepts and Methods for Inexpensively Reproducing the PET Data Acquisition Environment Using a Single PC with the PDT Card
W. F. Jones, E. Breeding, J. H. Reed, J. Everman, M. E. Casey, C. Olarte, S. Tolbert
Siemens Medical Solutions, USA

M26-16 PET Imaging Performance of the PEM/PET Breast Scanner and Biopsy Device: Initial Assessment
R. R. Raylman[1], S. Majewski[2], M. F. Smith[3], B. Kross[2], V. Popov[2], J. Proffitt[2], W. Hammond[2], J. McKission[2], A. G. Weisenberger[2], P. Kinahan[4], K. Champley[4]
[1]West Virginia University, USA; [2]Thomas Jefferson National Accelerator Facility, USA; [3]University of Maryland, USA; [4]University of Washington, USA

M26-20 Use of Anatomical Priors in the Segmentation of PET Lung Tumor Images
J. Kim[1], L. Wen[1,2], S. Eberl[1,2], R. Fulton[1], D. Feng[1,3]
[1]University of Sydney, Australia; [2]Royal Prince Alfred Hospital (RPAH), Australia; [3]Hong Kong Polytechnic University, Hong Kong

M26-24 Impact of Crystal Quality, Geometry and Surface Finish for 3D Impact Position Measurements in Gamma Ray Detection Systems
A. Ros[1], C. W. Lerche[2], A. Munar[3], F. Sánchez[1], A. Sebastiá[2], J. M. Benlloch[1]
[1]Instituto de Fisica Corpuscular (CSIC-UV), Apdo. 22085,46071, Valencia, Spain, Spain; [2]Universidad Politecnica de Valencia, Spain; [3]Universidad Jaime I, Spain

M26-28 Development of Anatomically Realistic PET and PET/CT Phantoms with Rapid Prototyping Technology
M. A. Miller, G. D. Hutchins
Indiana University School of Medicine, US

M26-32 Quantifying the Effects of Defective Block Detectors in a 3D Whole Body PET Cameras
M. Samiee, A. L. Goertzen, *University of Manitoba, Canada*

M26-36 Continuously Sampled Digital Pulse Processing for Inveon Small Animal PET Scanner
A. R. McFarland, D. F. Newport, B. Atkins, S. B. Siegel, R. Mintzer, M. Lenox
Siemens Molecular Imaging, USA

M26-40 Monte Carlo Optimizing of Non-Pixelated PET Scintillator Detectors Using a Neural Network Positioning Scheme
P. Bruyndonckx, C. Lemaître, Z. Li, *Vrije Universiteit Brussel, Belgium*; J. M. Pérez, P. Rato, *CIEMAT, Spain*; D. Schaart, M. Maas, D. J. Vanderlaan, S. Tavernier, *delft University of Technology, the Netherlands*

M26-44 Potential Advantages of Digitally Sampling Scintillation Pulses in Timing Determination in PET
Q. Xie[1,2], C.-M. Kao[1], N. Li[2], C. Zhu[2], C.-T. Chen[1]
[1]The University of Chicago, USA; [2]Huazhong University of Science and Technology, China

M26-48 Expanding SimSET to Include Block Detectors: Performance with Pseudo-Blocks and a True Block Model
R. E. Schmitz, S. B. Gillispie, R. L. Harrison, L. R. MacDonald, P. E. Kinahan, T. K. Lewellen
University of Washington, USA

M26-52 High-Sensitivity SPECT Imaging Using Large Collimator Holes and Geometric Blurring Compensation
B. Zhang, *Philips Medical Systems, USA*; G. L. Zeng, *University of Utah, USA*

M26-56 Determination of Geometrical Parameters for Slit-Slat SPECT Imaging on MicroPET
T. Ma[1,2], R. Yao[1], Y. Shao[1], Z. Rong[2]
[1]Department of Nuclear Medicine, State University of New York at Buffalo, U.S.; [2]Tsinghua University, P.R.China

M26-60 Motion Capture of Chest and Abdominal Markers Using a Flexible Multi-Camera Motion-Tracking System for Correcting Motion-Induced Artifacts in Cardiac SPECT
J. E. McNamara[1], B. Feng[1], K. Johnson[1], S. Gu[2], M. A. Gennert[2], M. A. King[1]
[1]University of Massachusetts Medical School, US; [2]Worcester Polytechnic Institute, US

M26-64 Small Animal Imaging with Attenuation Correction Using Clinical SPECT/CT Scanners
R. Boutchko, K. Balakrishnan, B. Reutter, G. Gullberg, A. Sauve
Lawrence Berkeley National Lab, USA

M26-68 The Potential of the Radiosensitive Beta-MicroProbe to Monitor in Vivo the [18F]MPPF Binding in the Mouse Hippocampus
A. Desbree[1], M. Verdurand[2], J. Godart[3], A. Dubois[4], L. Magnier[5], R. Mastrippolito[3], F. Pain[3], L. Pinot[3], T. Delzescaux[4], H. Gurden[3], L. Zimmer[2], P. Laniece[3]
[1]Institut de Radioprotection et de Surete Nucleaire, France; [2]Laboratoire de Neuropharmacologie et CERMEP Biomedical Cyclotron, France; [3]Laboratoire d'Imagerie et Modelisation en Neurobiologie et Cancerologie, France; [4]Laboratoire des Maladies Neurodegeneratives, France; [5]ANIMAGE, France

M26-72 Development of an Ultra High Spatial Resolution Small Animal PET Scanner Using CdTe Semiconductor Detectors
N. Tanizaki, A. Taneda, D. Amano, T. Yamaguchi, M. Yamada, T. Yano, T. Monzen, *Sumitomo Heavy Industries,ltd., Japan*; K. Ishii, H. Yamazaki, S. Matsuyama, Y. Kikuchi, *Graduate School of Engineering, Tohoku University, Japan*

M26-76 Four-layer DOI Detector with a Relative Offset in Animal PET System
M. Ito[1], S. J. Hong[2], J. S. Lee[3], B. Hong[1], K. S. Lee[1], S. J. Lee[4], J. T. Rhee[5], K.-S. Sim[1]
[1]Korea University, S. Korea; [2]Gachon University of Medicine and Science, S. Korea; [3]Seoul National University College of Medicine, S. Korea; [4]Seonam University, S. Korea; [5]Konkuk University, S. Korea

M26-80 Design Study for the ClearPET/XPAD Small Animal PET/CT Scanner
M. Khodaverdi, S. Nicol, J. Loess, F. Cassol-Brunner, S. Karkar, C. Morel
Centre de Physique des Particules de Marseille, France

M26-84 Semi-Automatic Elastic Registration Applied to a Beta-Autoradiography Brain Atlas
J. Cabello, K. Wells, A. Bailey, I. Kitchen
University of Surrey, United Kingdom

M26-88 Improving the Intrinsic Spatial Resolution Performance of the Continuous Miniature Crystal Element (cMICE) Detector
T. Ling, R. S. Miyaoka, T. K. Lewellen
University of Washington, USA

M26-92 The SiBi Project: a Low-Cost Benchtop microCT/ microPET System
H. Alva, M. E. Brandan, B. Hernandez, A. Martinez-Davalos, E. Moreno, T. Murrieta, C. Ruiz-Trejo, M. Rodriguez-Villafuerte
Instituto de Fisica, UNAM, MEXICO

M26-96 Calibration Procedure for a Continuous Miniature Crystal Element (cMICE) Detector
R. S. Miyaoka, T. Ling, C. Olson, T. K. Lewellen
University of Washington, USA

M26-100 Anatomical Priors to Improve Image Quality in Small-Animal SPECT/CT
R. G. Wells, *University of Ottawa Heart Institute, Canada*

M26-104 Evaluation of a MR-Compatible CZT Detector
P. Després[1], E. W. Izaguirre[2], S. Liu[2], L. J. Cirignano[3], H. Kim[3], M. F. Wendland[2], K. S. Shah[3], B. H. Hasegawa[2]
[1]Centre Hospitalier de l'Université de Montréal, Canada; [2]University of California, San Francisco, USA; [3]Radiation Monitoring Devices, Inc., USA

M26-108 Multimodal 3D Sono/PET Imaging of a Mouse
N. M. Lang[1], S. Hold[2], M. Mienkina[2], G. Schmitz[2], J. Stypmann[1], S. Hermann[1], K. P. Schäfers[1]
[1]University Hospital Münster, Germany; [2]Ruhr Universität Bochum, Germany

M26-112 Alternative Methods for Attenuation Correction for PET Images in MR-PET Scanners
E. Rota Kops, H. R. Herzog
Research Centre Juelich, Germany

M26-116 Difference Imaging of Inter- and Intra-Ictal SPECT Images for the Localization of Seizure Onset in Epilepsy
D. A. Hahn, V. Daum, J. Hornegger, W. Bautz, T. Kuwert
University of Erlangen-Nuremberg, Germany

