NUCLEAR SCIENCE SYMPOSIUM

AND

MEDICAL IMAGING CONFERENCE

INCLUDING THE

SYMPOSIUM ON NUCLEAR

POWER SYSTEMS

NOVEMBER 10-16, 2002

TECHNICAL EXPOSITION

NOVEMBER 12-14, 2002

NORFOLK WATERSIDE MARRIOTT

HOTEL & CONVENTION CENTER

SHERATON NORFOLK WATERSIDE HOTEL

NORFOLK, VIRGINIA

IEEE Conference

2002

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University of Pennsylvania Medical Center
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IEEE

NUCLEAR & PLASMA SCIENCES SOCIETY

IEEE Conference

2002

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The 2002 IEEE Nuclear Science Symposium (NSS), Medical Imaging Conference (MIC), and Symposium on Nuclear Power Systems (SNPS) will be held from November 10-16, 2002 and the Technical Exposition will be held from November 12-14, 2002 in Norfolk, Virginia, at the Norfolk Waterside Marriott Hotel & Convention Center and at the Sheraton Norfolk Waterside Hotel. Scientists and engineers in the fields of Nuclear Science and Medical Imaging will participate and present original work in a variety of subject areas related to these fields. Joel Karp of the University of Pennsylvania is this year's general program chair.

Norfolk has a 400 year-old seaport packed with galleries, theaters, museums, a variety of shopping options, and a wealth of military history. Norfolk sits at the center of the East Coast of the United States at the base of the historic Chesapeake Bay. A trip to Norfolk can include wonderful activities ranging from attending outdoor concerts to shopping and dining at Norfolk's waterside to historical tours and cruises.

The Nuclear Science Symposium (NSS) runs from Tuesday morning through Friday morning and will host a luncheon on Tuesday featuring Presidential Science Advisor, Jack Marburger. Joint sessions on topics of mutual interest with the Medical Imaging Conference (MIC) will be held Tuesday afternoon and Wednesday morning. The MIC program continues through Saturday morning and hosts a dinner on Friday evening with guest speaker Rear Admiral John Kavanaugh.

Other activities to be held during the week include an Exhibition Program that will be open from Tuesday afternoon through Thursday afternoon. Many companies involved in Nuclear Science and Medical Imaging Instrumentation will be present to discuss the technical details of their products.

Tuesday evening the exhibitors will host an opening reception from 6:00 - 7:30 PM.

On Wednesday evening from 6:00 – 9:00 PM, the conference will host the General Welcome Reception for all attendees at the Nauticus, the national maritime center, which has marine activities and exhibits of naval history.

A related program to the IEEE conference to be held in conjunction with Thomas Jefferson National Accelerator Facility (Jefferson Lab.) is an outreach day for high school teachers on Monday, November 11. Speakers include Bill Moses from Lawrence Berkeley National Lab, Josh Klein from the Universities of Pennsylvania and Texas, and Kanai Shah from Radiation Monitoring Devices. A public lecture that evening will be given by Michael Levi from Lawrence Berkeley National Lab on the topic of Cosmology.

Another related program, which will immediately follow the Medical Imaging Conference, is the Workshop on the Nuclear Radiology of Breast Cancer on Saturday & Sunday, November 16-17 at the Norfolk Waterside Convention Center. This one-and-a-half day workshop, organized by Martin Tornai from Duke University and Craig Levin from UC San Diego, is supported, in part, by the Susan G. Komen Breast Cancer Foundation and the IEEE NPSS. The workshop will cover issues related to nuclear emission imaging for breast cancer evaluation. Topics will include specific biological markers, radiotracers, and new instrumentation and methods designed for breast cancer identification and localization, comparison to conventional and other emerging breast imaging technologies, clinical practicality issues, cost-effectiveness, industrial perspectives, and funding opportunities. There is a separate registration fee of $125, which is due before November 1, 2002. Due to meal planning, there will be no on-site registration. For further information about the workshop, and for applications for student travel grants, please contact clevin@ucsd.edu or martin.tornai@duke.edu.

Information for the general program and short course programs is available on our website at ***www.nss-mic.org*** (click on NSS/MIC 2002). We encourage you to register and book your hotel rooms early.

NUCLEAR SCIENCE SYMPOSIUM (NSS)

The Nuclear Science Symposium, chaired by Nigel Lockyer and Rick Van Berg from the University of Pennsylvania starts on Tuesday, November 12 and ends on Friday morning, November 15. The NSS promises exciting presentations in many areas of nuclear and particle physics. The Symposium will lead off with a Plenary session describing new challenges and opportunities in neutrino physics (Josh Klein, University of Texas, Austin), satellite dark energy probes (Mike Levi, LBNL), and high energy electron-positron colliders (Tom Himel, SLAC). The technical and scientific difficulties of proposed neutrino beams and detectors, billion pixel imagers, and the next generation of linear colliders set the scale for our efforts over the next decade. The technical sessions that follow over the next three days of the Symposium should provide some of the first parts of our answer.

The NSS Luncheon will precede the technical sessions. The speaker will be Presidential Science Advisor Jack Marburger, Director of the Office of Science and Technology formerly director of Brookhaven National Laboratory (BNL) and President of Stony Brook University. Dr. Marburger's broad knowledge of science and science policy at the university, laboratory and, now, national level will help place these future science projects in perspective.

The technical sessions are divided into two parallel tracks this year to reduce conflicts. Two separate Poster periods are set aside on Wednesday and Thursday to ensure poster presenters an attentive audience. The NSS posters will be physically interspersed with MIC posters. There will also be two special joint sessions Tuesday afternoon and Wednesday morning with the Medical Imaging Conference to emphasize some of the many areas where interests and technologies coincide. Invited speakers on Wednesday morning will be Hartmut F. W. Sadrozinski, Santa Cruz, talking on proton

tomography and Steve Peggs from BNL presenting new ideas in hadron cancer therapy.