M26-120 Use of Single Photon Detector Arrays in Combined PET/MR: Investigation of a New Detector Concept for Clinical Applications
V. C. Spanoudaki[1], A. B. Mann[2], I. Konorov[2], S. Paul[2], I. Torres-Espallardo[1], S. I. Ziegler[1]
[1]Klinikum Rechts Der Isar, Tu Muenchen, Germany; [2]E18 Chair for Experimental Physics, Tu Muenchen, Germany

M26-124 Investigation of Respiratory Motion Gating with Geometric Sensitivity in Allegro PET
J. He[1,2], G. J.O'keefe[2], S. J. Gong[2], T. Saunder[2], G. Jones[2], M. Geso[1], A. M. Scott[2]
[1]RMIT University, Australia; [2]Austin Hospital, Australia

M26-128 Nerve Fiber Mapping of the Human Visual Cortex Using Polarized Light Imaging (PLI)
M. Axer[1], H. Axer[2], D. Gräßel[2], K. Amunts[1,3], K. Zilles[1,4], U. Pietrzyk[1,5]
[1]Research Centre, Germany; [2]Friedrich-Schiller University, Germany; [3]RWTH, Germany; [4]Heinrich-Heine University, Germany; [5]University, Germany

M26-132 Image Guided Radiotherapy Using Active Pixel Technology
J. P. Osmond[1], P. M. Evans[2], E. J. Harris[2], A. D. Holland[1], R. J. Ott[2]
[1]Brunel University, United Kingdom; [2]Institute of Cancer Research, United Kingdom

M26-136 Optical and Electrical Crosstalk in PIN Photodiode Array for Medical Imaging Applications
I. Goushcha, B. Tabbert, A. O. Goushcha, *SEMICOA, USA*

M26-140 Heavy Ion CT System Based on the Measurement of Residual Range Distribution: Improvement of the Optical Detector System
H. Muraishi[1], K. Nishimura[2], S. Abe[2], H. Satoh[2], Y. Takahashi[2], H. Hara[2], S. Hara[2], R. Kawai[1], K. Yokoyama[3], N. Yasuda[4], T. Tomida[5], Y. Ohno[6], T. Kanai[6]
[1]Kitasato University, Japan; [2]Ibaraki Prefectural University of Health Sciences, Japan; [3]National Cancer Center East, Japan; [4]Hirosaki University, Japan; [5]Shizuoka Cancer Center, Japan; [6]National Institute of Radiological Sciences, Japan

M26-144 Structure and Scintillation Properties of CsI(Tl) and ZnSe(Te) Vacuum Deposited Layers.
A. Fedorov, K. Katrunov, A. Lalayants, A. Lebedinsky, N. Shiran, V. Tarasov, S. Tretyak
Institute for Scintillation Materials NAS of Ukraine, Ukraine

M26-148 Feasibility Study of a Real-Time Tumor-Tracking System for Radiotherapy Based on Annihilation Gamma Rays Detection from Radiopharmaceutical Concentrated in a Tumor
J. H. Kaneko[1], E. Takada[2], F. Fujita[1], Y. Hara[1], T. Yamaguchi[1], S. Kawamura[1], N. Kubo[1], M. Ishikawa[1], A. Homma[1], M. Furusaka[1], H. Shirato[1]
[1]Hokkaido University, Japan; [2]Toyama National College of Technology, Japan

M26-152 Maximum-Likelihood Estimation of 3D Event Position in Monolithic Scintillation Crystals I: Theory and Simulation of Calibration Methods
W. C. J. Hunter, S. K. Moore, L. R. Furenlid, H. H. Barrett
University of Arizona, USA

M26-156 Orthogonal Strip HPGe Planar SmartPET Detectors in PET and SPECT Configurations
H. C. Boston, A. J. Boston, R. J. Cooper, J. R. Cresswell, A. N. Grint, A. R. Mather, P. J. Nolan, D. P. Scraggs, *University of Liverpool, UK*; I. Lazarus, *STFC Daresbury, UK*; A. Berry, T. Beveridge, J. Gillam, C. J. Hall, R. A. Lewis, *Monash University, Australia*

M26-160 Improvement of the Imaging Resolution for a Compton Camera by Determination of the Interaction Depth in a 25-Segmented Germanium Detector
H. S. Jung, J. H. Lee, Y. K. Kwon, C. S. Lee
Chung-Ang university, South Korea

M26-164 Developments on Imaging Germanium Hybrid Detectors
P. Kostamo[1], H. Sipilä[2], S. Nenonen[2], H. Lipsanen[1], C. Fröjdh[3]
[1]Helsinki University of Technology, Finland; [2]Oxford Instruments Analytical Oy, Finland; [3]Mitthögskolan, Sweden

M26-168 Automatic Exposure Control (AEC) for Dual Energy Computed Tomography (DECT)
P. Stenner, M. Kachelriess
Institute of Medical Physics (IMP), Germany

M26-172 Development of a Multi-Energy CT for Small Animals: Characterization of the Quasi-Monochromatic X-Ray Source and Preliminary Results in Triple-Energy Imaging
N. Lanconelli[1,2], S. Masetti[1], M. Fiaschetti[1], L. Roma[3], P. L. Rossi[1], G. Baldazzi[1,2]
[1]University of Bologna, Italy; [2]INFN of Bologna, Italy; [3]S. Orsola-Malpighi University Hospital, Italy

M26-176 X-Ray CT Truncation Artifact Removal Using Water-Equivalent Thicknesses Derived from Truncated Projection Data
J. S. Maltz, S. Bose, H. P. Shukla, A. R. Bani-Hashemi
Siemens Medical Solutions, USA, Inc., USA

M26-180 Achieving Uniform Noise Profiles in Direct Fan-Beam CT Reconstruction Through Bowtie Filter Design
A. J. Wunderlich, F. Noo, *University of Utah, USA*

M26-184 Feasibility of Integrally Structured Scintillator/ Photodiode Array Detectors for Digital Radiography
C. H. Lim, S. M. Youn, H. K. Kim
Pusan National University, South Korea

M26-188 A Novel Approach to the Visualization of Four-Dimensional Cerebral Angiography with Cine Angiography Data Measured at Several Views.
Y. Nyui[1,2], K. Ogawa[2,3], E. Kunieda[3]
[1]Faculty of Health Sciences, Tokyo Metropolitan University, Japan; [2]Faculty of Engineering, Hosei University, Japan; [3]School of Medicine, Keio University, Japan

M26-192 Comparison of the Performance of GaAs X-Ray Pixel Detectors
M. Fiederle, A. Zwerger, A. Fauler, D. Greiffenberg
Freiburger Materialforschungszentrum, Germany

M26-196 Segmentation Based Ultra Low Dose CT Attenuation Maps for Emission Computed Tomography in the Presence of High Density Objects
H. D. Kadhem[1], R. Abeygunasekera[1], J. Cabello[1], K. Wells[1], M. Guy[2], E. Lewis[1]
[1]University of Surrey, UK; [2]Royal Surrey County Hospital, UK

M26-200 Accuracy of Various 3D-OSEM Versus 3D-FBP Reconstructions of HRRT PET Studies
F. H. P. van Velden, R. W. Kloet, B. N. M. van Berckel, A. A. Lammertsma, R. Boellaard
VU University Medical Center, The Netherlands

M26-204 A Statistical Approach to Determine the Optimal Iteration Number in Iterative Reconstruction Methods
M. Conti, M. E. Casey, *Siemens, USA*

M26-208 Influence of the Time of Flight Information on the Reconstruction of In-Beam PET Data
G. Shakirin[1], P. Crespo[1], H. Braess[2], W. Enghardt[1,3]
[1]Forschungszentrum Dresden-Rossendorf, Germany; [2]Siemens Medical Solutions, Germany; [3]Technische Universitaet Dresden, Germany

M26-212 Reconstruction of 4-Layer DOI Detector Equipped C-Shaped PEM via List-Mode Iterative Algorithm
Y. Yamada, K. Kitamura, N. Hasizume, Y. Yamakawa, Y. Kumazawa
Shimadzu Corporation, Japan

M26-216 Fully 4D Reconstruction Applied to Respiratory Gated PET Acquisitions
N. Grotus[1,2,3], A. J. Reader[4], R. Brinks[5], P. Maniawski[3], V. Servois[1], J.-C. Rosenwald[1], P. Giraud[1], I. Buvat[2]
[1]Institut Curie, France; [2]INSERM, France; [3]Philips Medical Systems, United States; [4]University of Manchester, United Kingdom; [5]Philips Research Europe, Germany