MEDICAL IMAGING CONFERENCE (MIC)

The Medical Imaging Conference, chaired by Paul Kinahan and Robert Miyaoka from the University of Washington starts with a joint session with the NSS on Tuesday, November 12 and ends at noon on Saturday November 16. The MIC is the most productive international scientific meeting on the physics, engineering, and mathematical aspects of nuclear medicine based imaging. The MIC has evolved from a single session of the Nuclear Science Symposium into a sister symposium, due in large part to the synergism between the applied nuclear physics and medical imaging communities. This synergism will be emphasized with the continued presence of joint MIC/NSS sessions.

This year the MIC has retained its focus on nuclear medicine based imaging, with approximately 300 high-quality submissions accepted for presentation. The popular single session format will be continued with an increased emphasis given to the poster sessions. Posters for the NSS and MIC will be presented for the entire length of the meeting with a total of five poster sessions to allow sufficient time for viewing. There will also be short (30 min) poster tours of selected posters, following the pattern established at last year's successful meeting. In the oral sessions, the number of presentations per 90 min session has been decreased to five, allowing more time for discussion.

The MIC plenary session will feature invited presentations on the highly relevant topic of image quality in nuclear medical imaging. We are fortunate to have the combination of

Lift for Conference Schedule

LIFT

IEEE Conference Schedule

SUNDAY

SHORT COURSES			SNPS	NSS	MIC	EXHIBITS
Rad. Det. & Meas. 1 8:30-5:00	Trig. for Particle Physics Exper. 8:30-5:00					

MONDAY

SHORT COURSES			SNPS	NSS	MIC	EXHIBITS
Rad. Det. & Meas. 2 8:30-5:00	Integrated Front-Ends for Nuc. Pulse Processing 8:30-5:00					
		Nuc. Emis. Detectors, Sys. & Methods for Breast Cancer 1:00-5:30				

TUESDAY

SHORT COURSES			SNPS	NSS		MIC	EXHIBITS
Multi-Modal Imaging Devices 8:00-12:30	Analytical Reconstruct. Methods 8:00-12:30		SNPS Plenary 9:00-noon	NSS Plenary 9:00 - noon			
			NSS Luncheon noon - 2:00				
Task-Based Assessment of Image Quality 1:00-5:30	Statistical Methods for Image Reconstruction 1:00-5:30		SNPS P2 2:00-5:00	Photodetectors 2:00-3:00	New Rad. Det. 2:00-3:00		Exhibits 3:00-6:00
				Analog & Dig. Circuits 1 3:30-5:00	NSS/MIC Joint Session 3:30-5:00		
			Exhibitor Reception 6:00-7:30				

WEDNESDAY

SHORT COURSES			SNPS	NSS		MIC	EXHIBITS
			SNPS P3 9:00-noon	Astro-Space 8:30-10:00	HEP Instr. 1 8:30-10:00	MIC Plenary 8:30-10:00	Exhibits
				Scintillation Detectors 1 10:30-noon	NSS/MIC Joint Session Protons in Therapy Imaging 10:30-11:30		
				NSS Poster 1 1:30-3:00		MIC Poster 1 1:30-3:00	
				Semiconductor Detectors 1 3:30-5:00	Gas Detectors 1 3:30-5:00	PET Imaging 3:30-5:00	9:00-5:00
			Conference Welcome Reception at Nauticus 6:00–9:00				

THURSDAY

SHORT COURSES	SNPS	NSS		MIC	EXHIBITS
		Analog & Dig. Circuits 2 8:30-10:00	Scintillation Detectors 2 8:30-10:00	Image Reconstruction 8:30-10:00	Exhibits
		Semiconductor Detectors 2 10:30-noon	Nuclear Instr. & Monitoring 10:30-noon	MIC Poster 2 Detectors 10:30-noon	
		NSS Poster 2 1:30-3:00		MIC Poster 3 1:30-3:00	9:00-3:00
		DAQ & Analysis 3:30-5:00	Analog & Dig. Circuits 3 3:30-5:00	SPECT Imaging 3:30-5:00	

FRIDAY

SHORT COURSES	SNPS	NSS		MIC	EXHIBITS
		HEP Instr. 2 8:30-10:00	Analog & Dig. Circuits 4 8:30-10:00	Image Quality 8:30-10:00	
		Gas Detectors 2 10:30-noon	Rad. Damage Effects 10:30-noon	MIC Poster 4 Detectors 10:30-noon	
				MIC Poster 5 Detectors 1:30-3:00	
				Small Animal Imaging 3:30-5:00	
		MIC Dinner Banquet 6:30 - 9:00			

SATURDAY

SHORT COURSES	SNPS	NSS		MIC	EXHIBITS
				Quantitative Analysis 8:30-10:00	
				Breast Imaging 10:30-noon	

Professors Charles Metz (University of Chicago) and Harrison Barrett (University of Arizona) who will present the state-of-the-art in assessing medical image quality using human and computational observers. Some of these topics and others will be presented during the excellent selection of medical imaging short courses presented prior to the start of the MIC. In addition, workshops linked to the NSS/MIC have been organized around the subjects of Compton camera imaging and the nuclear radiology of breast cancer.

For a change of pace, the MIC banquet speaker will discuss a new addition to Norfolk since the last IEEE NSS/MIC meeting there in 1994. In December of 2000, the Iowa-class battleship USS Wisconsin was berthed next to the Nauticus National Maritime Center, located on the revitalized Norfolk waterfront. Our speaker will be Rear Admiral John T. Kavanaugh, SC, USN (Ret), Executive Director of the Battleship Wisconsin Foundation.

The MIC conference provides an opportunity for the exchange of valuable ideas and recent advances in the intersection of physics, engineering, and mathematical aspects of medical imaging. Based on the presentations, short courses, workshops and exhibits from the nuclear and medical imaging communities, we can look forward to a high level of scientific exchange at the NSS/MIC in Norfolk.

SYMPOSIUM ON NUCLEAR POWER SYSTEMS (SNPS)

The Symposium on Nuclear Power Systems, chaired by Jay Forster will continue the tradition of meeting in conjunction with the NSS/MIC, from November 12-13. The topics covered are those currently of major interest to the operation of nuclear power stations and supporting services and suppliers.

LIFT

Lift for Conference Schedule

The registration form can be found in the back of this booklet or on the conference website at ***www.nss-mic.org.***

Advanced registration is highly recommended in order to save time and money and to ensure that your registration packet will be ready for you when you arrive at the conference.

GENERAL PROGRAM FEES

	by Oct. 21	on-site
IEEE Member*	$375	$525
Non-IEEE Member	$475	$625
IEEE Student†	$100	$200
Non-IEEE Student†	$150	$250
Retired/Unemployed IEEE Member*	$100	$150
One Day Only (specify day)	$200	$275
Short Course Program only♦	no charge	no charge

* IEEE member number required at registration.

† Proof of student status required.

♦ The short course fees are independent from the general program fees.

SHORT COURSE PROGRAM FEES

	Date	IEEE Member	Non Member
SC #1: Radiation Detection and Measurement*	Sun. Nov. 10 & Mon. Nov. 11	$350	$450
SC #2: Triggering for Particle Physics Experiments*	Sun. Nov. 10	$230	$310
SC #3: Integrated Front Ends for Nuclear Pulse Processing*	Mon. Nov. 11	$290	$380
SC #4: Nuclear Emission Imaging Detectors, Systems, and Methods for Breast Cancer Evaluation♦	Mon. Nov. 11	$125	$170
SC #5: Multi-Modality Imaging Devices†	Tue. Nov. 12	$125	$170
SC #6: Analytical Image Reconstruction†	Tue. Nov. 12	$125	$170
SC #7: Statistical Methods for Image Reconstruction♦	Tue. Nov. 12	$125	$170
SC #8: Task-Based Assessment of Image Quality♦	Tue. Nov. 12	$125	$170

* Full day course (8:30 AM – 5:00 PM)

† 1/2 day morning course (8:00 AM – 12:30 PM)

♦ 1/2 day afternoon course (1:00 PM – 5:30 PM)

BANQUET FEES

	by Oct. 21	on-site
NSS Luncheon (Tue. Nov. 12)	$30	$35
MIC Dinner (Fri. Nov. 15)	$40	$45
General Welcome Reception (Wed. Nov. 13)	$20	$25

* Fee applies to guests and short course registrants only.

TOUR PROGRAM FEES

	Date	Cost/ Person
Walking Tour of Olde Portsmouth (Bistro lunch)	Mon. Nov. 11	$35
Jamestown Settlement & Yorktown (boxed lunch)	Tue. Nov. 12	$65
Colonial Williamsburg (Tavern lunch)	Wed. Nov. 13	$85
Chrysler & Hermitage Museums (bagged lunch)	Thu. Nov. 14	$40
Norfolk & VA Beach Homes (boxed lunch)	Fri. Nov. 15	$55

PAYMENT

Register via the IEEE secure website at ***www.nss-mic.org***. Click on the registration link, and follow the instructions. Electronic registration is highly recommended, as it places your registration information directly in our database.

Fax your completed registration form to **410-559-0160**, attention IEEE 2002 NSS/MIC ***(credit card payments only)***.

IEEE accepts VISA, MasterCard, American Express, and Discover.

Mail your completed registration form and payment to:

IEEE 2002 NSS/MIC
c/o TDMG
110 Painters Mill Road, Suite 36
Owings Mills, MD 21117 USA

Checks and money orders should be made payable to **IEEE 2002 NSS/MIC**. Payment must be drawn on or paid through a US bank and must be in US dollars.

Please do not send cash.

An acknowledgment will be sent upon receipt of your registration and payment. Please direct any questions regarding registration to TDMG by phone (800-437-4589 or 410-363-1300) or e-mail IEEE@traveldest.com (Subject: IEEE 2002 NSS/MIC).

DEADLINE

Registration and payment must be received by Monday, October 21, 2002 in order to qualify for the lower registration, short course, and banquet fees listed above. After this date, you will have to register on-site at the meeting.

CANCELLATION AND REFUND POLICY

You are not officially registered until we receive your completed registration form and full payment. ***If your payment is not received by the October 21st deadline, your registration will be cancelled.*** In order to process refunds, cancellations must be received in writing by October 21, 2002 (less a $25 cancellation fee). No refunds will be issued thereafter.

REGISTRATION HOURS AT THE CONFERENCE

Registration and general information will be available during the following times at the registration desk, which will be located in the Marriott, unless otherwise indicated:

Sunday, November 10*	7:30 – 9:00 AM
Monday, November 11	7:30 – 10:00 AM & 5:30-8:30 PM
Tuesday, November 12	7:30 AM – 7:00 PM
Wednesday, November 13	7:30 AM – 6:00 PM
Thursday, November 14	7:30 AM – 5:00 PM
Friday, November 15	7:30 AM – NOON
Saturday, November 16	7:30 – 9:00 AM

* Registration will be held in the Sheraton's main lobby. Sunday is devoted to Short Course Program registration and packet pick-up only. General Program registration will begin on Monday at the Marriott.