M26-220 Analysis of the Dependence of PET/CT Quantification on Iterative Reconstruction Parameters
S. C. Kappadath, T. Pan, W. D. Erwin, O. Mawlawi
University of Texas M D Anderson Cancer Center, USA

M26-224 Bayesian Reconstructions with PDE Image Model for Emission Tomography
W. Zhentian, Z. Li, Z. Ziran, X. Yuxiang, K. Kejun
Tsinghua Univercity, China

M26-228 An LOR-Based Systematic and Fully-3D PET Image Reconstruction Using a Blob-Basis Function
Z. Hu[1], W. Wang[1], E. E. Gualtieri[1], Y. L. Hsieh[1], J. S. Karp[2], S. Matej[2], M. J. Parma[1], C. H. Tung[1], E. S. Walsh[1], M. Werner[2], D. Gagnon[1]
[1]Philips Medical Systems, USA; [2]University of Pennsylvania, USA

M26-232 Compton Reconstruction in a Liquid Xenon Micro-PET Detector
D. Bryman[1], L. Kurchaninov[2], P. Lu[1], F. Retiere[2], A. Sher[2], V. Sossi[1]
[1]UBC, Canada; [2]TRIUMF, Canada

M26-236 Estimation of Detector Response Function for PET from Point Source Measurements: Effect of Point Source Configuration
M. S. Tohme, J. Qi, *University of California, Davis, USA*

M26-240 Analysis of Organ Uniformity in Low Count Density Penalized Likelihood PET Images
E. Asma, R. M. Manjeshwar
General Electric Global Research, USA

M26-244 The Signature of an Inaccurate Centre-of-Rotation in SPM Analysis of Multi-Head Gammacamera Brain SPECT and a Method of Correction
L. R. Barnden, *The Queen Elizabeth Hospital, Australia*

M26-248 Application of Neural Nets to the Reconstruction of the Interaction Sequence in Compton Imagers
A. Zoglauer, S. E. Boggs
University of California at Berkeley, USA

M26-252 Three-Dimensional Cardiac Motion Estimation: Study of the Cost Functions and Initial Estimates
J. Tang, N. F. Osman, B. M. W. Tsui
Johns Hopkins University, USA

M26-256 Half-Cone-Beam Data Sufficiency in Triple-Camera SPECT
R. Ter-Antonyan[1], R. J. Jaszczak[1,2], J. E. Bowsher[1], K. L. Greer[1], S. D. Metzler[3]
[1]Duke University Medical Center, USA; [2]Duke University, USA; [3]University of Pennsylvania, USA

M26-260 Non-Uniform Resolution Compensation in Tomographic Image Reconstruction Methods Using Median Based Priors
M. Ahmad, A. Todd-Pokropek, *University College London, UK*

M26-264 Study of an Iterative Super-Resolution Algorithm and Its Feasibility in High-Resolution Animal Imaging with Low-Resolution SPECT Cameras
F. J. Caramelo, G. Almeida, L. Mendes, N. C. Ferreira
IBILI - FMUC, Portugal

M26-268 Rawdata-Based Dual Energy CT (DECT) from Inconsistent Scans
M. Knaup, P. Stenner, M. Kachelriess
Institute of Medical Physics (IMP), Germany

M26-272 Performance of Fast Hierarchical Backprojection in Micro-CT Reconstruction
J. Brokish[1], Y. Bresler[1,2]
[1]InstaRecon, Inc., USA; [2]University of Illinois at Urbana-Champaign, USA

M26-276 TV Based Image Reconstruction-Reprojection Helical Cone-Beam Reconstruction Algorithm for High Pitch Helical Scan
J. Tang, L. Zhang, Z. Chen, Y. Xing, J. Cheng
Tsinghua University, China

M26-280 Fast GPU-Based CT Reconstruction using the Common Unified Device Architecture (CUDA)
H. Scherl[1], B. Keck[1], M. Kowarschik[2], J. Hornegger[1]
[1]University of Erlangen-Nuremberg, Germany; [2]Siemens Medical Solutions, Germany

M26-284 Methods of Pre-Reconstruction Decomposition and Calibration in Dual Energy CT
M. D. Silver, Y. Zou
Toshiba Medical Research Institute USA, USA

M26-288 Comparative Evaluation of Three Analytical Methods for Helical Cone-Beam Tomography
H. Schöndube[1,2], K. Stierstorfer[2], F. Dennerlein[1], F. Noo[1]
[1]University of Utah, USA; [2]Siemens Medical Solutions, Germany

M26-292 Comparative Assessment of ESSE and DEW Scatter Compensation Methods for Myocardial Perfusion SPECT
D. Devakumar, *Christian Medical College, India*; X. He, E. C. Frey, *Johns Hopkins University, USA*

M26-296 A Global and a Segmented Plane Scatter Calibration: Improving the Quantitative Accuracy of Frames with High Random Fraction and/or Low Number of Counts in Dynamic High Resolution PET Brain Imaging
J.-C. (. Cheng[1], A. Rahmim[2], S. Blinder[3], V. Sossi[1]
[1]University of British Columbia, Canada; [2]Johns Hopkins University School of Medicine, USA; [3]Pacific Parkinson's Research Centre, Canada

M26-300 Single Input Multiple Output (SIMO) Optimization for Input Function Estimation: a Simulation Study
Y. Su, M. J. Welch, K. I. Shoghi
Washington University School of Medicine, USA

M26-304 Accuracy of CT-Based Attenuation Correction in Bone Imaging with PET/CT
M. Abella[1], D. A. Mankoff[2], J. J. Vaquero[1], M. Desco[1], P. E. Kinahan[2]
[1]Hospital General Universitario Gregorio Marañón, Spain; [2]University of Washington, USA

M26-308 Parametric Image of Regional Bone Metabolism Using F-18 PET Using a Multiple Linear Regression Analysis Method
S. J. Kim, J. S. Lee, W. W. Lee, Y. K. Kim, S.-J. Jang, K. R. Son, H.-C. Kim, J. W. Chung, D. S. Lee
Seoul National University College of Medicine, South Korea

M26-312 Estimation Accuracy of Ejection Fraction in Gated Cardiac SPECT/CT Imaging Using Iterative Reconstruction with 3D Resolution Recovery in Rapid Acquisition Protocols
J. Zeintl[1], A. H. Vija[2], X. Ding[2], H. Hofmann[1], E. G. Hawman[2], J. Hornegger[1]
[1]University of Erlangen, Germany; [2]Siemens Medical Solutions USA, Inc., USA

M26-316 An Investigation of Factors Affecting Quantitative Accuracy in Small Animal Pinhole SPECT Using Monte Carlo Simulation and Experimental Methods
C. L. Chen[1], Y. Wang[2], J. J. S. Lee[1], B. M. W. Tsui[2]
[1]Yang-Maing University, Taiwan; [2]Johns Hopkins Medical Institutions, United States

M26-320 Evaluation of NanoSPECT Quantification as a Function of Acquisition and Reconstruction Parameters
B. Gershman[1], J. Hoppin[2], C. Lackas[2], L. Sklar[1], J. Norenberg[1], N. Schramm[3]
[1]University of New Mexico, USA; [2]Bioscan, Inc., USA; [3]Research Center Julich, Germany

M26-324 Effects of LSO Detector Intrinsic Radioactivity on SPECT Imaging
R. Yao[1], T. Ma[1,2], Y. Shao[1]
[1]State University of New York at Buffalo, USA; [2]Tsinghua University, China

M26-328 Impact of Variability in Respiration When Estimating Respiratory Motion of the Heart by Registering 3D Reconstructions of Amplitude-Gated Bins
J. Dey, K. L. Johnson, P. H. Pretorius, J. Mitra, M. A. King
University of Massachusetts Medical School, USA

M26-332 Omission of Serial Arterial Blood Sampling for Quantitative Analysis of Monkey PET Data Using Independent Component Analysis-Based Method
M. Naganawa[1,2], H. Tsukada[3], H. Ohba[3], K. Ishiwata[4], C. Seki[1], M. Shidahara[1], Y. Kimura[1]
[1]*Molecular Imaging Center, National Institute of Radiological Sciences, Japan;* [2]*Japan Society for the Promotion of Science, Japan;* [3]*Central Research Laboratory, Japan;* [4]*Positron Medical Center, Japan*

M26-336 Benchmarking of a Motion Sensing System for Medical Imaging and Radiotherapy
P. J. Barnes[1], C. Baldock[1], S. Meikle[1], R. Fulton[1,2]
[1]*University of Sydney, Australia;* [2]*Royal Prince Alfred Hospital, Australia*

M26-340 Effect of Reconstruction Algorithms on the Dynamics and Modeling Parameters of 18F-Galacto-RGD in Mice
A. W. Weber[1], R. Haubner[2], B. Wolf[3], S. I. Ziegler[1]
[1]*Nuklearmedizinische Klinik, Klinikum rechts der Isar, TU München, Germany;* [2]*Universitätsklinik für Nuklearmedizin, Medizinische Klinik Innsbruck, Austria;* [3]*Heinz-Nixdorf Lehrstuhl für Medizinische Elektronik, TU München, Germany*