IEEE MEMBERSHIP

An IEEE membership desk will be located in the Marriott, near the registration desk. Vern Price, IEEE Membership Chairman, will be available to answer questions and explain the benefits of IEEE membership. A portion of your non-member conference registration fee ($50) will be applied to your new IEEE membership (not applicable to student memberships). By joining IEEE during the conference, you will also receive one year's free membership in the Nuclear Plasma Sciences Society, which includes a subscription to the Transactions on Nuclear Science.

STUDENT STIPENDS

The 2002 NSS and MIC are pleased to offer several stipends to defray travel expenses for student authors of papers presented by the student or collaborator. Requests should be sent to Nigel Lockyer for the NSS (lockyer@hep.upenn.edu) and Paul Kinahan for the MIC (kinahan@u.washington.edu). Each applicant will be required to arrange for a letter of recommendation to be sent independently by a senior colleague.

MESSAGE BOARD

A message board will be located in the Marriott, near the registration desk for posting messages and notifications.

SPEAKER'S PREPARATION ROOM/COMPUTER ROOM

All speakers should be prepared to give their presentations using electronically formatted media (PowerPoint). The conference will provide computers equipped with a CD-ROM in each meeting room. Please bring your presentation on a CD. All presentations will be loaded onto a central server, thus avoiding delays in switching laptops prior to each presentation. A room will be designated for speakers to practice their presentations. Please communicate any special requests in advance to Rick Van Berg (rick@hep.upenn.edu).

In addition, attendees can check their e-mail. The facility will consist primarily of SUN computers, which will allow attendees to retrieve email from parent organizations. We will also provide a limited number of PCs, printers, and stations that allow for wireless connections. A staff of experienced personnel will be on hand to assist attendees with the use of the computers and equipment in the facility. The computer room will open Monday, November 11 at noon and close promptly on Saturday, November 16 at noon.

WEBSITE

Information for all conference programs (NSS, MIC, SNPS), short courses, and tours can be found at ***www.nss-mic.org***.

TECHNICAL EXPOSITION

The IEEE NSS, MIC, SNPS Exposition provides our conference registrants ample opportunity to visit with the varying commercial exhibitors, on Tuesday, Wednesday and Thursday. Companies both domestically and internationally are in attendance to meet conference registrants and to demonstrate their latest products representing the "state-of-the-art" in categories under the primary areas of Detectors, Instrumentation, Imaging, Software, and other areas. Attendees at this conference will be able to view and discuss with vendors their needs for products in the above areas for current and future projects on which they spend their scientific and engineering efforts. Our registrants either greatly influence the decision for products in their efforts or have the authority to purchase their organization's needs for products under the areas given above. The Exposition is located in the Marriott on the first floor just past the escalators in the Norfolk Ballroom. The Exposition's hours are as follows:

Tuesday, November 12 3:00 – 7:30 pm*
6:00 – 7:30 pm (opening reception)

Wednesday, November 13 9:00 am – 5:00 pm*
9:00 am – 4:00 pm (guest passes valid)
10:00 am & 2:00 pm (coffee and refreshment breaks)

Thursday, November 14 9:00 am – 3:00 pm*
9:00 am – 2:30 pm (guest passes valid)
10:00 am & 2:00 pm (coffee and refreshment breaks)

*prize drawings during exhibit hours

Exclusive conference morning coffee breaks and afternoon refreshment breaks will be held in the exhibit area during the times given in the schedule above. Prize drawings will be scheduled every day during the exhibit hours. Registrants must drop their coupons in the container in the exhibit area. Winners will be posted in the same area and must go to the main conference registration area to claim their prize (TBA). On Tuesday evening, from 6:00 PM to 7:30 PM, the exhibiting companies are hosting the Opening Reception.

To see the companies that are exhibiting and/or to obtain information regarding their products or services, go to the web site of Trade Associates Inc. at: ***www.tainc.com***, and click on the IEEE logo, then click on Exhibitors. Companies interested in participating in the exhibits may go to the given web site of Trade Associates, or contact Faye Pastor at 301-519-1610, or by email at faye@tainc.com.

PUBLICATIONS

The deadline for submitting papers to the Conference Proceedings is November 13. Authors must submit Word, Latex (preferred) or another acceptable format to ***www.ieee.org/organizations/pubs/confpub/***. Within 24 hours, a PDF proof will be generated and mailed to the author, who must accept or reject by November 15. Since this date falls during the conference, final review of the PDF proof can be done in the editor's office. Authors should NOT generate PDF themselves and they should NOT e-mail their paper to the conference editor. All attendees will receive a complimentary copy of the Conference Proceedings on CD-ROM.

Additionally, papers presented at the conference that contain important information of lasting value may be submitted for review and publication in the conference issue of 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. MIC papers submitted for review and possible publication in the TNS must be submitted electronically by email to Edward Hoffman. NSS and SNPS papers submitted for review and possible publication in the TNS must be submitted to Manuscript Central (***http://tns-ieee.manuscriptcentral.com/***). The deadline for submitting all papers to the TNS is December 2. No papers will be accepted without prior approval of the appropriate editor.

The preferred manuscripts submission format is a PDF (postscript is also acceptable) and should conform to the 8.5" by 11" U.S. standard. The copyright form and author information form may be found on the conference web site and at the guest editor's office at the conference. These forms should be submitted directly to the appropriate conference editor. Contact information for each guest editor is given below:

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HOTEL RESERVATIONS AND RATES

The 2002 IEEE conference will be held at the Norfolk Waterside Marriott Hotel & Convention Center (235 East Main Street) and at the Sheraton Norfolk Waterside Hotel (777 Waterside Drive). The hotels are only a 5-minute walk away from each other.

An even number of rooms have been reserved at both the Marriott and the Sheraton; reservations can be made at either hotel. Please note that a portion of the room rates given below is being used to offset the meeting costs. Please see below for details pertaining to each hotel.

MARRIOTT

The special group rate is $136 per night. Rates are for single or double occupancy and do not include 12.5% in taxes, which are subject to change. A $15 charge per person per room per night applies to rooms with more than double occupancy (maximum five people per room). Group rates will be honored from November 6 to 18, based on space and rate availability. A credit card is required to hold a reservation. The Marriott accepts all major credit cards. Hotel check-in is at 4 pm, check-out is at 11 am.

Your credit card will not be charged if you cancel your reservation by 6 PM, 72 hours prior to your date of arrival. Please call the Marriott directly at 800-228-9290 or 757-627-4200 to cancel your reservation.

SHERATON

The special group rate is $118 per night. Rates are for single or double occupancy and do not include 12.5% in taxes, which are subject to change. A $15 charge per person per room per night applies to rooms with more than double occupancy (maximum five people per room). Group rates will be honored from November 4 to 22, based on space and rate availability. A deposit for one night's room rate is required to hold a reservation; your credit card will be charged immediately. The Sheraton accepts all major credit cards. Hotel check-in is at 3 pm, check-out is at noon.

Advance deposits are refundable if you cancel your reservation by 4 PM, 48 hours prior to your date of arrival. Please call the Sheraton directly at 800-325-3535 or 757-622-6664 to cancel your reservation.

Please be sure to ask about each hotels' reservation and cancellation policies. IEEE is not responsible for any misinformation regarding hotel policies and procedures.

To make hotel reservations, please contact either hotel directly at the following numbers. Reference the "IEEE Nuclear & Plasma Science" to receive the group rate at each hotel.

Marriott: 800-228-9290 or 757-627-4200
Sheraton: 800-325-3535 or 757-622-6664

Deadline for Reservations: October 21, 2002. After this date, reservations will be taken based on space and rate availability.

Please visit the internet for more information on each hotel:
Marriott: *www.norfolkmarriott.com*
Sheraton: *www.sheratonnorfolk.com*

TRAVEL ARRANGEMENTS

We request that all meeting participants make their own travel arrangements. We do not have special arrangements with any airlines, rental car companies, or travel agencies.

Note: IEEE is not responsible for arranging or canceling hotel and transportation reservations for meeting participants. IEEE is also not responsible for any fees incurred as a result of cancelled reservations or no-shows.

AIRPORT

Norfolk International Airport is approximately 15 minutes from both the Marriott and the Sheraton and is easily accessible from Interstates 64 and 264. The airport serves AirCanada, American, Continental, Delta, Northwest, Southwest, and USAir airlines. Please visit the airport's website at ***www.norfolkairport.com*** for more information.

TRAIN

Amtrak serves Norfolk via a bus connection at the Newport News, Virginia station. The connecting bus will stop at Parking Lot 39 on the corner of Monticello Avenue and Virginia Beach Boulevard in downtown Norfolk. Both hotels are approximately a $5 cab ride from Lot 39.

RENTAL CARS

The following rental car offices are located in the baggage claim area below the main terminal lobby: Avis, Budget, Dollar, Enterprise, Hertz, National, Payless, and Thrifty.

GROUND TRANSPORTATION

Brown Airport Sedan Service is located outside baggage claim at the booth marked "Airport Shuttle." Sedan service to both hotels costs approximately $18 one way and $27 roundtrip (excluding gratuity).

Taxi service is located outside the baggage claim lobby. It costs approximately $25 one way (excluding gratuity).

Neither the Marriott nor the Sheraton offer a shuttle to and from the airport.

PARKING

The Marriott offers self-parking for $17 a day and valet parking for $22 a day. The Sheraton offers self-parking for $9 a day (if validated by the hotel) and valet parking for $18 a day.

The Waterside Garage (corner of Waterside Drive and Atlantic Avenue) and the Main Street Garage (corner of Main Street and Atlantic Avenue) are also close to both the Marriott and the Sheraton hotels. The entrance to both garages is located on Atlantic Avenue. Each garage charges approximately $14 per 24 hours.

Norfolk offers a variety of garages, lots, and metered parking. Please visit ***www.norfolk.va.us/parking/*** for general directions and specific information on parking locations and rates.

SHORT COURSE PROGRAM

An excellent set of short courses will be given prior to the start of the NSS/MIC programs. Specialized topics covering a wide range of nuclear and medical technology will be presented in the Short Course Program, organized by Gary Alley from Oak Ridge National Laboratory.

This year, we are offering discounted fees to a select number of students and post-docs to encourage participation by junior scientists. Requests should be sent to Gary Alley at alleygt@ornl.gov. Each applicant will be required to arrange for a letter of recommendation to be sent independently by a senior colleague.

All courses include refreshments, lecture notes, and a certificate of completion as part of the registration fee. Full day courses also include lunch, and selected courses include a textbook.

SHORT COURSE 1

Radiation Detection and Measurement
Sunday and Monday, November 10-11, 2002
8:30 AM - 5:00 PM
Textbook: *Radiation Detection and Measurement*, 3rd Edition, by G. Knoll

Organizer:
Glenn Knoll, University of Michigan
Lecturers:
Stephen Derenzo, Lawrence Berkeley National Laboratory
Eugene Haller, Lawrence Berkeley National Laboratory
Glenn Knoll, University of Michigan
Fabio Sauli, CERN
Helmuth Spieler, Lawrence Berkeley National Laboratory

This 2-day course provides a short 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 both of established applications and recent developments are drawn from areas including particle physics, nuclear medicine, 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. Topics are also included on the pulse processing techniques that are needed to properly record the information provided by the detection devices. 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.