M26-344 Development of Digital Phantoms for Evaluation of Fundamental Performance on SPECT
N. Motomura, *Toshiba Medical Systems, Japan*; K. Ogawa, *Hosei University, Japan*; M. Shidahara, *National Institute of Radiological Sciences, Japan*; H. Onishi, *Prefectual university of Hiroshima, Japan*

M26-348 Introducing a Novel Extended NEMA-Phantom for Clinically Relevant Imaging Analysis of PET-Scanners
S. A. Larsson[1], R. Odh[1], P. Schnell[1], J. Inácio[2], C. Jonsson[1]
[1]*Nuclear Medicine, Karolinska University Hospital, Sweden;* [2]*Karolinska University Hospital, Sweden*

M26-352 System Evaluation for In Vivo Imaging of Amyloid Beta Plaques in a Mouse Brain Using Statistical Decision Theory
S. Shokouhi, W. Pham, T. E. Peterson
Vanderbilt University Institute of Imaging Science, USA

M26-356 Transformable Computational Phantom for Optimization of X-Ray CT Imaging Protocols
W. P. Segars, J. Sandberg, X. Li, S. Ehsan, R. Jones, D. Frush, C. Hollingsworth, *Duke University, USA*; B. M. W. Tsui, *Johns Hopkins, USA*

M26-360 Generation and Validation of 90Y-Bremsstrahlung Spectra for Usage in MC Simulations of Reconstruction Kernels
D. Minarik, C. Östlund, E. Larsson, K. Sjögreen-Gleisner, M. Ljungberg
Lund University, Sweden

M26-364 Comparative Evaluation of Three MicroPET Series Systems Using Monte Carlo Simulation: Sensitivity and Scatter Fraction
J. S. Kim[1], J. S. Lee[1], M. J. Park[1], S. J. Hong[2], D. S. Lee[1]
[1]*Seoul National University College of Medicine, Korea;* [2]*Gachon University of Medicine and Science, Korea*

M26-368 A New Approach to Image Reconstruction in TOFPET
N. N. Mondal, *Saha Institute of Nuclear Physics, India*

M26-372 Effect of Respiratory Motion on Abdominal C-Arm CT Angiography Using the 4D NCAT Phantom
G. S. K. Fung, *The University of Hong Kong, Hong Kong*; W. P. Segars, *Duke University, US*; J.-F. H. Geschwind, B. M. W. Tsui, K. Taguchi, *Johns Hopkins University, USA*

M26-376 Effect of Measurement Uncertainty on Region of Interest Based and Parametric Binding Potential Estimates for the High Resolution Research Tomograph (HRRT)
V. Sossi[1], S. Blinder[1], A. Rahmim[2], K. Dinelle[1], K. J.-C. Cheng[1], S. Lidstone[1]
[1]*University of British Columbia, Canada;* [2]*Johns Hopkins University, U.S.A.*

M26-380 Least-Square Pinhole SPECT Calibration Using a Forward Projector Modeling Misalignment
C. Wietholt[1], C.-T. Chen[1,2], G. Fu[3], L.-J. Meng[3]
[1]*The University of Chicago, U.S.A.;* [2]*National Health Research Institutes, Taiwan;* [3]*The University of Illinois at Urbana-Champaign, U.S.A.*

M26-384 Fast Analytical Modeling of Compton Scatter Using Point Clouds and Graphics Processing Unit (GPU)
A. Sitek, G. El Fakhri, J. Ouyang, *Brigham and Women's Hospital and Harvard Medical School, USA*; J. Maltz, *Siemens Medical Solutions, USA*

M26-388 Simulating Lung Tumor Motion for Dynamic Tumor-Tracking Irradiation
M. Nakao, A. Kawashima, K. Minato, *Nara Institute of Science and Technology, Japan*; M. Kokubo, *Institute of Biomedical Research and Innovation, Japan*

M26-392 Robust Non-Rigid Medical Image Registration Using Optical Flow and Multi-Level Free Form Deformation with Local Refined Control Points
M. Wang, B. Qin, *Shanghai Jiao Tong University, China*

M26-396 MR-Based Renography as a Replacement for Radionuclide Diagnostic Renography Studies
D. Rodriguez Gutierrez[1], O. Diaz Montesdeoca[2], A. Moran Santana[2], K. Wells[1], J. Cabello[1], I. A. Mendichovszky[3], I. Gordon[3]
[1]*University of Surrey, UK;* [2]*Universidad de Las Palmas de Gran Canaria, Spain;* [3]*UCL, UK*

M26-400 Virtual Colonoscopy Screening with Ultra Low-Dose CT: a Simulation Study
J. Wang[1], S. Wang[1], L. Li[2], H. Lu[3], Z. Liang[1]
[1]*State University of New York at Stony Brook, USA;* [2]*City University of New York/College of Staten Island, USA;* [3]*The Fourth Military Medical University, China*

M26-404 New Radiochromic Gel for 3D Dosimetry Based on Turnbull Blue: Characteristics and Optical Computed Tomography Evaluation
J. Solc, V. Spevacek
Czech Technical University, Czech Republic

SPECIAL FOCUS WORKSHOPS

New Developments in the Micro-Pattern Gaseouos Detector

The recent results in the field of Micro-Pattern Gas Detectors – used for the fast tracking at the LHC and high precision tracking at the ILC, pixel readout of Micro-pattern Gas Detectors, astrophysics research and medical applications, optical readout of MPGD, with a focus on design principles, performance, reliability and limitations - will be discussed. The format of the workshop consists of invited speakers and presentations selected from submitted abstracts.

The Topics of the Workshop will include:

- High Precision Tracking for TPC
- High Rate Tracking, Triggering and Aging Studies
- Gaseous Photomultipliers
- New Manufacturing Technologies for MPGD
- Pixel Readout of Micro-Pattern Gas Detectors
- Astrophysics, Neutrino Physics and Medical Imaging
- Optical Readout of Micro-Pattern Gas Detectors
- System Aspects: Detector and Electronic Integration

Paul Colas
SACLAY, France

Leszek Ropelewski
CERN, Switzerland

Maxim Titov
SACLAY, France

MPGD Workshop Co-Chairs

MP1 Time Projection Chamber Readout

Sunday, Oct. 28 09:00-10:35, Coral V
Session Chair: Paul Colas, *CEA/DAPNIA*

MP1-1: Charge Dispersion in Micro Pattern Gas Detectors with a Resistive Anode
M. S. Dixit, *Carleton University & TRIUMF, Canada*

MP1-2: Cosmic Ray Tests of a GEM-Based TPC Operated in Mixtures of Ar-CF4-Isobutane
M. Kobayashi, *KEK (High Energy Accelerator Research Organization), Japan*
On behalf of part of the ILC-TPC Collaboration

MP1-3: Study of Gating with GEM for ILC TPC
A. Ishikawa, A. Sugiyama, T. Higashi, A. Aoza, H. Tsuji, *Saga University, Japan*; K. Fujii, M. Kobayashi, T. Matsuda, H. Kuroiwa, R. Yonamine, *KEK, Japan*; O. Nitoh, H. Ohta, K. Sakai, H. Bito, *Tokyo University of Argiculture and Technology, Japan*; T. Watanabe, *Kogakuin University, Japan*; Y. Kato, K. Hiramatsu, T. Yazu, *Kinki University, Japan*; T. Takahashi, *Hiroshima University, Japan*

MP1-4: Single Electron Response and Energy Resolution of a Micromegas Detector
V. C. M. Lepeltier, *LAL Laboratoire de l'Accélérateur Linéaire d'Orsay, France*; B. Genolini, J. Pouthas, T. Zerguerras, *IPNO Institut de Physique Nucléaire, France*

MP2 Gaseous Photon Detectors and Neutron Detector Applications

Sunday, Oct. 28 11:00-12:40, Coral V
Session Chair: Vladimir Peskov, *CERN*

MP2-1: Global-Local-Grouping Multi-Grid-Type MSGC for Neutron Applications
Y. Takada, H. Takahashi, K. Fujita, H. Niko, *University of Tokyo, Japan*; M. Furusaka, *Hokkaido University, Japan*; H. Toyokawa, *Japan Synchrotron Radiation Research Institute, Japan*; K. Ishitoya, N. Hikida, *Toshiba Electron Tubes and Devices, Co., Ltd, Japan*; Y. Yarimizu, K. Tsuji, M. Hirota, M. Nikaido, *Toshiba Corporation, Japan*