SHORT COURSE 2

Triggering for Particle Physics Experiments
Sunday, November 10, 2002
8:30 AM - 5:00 PM

Organizer: **Peter Wilson**, Fermi National Accelerator Laboratory
Instructors:
Sidhara Dasu, University of Wisconsin (BABAR, CMS)
Levan Babukhadia, SUNY at Stoneybrook (D0)
Giovanni Punzi, INFN Pisa (CDF)

A critical component of particle physics experiment design is determining which events to store for further analysis and how to make that decision. The job of the Trigger is to quickly discard uninteresting events while efficiently culling the most interesting events in as unbiased a manner as possible. In most experiments, the rate at which detector data is sampled, such as beam crossing rate for a colliding beam experiment, is much higher than the rate of physics interactions of primary interest. At the same time, the volume of data from digitizing all readout channels is frequently too high to be practically read-out by a data acquisition system (DAQ) for later analysis let alone be fully reconstructed in real time. Some reduction of needed bandwidth can be achieved within the DAQ system by suppressing channels with no interesting data or other data compression methods. While sparsification can reduce the needed bandwidth by factors of 10 or 100, suppression by factors of a million are often achieved with a combination of triggering and data compression. For example, the Run II trigger systems for the CDF and D0 experiments at the Fermilab Tevatron collider each reduce an input of about 10 TBytes/sec to an output of about 20 Mbytes/sec recorded on tape. This course will discuss the design of trigger systems for particle physics ranging from cosmic ray experiments to future colliding beam experiments such as those at the Large Hadron Collider.

The course will cover overall trigger system design with particular attention to impact of beam environment and data acquisition design. It will also cover the design of trigger subsystems, which do fast partial event reconstruction and pass information to more global decision hardware. This process is often referred to as generating trigger primitives. The focus will be on primitives that are common to many modern HEP experiments: charge track reconstruction, calorimeter and muon triggers. Also covered will be systems to reconstruct tracks from detached vertices which is a more recent and complicated task. Specific examples from past, current and future experiments will be used to illustrate the techniques of each topic and the progression of those techniques with improving technology. Comparisons will also be made for different types of experiments (e.g. cosmic ray, fixed target, colliding beam).

SHORT COURSE 3

Integrated Circuit Front Ends for Nuclear Pulse Processing
Monday, November 11, 2002
8:30 AM - 5:00 PM
Textbook: *Analog Integrated Circuit Design*
by David Johns and Ken Martin

Organizer:
Chuck Britton, Oak Ridge National Laboratory
Lecturers:
Veljko Radeka, Brookhaven National Laboratory
Paul O'Connor, Brookhaven National Laboratory
Alan Wintenberg, Oak Ridge National Laboratory

This one-day course will cover integrated circuits developed for nuclear pulse processing applications with an emphasis on charge measurement. We will discuss bipolar and MOS transistor operation, signal processing for pulse measurements, charge-sensitive preamplifiers, photomultiplier preamplifiers, pulse-shaping circuits, sample/holds, and analog/digital converters.

This course has been targeted to three types of attendees. The first is the engineer/physicist who desires understanding of the basics of integrated circuits and pulse-shaping networks in order to begin creating circuits for systems. The second is the engineer/physicist/manager who needs to be able to understand the basics of these technologies and their achievable performance in order to manage or work with a development team utilizing these technologies. The third type is one who desires an overview for personal technical development.

The morning session will be an overview of the theory of pulse processing from a theoretical viewpoint. It will cover noise sources and pile up and their effect on resolution. Charge-sensitive preamplifiers and their design in integrated circuit processes will be covered with an emphasis on implementation.

The afternoon session will cover integrated circuits for photomultiplier tube readout and associated circuits for the system aspects such as variations of gain and timing. Analog/digital converters and their associated circuitry (sample/hold and peak stretchers) will be discussed.

In all cases, numerous examples will be presented of the present state-of-the-art.

SHORT COURSE 4

Nuclear Emission Imaging Detectors, Systems and Methods for Breast Cancer Evaluation
Monday, November 11, 2002
1:00 PM - 5:30 PM

Co-Organizers: **Martin Tornai**, Duke University Medical Center
Craig Levin, UC San Diego School of Medicine
Lecturer: **James Bowsher**, Duke University Medical Center

In recent years, the possibility of using nuclear emission imaging to alleviate some drawbacks of conventional methods for detection, diagnosis and staging of breast cancer has been an active field of research. Dedicated nuclear cameras used in conjunction with breast cancer specific radiotracers offer the potential for more specific and sensitive identification of breast cancer than conventional imaging techniques. Drawbacks of standard clinical nuclear imaging methods for breast imaging such as planar scintigraphy, Single Photon Emission Computed Tomography (SPECT), and Positron Emission Tomography (PET) are that the all-purpose camera systems' geometry and performance are not optimized for breast cancer imaging. In addition, the relatively expensive all-purpose cameras keep study costs high compared to standard breast imaging techniques, which raises questions of cost-effectiveness. For these reasons there has been great interest in development of dedicated breast imaging systems and techniques. Through close-proximity breast imaging and new detector materials, components and configurations, such systems extend the performance limits available to nuclear imaging.

This course is designed for the scientist and engineer who wants to learn more about or review the details of issues specific to breast imaging with nuclear emission cameras. This discussion includes system development issues relevant to both single and coincident

photon imaging systems. Issues relevant to both conventional clinical and dedicated breast imaging systems will be covered. The course begins with a discussion of basic detector design issues for breast imaging with nuclear emission cameras. Practical information on how to build a dedicated breast imaging system will be covered such as detector components, electronics, and event positioning algorithms. Next, we present a thorough discussion of recent systems and methods that have been developed by various researchers in the field for nuclear breast imaging. A comparison of the variety of different approaches will give the course attendee perspective on the important system issues under consideration. Data generated from phantom studies will be presented to understand the limitations of the various approaches. Practical clinical imaging applications of these systems and methods will also be presented to demonstrate the utility of these systems. The session ends with a comprehensive discussion on complete-orbit and image reconstruction issues relevant to nuclear emission breast imaging systems. The particular geometry of the breast in relation to the detector systems yields some very unique problems and solutions for tomographic image reconstruction.

SHORT COURSE 5

Multi-Modality Imaging Devices
Tuesday, November 12, 2002
8:00 AM - 12:30 PM

Organizer:
David Townsend, University of Pittsburgh
Lecturers:
Bruce Hasegawa, University of California at San Francisco
Simon Cherry, University of California at Davis

The importance of aligning image sets from two different modalities in regions of the body other than the brain has long been recognized, particularly where the modalities represent complementary aspects of disease. Functional imaging modalities such as PET and SPECT offer little anatomical localization, whereas anatomical imaging modalities such as CT or MR generally contain very little functional information. However, the imaging of function, accurately localized within an anatomical framework, could offer a powerful approach to the diagnosis and staging of disease, and the monitoring of treatment. Despite increasing sophistication, software fusion techniques cannot compete outside the brain with the convenience and accuracy of a hardware approach where the imaging technologies themselves are fused, rather than the images registered post hoc. This course will review the motivation for combined functional and anatomical imaging, particularly emphasizing the areas in which the software approach can be problematic. The recent development of combined SPECT/CT and PET/CT designs for imaging patients, and SPECT/CT, PET/CT and PET/MR designs for imaging small animals, will be presented, summarizing the unique challenges created by the differing scale of the animal and human instrumentation. The use of the anatomical μ-map to correct the functional data for photon attenuation is also a key feature of these devices. Finally, the clinical impact of the new systems will be assessed and illustrated with patient studies in oncology and cardiology.

SHORT COURSE 6

Analytical Reconstruction Methods
Tuesday, November 12, 2002
8:00 AM - 12:30 PM

Organizer:
Michel Defrise, Vrije Universiteit Brussel
Lecturers:
Pierre Grangeat, LETI, CEA-DTA
Frédéric Noo, University of Utah

Analytic reconstruction methods describe the unknown image and the data as continuous functions, and model the data acquisition by a transform operator mapping the image onto the data. In SPECT, PET and CT, this operator is the Radon or x-ray transform in two and three dimensions. Explicit inversion formulae for these operators are discretized to obtain algorithms which take into account the sampling of the data and of the image. Besides providing a unique insight into issues such as sampling, stability and data sufficiency, analytic algorithms are the methods of choice whenever the data set and the image matrix are too large to apply iterative reconstruction techniques. Despite an already long history, the academic and industrial research on analytic methods is still extremely active and has recently produced remarkable solutions to problems which had been open for many years.

The course will provide an overview of the reconstruction methods which are currently used in clinical scanners, as well as of the most recent advances in this field. It will be assumed that the attendees have some prior knowledge of the basic principles of 2D tomography (notes will be provided beforehand), but these principles will nevertheless be carefully summarized. The course will then concentrate on more advanced topics, especially 3D reconstruction in PET and spiral CT, and dynamic (4D) reconstruction.

SHORT COURSE 7

Statistical Methods for Image Reconstruction
Tuesday, November 12, 2002
1:00 PM - 5:30 PM

Organizer: **Jeffrey Fessler**, University of Michigan

The recent commercial introduction of iterative algorithms for tomographic image reconstruction, and the increasing interest in scanners with nonstandard imaging geometries, has brought new relevance and timeliness to the topic of statistical methods for image reconstruction. This course will provide an orderly overview of the potpourri of statistical reconstruction methods that have been proposed recently. Rather than advocating any particular method, this course will emphasize the fundamental issues that one must consider when choosing between different reconstruction approaches. The intended audience is anyone who would like to reconstruct “better” images from photon-limited measurements, and who wants to make informed choices between the various methods. Recent advances in convergent forms of “ordered subsets” algorithms will be given particular attention, since these algorithms can be both practical for routine use, while also having desirable theoretical properties. Both emission tomography and transmission tomography algorithms will be discussed.

Attendees should be familiar with photon-counting imaging systems at the level presented in the Medical Imaging short course offered in previous years. Some past attendees have commented that at least a little experience with some type of iterative reconstruction (e.g. ART or OS-EM) would be helpful for getting the most value from this course.

SHORT COURSE 8

Task Based Assessment of Image Quality
Tuesday, November 12, 2002
1:00 PM - 5:30 PM

Organizer:
Michael King, University of Massachusetts Medical School
Lecturers:
Charles Metz, University of Chicago
Harrison Barrett, University of Arizona

Medical images are acquired for the purpose of diagnosis, delineation of disease state, and monitoring therapy. Thus the relative merits of different imaging, acquisition, reconstruction, and processing strategies would be best determined from objective comparisons of the imaging systems, protocols, and images at performing tasks closely related to the clinical ones for which imaging is to be performed. The purpose of this short course is to introduce the participant to the objective assessment of image quality and give them the needed information to start conducting studies of task performance using human and numerical observers.

This course will be divided into two sessions with a combined discussion, and question and answer session following the second.

The first session will cover the conduction of lesion detection studies using human observers. It will start with the underlying model of ROC studies. This will be followed by discussion of the design, conduction, and analysis of ROC studies. Specific topics will include the collection of data, definition of "truth", avoidance of bias in study design, curve fitting, comparison criteria, and statistical testing. The session will conclude with discussion of alternative observer testing methodologies such as LROC, FROC and alternative forced choice.