MP2-2: Development of Neutron Gaseous Detector with GEM
S. Uno, M. Sekimoto, T. Murakami, M. Tanaka, N. Ujiie, *KEK, Japan*; S. Nakagawa, E. Nakano, *Osaka City University, Japan*; A. Sugiyama, *Saga University, Japan*; F. Sugiyama, *Tokyo University of Science, Japan*; T. Uchida, *University of Tokyo, Japan*

MP2-3: Micromegas for Neutron Detection
S. Andriamonje, *CEA-Saclay DSM/DAPNIA/SPHN, France*
On behalf of the CEA Saclay Micromegas group

MP2-4: Photodetection with a Micromegas Device
F. Jeanneau, *CEA Saclay, France*; P. Bascle, *Photonis, France*; P. Gorodetzki, T. Patzak, P. Salin, *UP7, France*

MP2-5: The Photon-Assisted Cascaded Electron Multiplier
J. F. C. A. Veloso, *University of Aveiro, Portugal*; F. D. Amaro, J. M. F. dos Santos, *University of Coimbra, Portugal*; A. Breskin, A. Lyashenko, R. Chechik, *The Weizmann Institute of Science, Israel*

MP3 Pixel Readout for Micro-Pattern Gas Detectors

Sunday, Oct. 28 13:45-15:05, Coral V
Session Chair: Craig Woody, *Brookhaven National Lab*

MP3-1: Ultra High Resolution Imaging of Single and Multiple Coincidence Photons
R. Bellazzini, *INFN Pisa, Italy*; A. Tremsin, *SSL Berkeley, USA*

MP3-2: Measurements and Modeling of the Amplification and Ion Backflow Properties of Integrated Micromegas Detectors
M. Chefdeville, H. van de Graaf, J. Timmermans, J. Visschers, *NIKHEF, The Netherlands*; V. Blanco Carballo, J. Schmitz, *University of Twente / MESA+, The Netherlands*; D. Attié, P. Colas, I. Giomataris, *CEA, France*

MP3-3: Results from MPGDs with a Protected TimePix or Medipix-2 Pixel Sensor as Active Anode
H. van der Graaf, *Nikhef, The Netherlands*
On behalf of the GridPix group

MP3-4: Performance of a Small TPC Prototype Readout with the TimePix
A. Bamberger[1], K. Desch[2], U. Renz[1], M. Titov[3], N. Vlasov[1], P. Wienemann[2], A. Zwerger[1]
[1]Freiburg University, Germany; [2]Bonn University, Germany; [3]DAPNIA, France

MP4 New MPGD Techniques: Production Processes

Sunday, Oct. 28 15:30-17:30, Coral V
Session Chair: Leszek Ropelewski, *CERN*

MP4-1: Development of Micro Pixel Gas Chamber Based on Printed Circuit Technology and Applications to X-Ray and Gamma-Ray Imaging
T. Tanimori, K. Tsuchiya, Y. Okada, K. Hattori, S. Kabuki, H. Kubo, S. Kurosawa, K. Miuchi, H. Nishimura, A. Takada, K. Ueno
Kyoto University, Japan

MP4-2: A Study of GEM Foils Produced at Tech Etch
B. Azmoun, C. Woody, *Brookhaven National Laboratory, USA*; B. Surrow, F. Simon, *Massachusetts Institute of Technology, USA*; R. Majka, N. Smirnov, *Yale University, USA*; D. Crary, K. Kearney, G. Keeler, G. Saini, *Tech Etch, USA*; J. Herstoff, *Muhlenberg College, USA*; J. Sinsheimer, *Ohio State University, USA*

MP4-3: Large "bulk" Micromegas Detectors for TPC and Other HEP Applications
M. Zito, E. Mazzucato, *Dapnia/SPP CEA-Saclay, France*

MP4-4: Fine-Pitch and Thick-Foil Gem Production in Japan
T. Tamagawa, *RIKEN, Japan*

MP4-5: Development and Performance Evaluation of Thick-GEM
Y. L. Yamaguchi, H. Hamagaki, T. Gunji, S. X. Oda, Y. Aramaki, S. Sano, *CNS, University of Tokyo, Japan*; T. Tamagawa, *RIKEN, Japan*

MP4-6: Development of a New Hole-Type Avalanche Detectors and the First Results of Their Applications
G. Charpak, *Biospace Inc., France*; P. Benaben, P. Breuil, *Ecole Superior des Mines, France*; P. Martinego, V. Peskov, *CERN, Switzerland*

MP5 New MPGD Techniques: Applications

Sunday, Oct. 28 17:45-19:25, Coral V
Session Chair: Maxim Titov, *CEA Saclay, DAPNIA*

MP5-1: Search of rare events with MPGD detectors
I. Giomataris, *CEA SACLAY, France*

MP5-2: High Spatial Resolution in ß-Imaging with a PIM Device
J. Donnard, D. Thers, N. Servagent, L. Luquin
Subatech, France

MP5-3: Understanding the Gain Characteristics of GEMs Inside the PHENIX Hadron Blind Detector.
J. A. Kamin[1], W. Anderson[1], A. Babak[2], C.-Y. Chi[3], Z. Citron[1], A. Dubey[4], J. M. Durham[1], Z. Fraenkel[4], T. K. Hemmick[1], A. Kozlov[4], A. Milov[2], M. Naglis[4], R. Pisani[2], I. Ravinovich[4], T. Sakaguchi[2], D. Sharma[4], A. Sickles[2], I. Tserruya[4], C. Woody[2]
[1]Stony Brook University, USA; [2]Brookhaven National Labs, USA; [3]Columbia University, USA; [4]Weizmann Institute of Science, Israel

MP5-4: The Full Scale Prototype of the Cylindrical-GEM Detector as Inner Tracker
G. Bencivenni, D. Domenici
Laboratori Nazionali di Frascati - INFN - Italy, Italy

MP5-5: The Commissioning of the GEM Detector for the Muon Apparatus of the LHCb Experiment
G. Bencivenni[1], M. Alfonsi[1], W. Bonivento[2], A. Cardini[2], F. Murtas[1], M. Poli Lener[1], D. Raspino[2], B. Saitta[2,3]
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WORKSHOP ON INNOVATIVE TECHNIQUES FOR HADRONTHERAPY

Friday, November 2, 08:30-16:45, Sea Pearl Suite 5 & 6

This 1-day workshop proposes to review the evolution of innovative concepts and instrumentation around technologies for hadron beam radiotherapy (hadrontherapy). This emerging field is a perfect illustration of merging Nuclear and Radiation Instrumentation experts with the Medical Imaging community.

The goal of the workshop is to provide an informal forum for interested participants to discuss in a convivial manner the technical progress in the field and to exchange recent experiences. The format of the workshop will consist of review talks and oral and posters presentations selected from abstracts submitted before September 31, 2007. The final program will be available on the conference WEB site by October 15th. Papers will be published in the NSS/MIC conference record.

The preliminary agenda of contributions fields is the following:

- Review talks (clinical views, new facilities and projects around the world)
- New accelerator concepts (protons, ions, antiprotons, neutrons)
- Instrumentation for beam delivery control and real time dose monitoring (Nozzles, In-beam PET systems, Proton CT imaging, advanced micro- and nano- dosimetry, neutron contaminations in charged particle therapy)
- Proton CT imaging
- Simulation and modeling for beam delivery and patient treatment planning

We are looking forward to your contributions (http://www.nss-mic.org/2007) and to meet together in Hawaii. Please visit the conference website www.nssmic.org/2007 for updated information. For information regarding this Workshop program, please contact:

Co-Chairs of
Hadrontherapy Workshop

Patrick Le Dû
DAPNIA CEA Saclay
France

Steve Peggs
Brookhaven Nat. Lab
USA

Anatoly Rozenfeld
Univ. of Wollongong
Australia

SPECIAL SESSION ON TECHNOLOGY TRANSFER

Wednesday, October 31, 17:00 – 19:00, Sea Pearl 5 & 6

In the special session on Technology Transfer, professionals and top experts in the field will share their experience and present examples of great success stories within our community where "just an idea" or "small invention" has led to a new commercial product, spin-off, or new company. Conference participants will have an opportunity to inquire and learn about the necessary steps for such paths to success. Technology Transfer Office professionals and experts will provide information concerning intellectual property, patents, seed money, venture capital, and other forms of start-up funding. Detailed information can be found on the conference website: www.nss-mic.org/2007.

Uwe Bratzler

Jean-Marie Le Goff

Co-Chairs of Special Session on Technology Transfer

THE ASIAN-PACIFIC PROGRAM

It is a great pleasure to welcome you to a special Asian-Pacific Program at the IEEE MSS MIC. It is the first time that this special program was organized as a part of the conference to provide a forum for the participants to learn about the range of scientific research and technological development in the Asian-Pacific region. The development of technology is of great interest to the multi disciplinary nuclear science communities, including HEP, radiation detectors and instrumentation, medical physics and medical imaging.

This Program will overview the major NSS/MIC scientific activities in Asia and the South Pacific by leaders in the field, and I sincerely hope that the Program will support the exchange of ideas and collaboration between East and West.

Anatoly Rozenfeld
Asian-Pacific
Program Chair

New opportunities for collaboration in a growing Hi Tech environment in Australia, China, Japan, South Korea, New Zealand and Singapore will be discussed during the presentations by 18 invited speakers, followed by informal discussion between three sessions. I hope that this program will be the beginning of regular Asian-Pacific highlights at future IEEE NSS/MIC and in the future will bring these conferences to Asian –Pacific countries on a regular basis.

I would like to thank the speakers, session chairs and attendees for their contributions and strong desire to promote collaboration with Asian - Pacific countries.

Anatoly Rozenfeld
Asian-Pacific Program Chair

The Asian-Pacific Program

Session 1: Tuesday, October 30 17:30 – 19:00, Lehua Suite

Session Chairs: Steve Meikle, *University of Sydney*
Hee-Joung Kim, *Yonsei University, South Korea*

17:30 – 17:35 Introduction
Anatoly Rozenfeld
Asian-Pacific Program Chair
University of Wollongong

17:35 – 17:50 **Validity and Value of Quantitative Spect Reconstruction Package (Qspect) for a Multi-Centre Clinical Studies in Japan"**
Hidehiro Iida
National Cardiovascular Center, Japan

17:50 – 18:05 **Techniques for Motion-Corrected Brain Imaging in Humans and Small Animals with SPECT and PET**
Roger Fulton
Royal Prince Alfred Hospital, Australia

18:05 – 18:20 **Challenges for Quantitative Pre Clinical Molecular Imaging Studies of the CNS"**
Steve Meikle
Brain & Mine Institute
University of Sydney, Australia

18:20 – 18:35 **Medical Imaging and Instrumentation in Korea**
Hee-Joung Kim
Yonsei University, South Korea

18:35 – 18:50 **Medical Imaging on the Australian Synchrotron**
Rob Lewis
Monash University, Australia

18:50 – 19:05 **Synchrotron Radiation Research and Radiation Detector Development in Singapore**
Herbert O. Moser
Singapore Synchrotron Light Source National University of Singapore, Singapore

Session 2: Thursday, November 1 17:00 - 19.00, Lehua Suite

Session Chairs: Geoff Taylor, *University of Melbourne*
Yifang Wang, *Institute of High Energy Physics*

17:00 – 17:20 **Current Status of the High Energy Program in China**
Yifang Wang
Institute of High Energy Physics, China

17:20 – 17:40 **The Australian HEP Program**
Geoff Taylor
University of Melbourne, Australia

17:40 – 18:00 **Review of Present and Future HEP Program in Japan**
Masanori Yamauchi
Institute of Particle and Nuclear Studies of KEK, Japan

18:00 –18: 20 **Overview of High Energy Physics Research in Korea**
Jung Keun Ahn
Pusan National University, South Korea

18:20 – 18:40 Present Statuses of KEKB and Belle
Takayuki SUMIYOSHI
Tokyo Metropolitan University, Japan

18:40 – 19:00 The Advanced Materials Research at GE Global Research Shanghai
Qun Deng
GE Global Research Shanghai, China

Session 3: Friday, November 2 17:00 – 18:.30, Lehua Suite

Session Chairs: Peter Johnston, *RMIT University*
Masanori Yamauchi
Institute of Particle and Nuclear Studies of KEK, Japan

17:00 – 17:15 **Overview of Radiation Detector Technology Development in Korea**
Gyuseong Cho
KAIST, Daejeon, South Korea

17:15 – 17:30 **Radiation Sensors Research and Development in New Zealand**
David Krofcheck
University of Auckland, New Zealand

17:30 – 17:45 **Developments of Radiation Detectors and Radiation Instrumentation in Australia**
Anatoly Rozenfeld
University of Wollongong, Australia

17:45 – 18:00 **Nanoscale Radiation Detector Research – An Australian Perspective**
Andrew Dzurak
University of NSW, Australia

18:00 – 18:15 **Opportunities for Australia to Expand its Involvement in the Nuclear Fuel Cycle"**
Peter Johnston
RMIT University, Australia

18:15 – 18:30 **Recent Development in Radiation Detection and Imaging at CSIRO**
James Tickner
CSIRO, Australia

ACKNOWLEDGEMENTS

The 2007 Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC) is made possible through the sponsorship of the IEEE Nuclear and Plasma Sciences Society (NPSS), and through the support and generosity of the cooperating institutions and organizations listed on the inside front cover. We especially thank our Asian colleagues for showing their strong support of this conference through their participation as authors and attendees. To organize a conference of this magnitude and duration requires that all members of the conference committee demonstrate team spirit, hard work, compromise, and personal sacrifice. We are truly fortunate to have worked with an outstanding group of volunteers that displayed these critically important attributes. We extend our heartfelt thanks to all of the members of the committee. It is nearly impossible to articulate how deeply and sincerely we appreciate their efforts. These volunteers devoted countless hours and immense effort in ensuring that all conference tasks were completed in a timely manner, and that all conference components would come together to form a scientifically rewarding, technically synergistic, and socially enjoyable experience for the attendees. Perhaps most importantly, we express our gratitude to the authors and co-authors for electing to submit the results of their intellectual pursuits to the 2007 NSS/MIC. Without their contributions, and the participation of the all of the attendees, this conference would never exist. It has been exciting to see how this meeting has grown over the years, and how it has become a premier international conference in the field. We are confident that our NPSS colleagues will continue to maintain and enhance this tradition in the future.

Nuclear Science Symposium (NSS)

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Lawrence R. MacDonald, *University of Washington, Seattle, USA*
Mark T. Madsen, *University of Iowa, USA*
Paul K. Marsden, *King's College London, England, United Kingdom*
Samuel Matej, *University of Pennsylvania, USA*
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Steven R. Meikle, *University of Sydney, Australia*
Chuck Melcher, *University of Tennessee, USA*
Scott D. Metzler, *University of Pennsylvania, USA*
Gregory S. Mitchell, *UC Davis, USA*
Robert S. Miyaoka, *University of Washington, USA*
Stephen C. Moore, *Brigham & Women's Hospital, USA*
Christian Morel, *CPPM, Aix-Marseille II University, France*
William W. Moses, *Lawrence Berkeley National Laboratory, USA*
Marek Moszynski, *Soltan Institute for Nuclear Studies, Poland*
Nobutoku Motomura, *Toshiba Medical Systems, Japan*
Gerd Muehllehner, *retired, USA*
Hideo Murayama, *National Institute of Radiological Sciences, Japan*
Raymond F. Muzic, *Jr., Case Western Reserve University, USA*
Vivek V. Nagarkar, *RMD, Inc., USA*
Deepa Narayanan, *Naviscan PET Systems, Inc, USA*
Frederic Noo, *University of Utah, Dept of Radiology, USA*
Robert E. Nutt, *Siemens Medical Solutions USA, USA*
Johan L.J. Nuyts, *K.U.Leuven, Belgium, Belgium*
Bill O'Brien-Penney, *University of Chicago, USA*
Michael K. O'Connor, *Mayo Clinic, USA*
Koichi Ogawa, *Hosei University, Faculty of Engineering, Japan*
Graeme J. O'Keefe, *Centre for PET, Austin Health, Australia*
Arne M. Paans, *University Medical Center Groningen, Netherlands*
Xiaochuan Pan, *The University of Chicago, USA*
Roberto Pani, *University of Rome, Italy*

Sang-June Park, *Brigham and Women's Hospital and Harvard Medical School, USA*
Todd E. Peterson, *Vanderbilt University, USA*
Maria Grazia Pia, *INFN Genova, Italy, Italy*
Bernd J. Pichler, *University of Tuebingen, Germany*
Uwe K. Pietrzyk, *Institute of Medicine - FZ Juelich, Germany*
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Maya Stavrianakou, *CERN, Switzerland*
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Sven-Erik Strand, *Lund University, Sweden, Sweden*
Suleman Surti, *University of Pennsylvania, USA*
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Asian-Pacific Program Committee

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Alpha Spectra, Inc.
AMPTEK INC.
Berkeley Nucleonics
CAEN Technologies
Canberra
Chemetall GmbH
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CONFERENCE PROGRAM TIME TABLE, OCTOBER 27 - NOVEMBER 3, 2007

	Coral I	Coral II	Coral III	Coral IV	Coral V	South Pacific Ballrooms I & II	South Pacific Ballrooms III & IV	Sea Pearl Suite	Hibiscus	Kahili	Lehua Suite
Saturday, October 27											
08:30-17:00						NSS Short Course: Radiation Detection and Measurement	NSS Short Course: Nuclear Science for Homeland Security				
Sunday, October 28											
08:30-09:30						NSS Short Course: Radiation Detection and Measurement	NSS Short Course: Integrated Circuit Front Ends for Nuclear Pulse Processing				
09:00-10:35					MP1: Time Projection Chamber Readout						
11:00-12:40					MP2: Gaseous Photon Detectors and Neutron Detector Applications						
13:45-15:05					MP3: Pixel Readout for Micro-Pattern Gas Detectors						
15:30-17:00					MP4: New MPGD Techniques: Production Processes						
17:00-17:30											
17:45-19:25					MP5: New MPGD Techniques: Applications						
Monday, October 29											
08:15-08:30				N01: NSS Plenary I							
08:30-10:00									MIC Short Course: Programming & Medical Appl. Using Graphics Hardware	MIC Short Course: Physics and Design of Detectors for PET and SPECT	MIC Short Course: Molecular Biology for Imaging Scientists
10:30-12:00				N02: NSS Plenary II							
12:00-14:00	NSS Luncheon										
14:00-15:30	N03: Analog and Digital Circuits I: Electronics for Gamma and X-Ray Detectors	N04: Astrophysics and Space Instrumentation I: Experiments I		N05: High Energy and Nuclear Physics Instrumentation I: Cherenkov and Scintillator Detectors	N06: Photodetectors and Radiation Imaging I						
16:00-17:00	N07: Solid State Tracking Detectors I	N08: Data Acquisition and Analysis Systems I		N09: High Energy and Nuclear Physics Instrumentation II: Electromagnetic Calorimeters	N10: Instrumentation for Homeland Security I: Neutron Detection						
17:00-18:00											
19:00-19:45	Refresher Course: Improving Gaseous Detectors: Why and How										
Tuesday, October 30											
07:30-08:15	Refresher Course: Digital Design with FPGAs: Examples and Resource Saving Tips										
08:30-10:00	N11: Computing and Software for Experiments I: HEP Software	N12: Gaseous Detectors I		N13: High Energy and Nuclear Physics Instrumentation III: Hadron Calorimeters	N14: Neutron Imaging and Radiography				MIC Short Course: Statistical Methods for Image Reconstruction	MIC Short Course: Dynamic Imaging in Emission Computed Tomography	MIC Short Course: Image Quality
10:30-12:00						N15: NSS Poster I		*13:00-16:00* Industrial Technical Session #1 (Suite 4)			
13:30-15:30	NM1: NSS-MIC Joint I		Industrial Exhibits	N16: Solid State Tracking Detectors II	N17: Instrumentation for Homeland Security II: Gamma-Ray Detection						
16:00-17:00	NM2: NSS-MIC Joint II			N18: New Solid State Detectors I: Si Detectors and Arrays	N19: Instrumentation for Homeland Security III						
17:00-17:30											
17:30-18:00											Asian-Pacific Program
18:00-19:00											
19:00-21:00			Exhibitor's Reception								

	Coral I	Coral II	Coral III	Coral IV	Coral V	South Pacific Ballrooms I & II	South Pacific Ballrooms III & IV	Sea Pearl Suite	Hibiscus	Kahili	Lehua Suite
Wednesday, October 31											
07:30-08:15	Refresher Course: GEANT 4: A Simulation Tool for Multi-disciplinary Applications			Refresher Course: Principles and Recent Advances of X-ray Computed Tomography							
08:30-10:00	N20: Solid State Tracking Detectors III	N21: Gaseous Detectors II	Industrial Exhibits	M01: MIC Plenary I				*10:00-17:00* Industrial Technical Session #2 (Suite 4)	N22: Astrophysics and Space Instrumentation II: Electronics and DAQ	N23: Computing and Software for Experiments II: Grid Computing	
10:30-12:00				M02: MIC Plenary II		N24: NSS Poster II					
13:30-15:30	N25: Data Acquisition and Analysis Systems II	N26: High Energy and Nuclear Physics Instrumentation IV: Pixel Detectors		M03: Instrumentation: Detectors with Depth of Interaction Capability	M04: Reconstruction: X-ray CT				N27: New Solid State Detectors II: CdTe & CdZnTe Materials & Detectors	N28: Gaseous Detectors III	
16:00-17:00	N29: Analog and Digital Circuits II: Electronics for High Energy Physics Detectors	N30: High Energy and Nuclear Physics Instrumentation V: Muon and Tracking Detectors		M05: Instrumentation: Detectors	M06: Reconstruction: Motion Effects and Compensation				N31: New Solid State Detectors III: Alternative Solid State Devices	N32: Computing and Software for Experiments III: Core Software Tools	
17:00-18:00								Special Session on Technology Transfer (Suite 5 & 6)			
18:00-19:00											
19:00-21:00	Conference Reception										
Thursday, November 1											
07:30-08:15				Refresher Course: Advances in Photodetectors for Medical Imaging Applications							
08:30-10:00	N33: Photodetectors and Radiation Imaging II	N34: Nuclear Measurements and Monitoring Techniques I	Insustrial Exhibits	M07: X-ray CT Instrumentation and Methods	M08: Reconstruction: PET Time-of-Flight and Attenuation Compensation			*10:00-12:00* Industrial Technical Session #3 (Suite 4)	N35: Trigger and Front-End Systems I	N36: Computing and Software for Experiments IV: Montecarlo Simulation I	
10:30-12:00	N37: Scintillators and Scintillation Detectors I: Detector Principles	N38: Nuclear Measurements and Monitoring Techniques II		M09: X-ray Imaging Instrumentation and Methods	M10: Reconstruction: Iterative Methods				N39: Environmental Health and Safety Instrumentation	N40: Computing and Software for Experiments V: Montecarlo Simulation II	
13:30-15:30	N41: Photodetectors and Radiation Imaging III: SiPM	N42: High Energy and Nuclear Physics Instrumentation VI: Neutrino and Dark Matter Detectors		M11: Small Animal Imaging and Imagers: MicroSPECT	M12: Reconstruction: PET Algorithms and Evaluation				N43: Trigger and Front-End Systems II	N44: Radiation Damage Effects I	
16:00-17:00	N45: Scintillators and Scintillation Detectors II: New Materials	N46: High Energy and Nuclear Physics Instrumentation VII: Nuclear Physics Instrumentation				M13: MIC Poster I		RITC Annual Open Meeting (Suite 6)	N47: Astrophysics and Space Instrumentation III: Sensors	N48: Radiation Damage Effects II	
17:00-18:00											Asian-Pacific Program
18:00-19:00											
Friday, November 2											
07:30-08:15				Refresher Course: Advances in Scintillators for Medical Imaging Applications							
08:30-10:00	N49: Scintillators and Scintillation Detectors III: Properties	N50: Instrumentation for Medical and Biological Research		M14: Instrumentation: Applications of Solid State Photodetectors	M15: Task Based Image Optimization and Evaluation			Workshop on Innovative Techniques for Hadrontherapy (Suite 5 & 6)	N51: Accelerators and Beam Line Instrumentation	N52: Computing and Software for Experiments VI: Astroparticle and Space Science Software	
10:30-12:00	N53: Photodetectors and Radiation Imaging IV	N54: Analog and Digital Circuits III: Electronics for Space-borne and Astronomical Detectors		M16: ECT/MR Imagers and Imaging	M17: Dynamic Imaging				N55: Synchrotron Radiation Instrumentation	N56: Computing and Software for Experiments VII: Software for Detectors	
13:30-15:30	N57: Scintillators and Scintillation Detectors IV: Fundamental Mechanisms	N58: Analog and Digital Circuits IV: Readout Circuits and Techniques				M18: MIC Poster II			N59: Astrophysics and Space Instrumentation IV: Experiments II	N60: Computing and Software for Experiments VIII: Medical Physics Software	
16:00-17:00						M19: MIC Poster III					
17:00-18:00											Asian-Pacific Program
18:00-18:30											
19:00-21:00	MIC Dinner										
Saturday, November 3											
07:30-08:15				Refresher Course: Advances in Tomographic Theory and and Analytic Reconstruction							
08:30-10:00				M20: Instrumentation: Application Specific Imagers	M21: Reconstruction: Analytical Methods & Theory						
10:30-12:00				M22: Instrumentation: System Design and Evaluation	M23: Reconstruction: Bayesian Methods						
13:30-15:30				M24: Small Animal Imaging and Imagers: MicroPET	M25: Reconstruction: SPECT						
16:00-18:00						M26: MIC Poster IV					

2007 IEEE NUCLEAR SCIENCE SYMPOSIUM & MEDICAL IMAGING CONFERENCE

Continuing Education Program • Special Interest Workshops • Tours & Companion Program
Hilton Hawaiian Village Beach Resort & Spa, Honolulu, Hawaii • October 27 – November 3, 2007

NUCLEAR & PLASMA SCIENCES SOCIETY

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Primary Interest: ❑ NSS ❑ MIC

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To become a member, visit the IEEE membership booth at the conference to receive a $50 new IEEE member discount and free NPSS membership.

FEE SCHEDULE:

1. REGISTRATION

	By Oct. 12	On-Site
❑ IEEE Member (IEEE member number required)	$500	$650
❑ non-IEEE Member	$650	$750
❑ IEEE Student (proof of IEEE student member status required)	$200	$300
❑ non-IEEE Student (proof of student status required)	$300	$400
❑ Retired/Unemployed (IEEE member only)	$100	$150
❑ One Day Only (specify day:) _____	$200	$200
❑ Continuing Education Program Only	see Continuing Education fees below	

2. BANQUETS

	By Oct. 12	On-Site	Qty.	Total
NSS Luncheon (Mon., Oct. 29)	$40	$50	_____	$_____
MIC Dinner (Fri., Nov. 2)	$70	$85	_____	$_____

3. CONTINUING EDUCATION PROGRAM

Course fees are valid for registrations received by **Oct. 12**
Add $50 per course for on-site registration.
Lunch and refreshments provided at all courses.

	Date	IEEE Member	Non-Member
❑ Radiation Detection and Measurement (2 day) * *Includes the textbook "Radiation Detection and Measurement"*	Sat.-Sun., Oct. 27-28	$425	$500
❑ Nuclear Science for Homeland Security (1 day)	Sat., Oct. 27	$250	$300
❑ Integrated Circuit Front Ends for Nuclear Pulse Proc. (1 day)	Sun., Oct. 28	$250	$300
❑ Programming & Medical Appl. Using Graphics Hardware (1 day)	Mon., Oct. 29	$250	$300
❑ Physics and Design of Detectors for PET and SPECT (1 day)	Mon., Oct. 29	$250	$300
❑ Molecular Biology for Imaging Scientists (1 day)	Mon., Oct. 29	$250	$300
❑ Statistical Methods for Image Reconstruction (1 day)	Tues., Oct. 30	$250	$300
❑ Dynamic Imaging in Emission Computed Tomography (1 day)	Tues., Oct. 30	$250	$300
❑ Image Quality (1 day)	Tues., Oct. 30	$250	$300

4. TOURS & COMPANION PROGRAM

Companion Program:
Fees for are valid for registrations received by **Oct. 12.**

	Cost/Person	Date	No. of People	Total Cost
1. Grand Circle Island Tour	$52	Sun., Oct. 28	_____	$_____
2. Pear Harbor/Arizona Memorial Tour	$30	Mon., Oct. 29	_____	$_____
3. *Kayak Adventure (AM)	$72	Tues., Oct. 30	_____	$_____
4. *Kayak Adventure (PM)	$72	Tues., Oct. 30	_____	$_____
5. *Guided Kayak Tour (AM)	$114	Tues., Oct. 30	_____	$_____
6. *Guided Kayak Tour (PM)	$114	Tues., Oct. 30	_____	$_____
7. *Snorkel Adventure	$57	Tues., Oct. 30	_____	$_____
8. Hawaiian Waterfall Hiking Adventure (AM)	$44	Wed., Oct 31	_____	$_____
9. Hawaiian Waterfall Hiking Adventure (PM)	$44	Wed., Oct. 31	_____	$_____
10. Pear Harbor/Arizona Memorial Tour	$30	Thurs., Nov. 1	_____	$_____
11. Manoa Waterfall Hiking Adventure (AM)	$44	Thurs., Nov. 1	_____	$_____
12. Manoa Waterfall Hiking Adventure (PM)	$44	Thurs., Nov. 1	_____	$_____
13. *Snorkel Adventure	$57	Fri., Nov. 2	_____	$_____
14. Waikele Outlet Shops	$25	Fri., Nov. 2	_____	$_____
15. Polynesian Cultural Center	$74	Sat., Nov. 3	_____	$_____

*For picnic lunch, please check sandwich choice:
❑ Turkey ❑ Tuna ❑ Ham ❑ Tofu

PAYMENT INFORMATION

Total amount enclosed: $ _____

Payment must be in US Dollars. Only checks drawn on or payable through US banks may be used. Traveler's checks, money orders and the credit cards listed below are acceptable. Do not send cash.

❑ Check or Money Order enclosed (payable to IEEE 2007 NSS/MIC)
❑ Charge to my: ❑ American Express ❑ VISA ❑ MasterCard ❑ Discover

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*The Card Security Code is the last three digits printed on the signature panel on the back of a Visa, MasterCard and Discover card or the 4 digits on the top front right of an American Express card.

DEADLINE

Friday, **October 12, 2007** (After this date, you will have to register on-site at the meeting.)

CANCELLATION & REFUND POLICY

You are not officially registered until we receive your completed registration form and payment. If your payment is not received by the **October 12th** deadline, your registration will be cancelled. In order to process refunds, cancellations must be received in writing by October 19, 2007 (less $25 cancellation fee). No refunds will be issued thereafter.

MAIL form & payment to: IEEE 2007 NSS/MIC * c/o TDMG Meetings Dept.
110 Painters Mill Road, Suite 36 * Owings Mills, MD 21117 USA
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PHONE: 410-363-1300 (8:30-17:30 ET) * 800-437-4589 (US/Canada only)
EMAIL: IEEE@traveldest.com (Attn: IEEE 2007 NSS/MIC) **WEBSITE:** http://www.nss-mic.org/2007

2008 NSS-MIC Dresden

ANNOUNCEMENT OF THE 2008 IEEE NSS-MIC

Dear Colleagues:

The next IEEE Nuclear Science Symposium (NSS), Medical Imaging Conference (MIC) and Room Temperature Semiconductor Detector Workshop (RTSD) will be held in Dresden, Germany, 19-25 October 2008, in cooperation with our local partner Forschungszentrum Dresden-Rossendorf (FZD). The venue is the International Congress Center Dresden (ICCD) situated near the old city center of Dresden on the banks of the Elbe River. The ICCD provides an ideal setting for our annual meeting with a great mix of modern conference facilities, first class accommodations, many nearby restaurants and beer gardens, historic buildings, and museums. The ICCD is within easy walking distance of many historic sites and Dresden has an excellent trolley system.

The Organizing Committee is planning a Conference that will offer state-of-the-art and up-to-date scientific information through oral and poster presentations. There will be a number of Continuing Education Courses before and during the Conference to review current topics of special interest. An Industrial Exhibition and Industrial Seminars will feature state-of-the-art products and services from a wide range of vendors. Many special focus Workshops will address topics of current instrumentation research. Most are scheduled for Dresden during the Conference. However, one will be at DESY before the Conference and another at Forschungszentrum Jülich, near Cologne, after the Conference. Please visit the website for details.

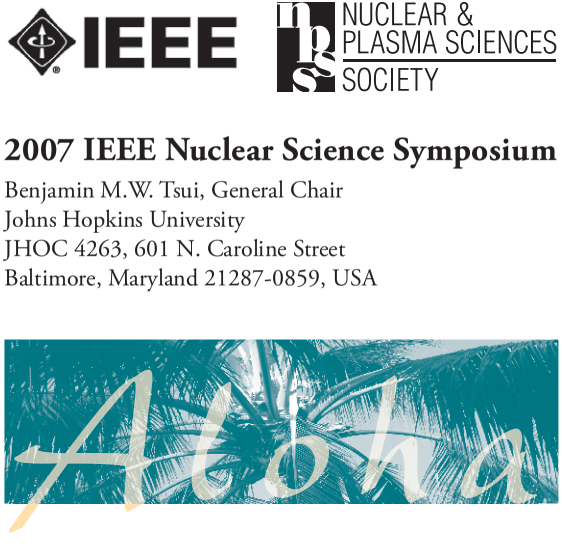
A companion program will provide daily tours to many of the attractions in and around Dresden during the Conference. The main attractions include: The Frauenkirche, the Green Vault, the Zwinger, the Semper Opera, Meissen, the mountains of Saxony, wineries, the Elbe River, and the old city center.

We extend a special invitation to all of our colleagues to attend the 2008 NSS/MIC. This will be a great opportunity to connect with old friends and colleagues and to make new friends from around the world and to exchange knowledge and ideas in nuclear science, medical imaging, detector development, and room temperature semiconductor detectors.

On behalf of the Organizing Committee, I encourage you to make plans now to attend this exciting Conference of the IEEE Nuclear and Plasma Sciences Society. I look forward to welcoming you to historic Dresden.

Uwe Bratzler, *General Chair, CERN & TMU*

Conference E-mail: nssmic2008@fzd.de
Conference Website: www.nss-mic.org/2008



2007 IEEE Nuclear Science Symposium

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