The second session will deal with classification and estimation tasks as assessed by numerical observers. It will start with a review of statistical decision theory and the statistical properties of medical images. With this background, optimum strategies for performing the tasks (ideal observers) will be formulated, and computational difficulties in actually implementing the optimal strategy will be identified. Various suboptimal strategies will be presented, including models that incorporate limitations of the human visual system. Some examples of applications will be presented.

TOUR PROGRAM

An interesting Tour Program has been put together by Margaret Daube-Witherspoon together with Virginia Escape, who organized the tours when the NSS/MIC was last held in Norfolk in 1994. We encourage attendees as well as companions to take advantage of these day trips, which will include a continental breakfast, lunch, transportation, admission fees, a historically-trained guide, taxes, & gratuity.

WALKING TOUR OF OLDE TOWNE PORTSMOUTH

Monday, November 11, 2002
Time: 9:00 AM - 2:30 PM
Note: Participants in this tour will be walking approximately 2 miles with little elevation change.

The best way to approach Olde Towne Portsmouth is the historic way, by water. A guide will meet the participants at the Marriott and walk with them two blocks to nearby Waterside in Norfolk, site of the Elizabeth River Ferry, which offers a panoramic harbor view. Participants will arrive at the High Street Landing in the heart of Olde Towne.

Olde Towne Portsmouth contains one of the largest concentrations of antique homes between Alexandria, Virginia and Charleston, South Carolina. Encounter beautifully preserved Georgian, Gothic, Victorian, Greek Revival, and Colonial structures at every turn. This walking tour includes numerous historic sites within an approximate 1 mile radius. Participants will pass by Trinity Episcopal Church, which still contains original hand-hewn pews built by slaves. Participants will also see the Commodore Theatre, a luxuriously restored 1945 Art Deco style theatre.

After the tour, participants will be free to peruse the numerous antiques, art and specialty shops located along historic High Street. The group will then gather for a delicious lunch at the artsy Fusion 440 Bistro in Olde Towne. Participants may choose among a selection of gourmet sandwiches and wraps, such as an Applewood smoked turkey wrap, Cajun corn meal oyster wrap, or a Jamaican Jerk pork loin sandwich. All sandwiches come with choice of one side item: mushroom caps, fresh seasonal fruit, Yukon Gold potato salad, or Mediterranean pasta salad. Soda or tea is also included.

JAMESTOWN SETTLEMENT TOUR AND YORKTOWN TOUR

Tuesday, November 12, 2002
Time: 8:30 AM - 4:00 PM

After boarding the motorcoach, participants will enjoy an interesting introduction to the area by their historically trained tour guide. The first stop on the tour will be Jamestown Settlement.

Jamestown Settlement commemorates America's first permanent English colony with exhibition galleries and outdoor living history programs. An original engraving of Captain John

Smith's map of Virginia and a stoneware jug believed to have been given to Pocahontas by the King and Queen of England are among many 17th-century artifacts on display in the indoor galleries. In the outdoor living history areas, costumed interpreters demonstrate 17th-century activities in the Powhatan Indian Village, palisaded James Fort, and on board three full-size replicas of the ships that arrived here in 1607.

After the Jamestown tour, participants will board the motorcoach, on which they will be served an excellent boxed lunch and cold beverage, and proceed on to historic Yorktown. Boxed lunch includes choice of baked ham on Kaiser roll, smoked turkey with Swiss on marble rye bread, or garden sub with mixed cheeses and sprouts. All are served with chips and pickle, small deli salad, cookie, and choice of soft drink.

In Yorktown, participants will venture back in time to experience the famous battlefields and Surrender Field of Yorktown - where the last battle of the Revolutionary War was fought. Travel through the fields that served to greatly influence the history of the United States as we know it today. Visit Moore House, a farmhouse where Washington and Cornwallis fought the verbal war of negotiations for the Battle of Yorktown surrender.

At the home of Thomas Nelson, Jr., a signer of the Declaration of Independence, you'll see a fine example of Georgian architecture. Its walls still bear the scars of cannonballs fired upon by Allied troops. See the Grace Church and the Victory Monument, which was commissioned in 1781 and not completed until 1884. Enjoy some time browsing the narrow streets of the historic village which remains much as it was during the waning days of the Revolution, but is now occupied by unique gift shops, antique shops, and art galleries.

COLONIAL WILLIAMSBURG TOUR

Wednesday, November 13, 2002
Time: 8:30 AM - 4:00 PM

Participants will enjoy a walk through history as they visit Colonial Williamsburg, a living museum that has been faithfully preserved and restored to its 18th-century appearance. A historically-trained guide will describe the lifestyle of the colonists, including such leading citizens as George Washington, Thomas Jefferson and Patrick Henry. America's largest living history museum offers an unparalleled view of daily colonial life at a time when Williamsburg was a powerful center of politics, commerce, and culture.

The first colony to speak for American independence did it with the unanimous voices of the gentlemen who gathered May 15, 1776, in the tall brick building that dominated the east end of Williamsburg, the Capitol. From a hall in the Capitol of what had been England's original New World possession, Virginia instructed its delegation at Philadelphia's Continental Congress to raise the question of freedom. Thomas Jefferson's Declaration of Independence records the Continental Congress's answer.
Every day, visitors of all ages tour the Capitol to learn more about government in Colonial Virginia and the colony's contribution to the American Revolution. One of the highlights of your tour will be the Governor's Palace. Built in 1722 to house the King's governors, the palace symbolized the prestige and power of British rule. The most popular exhibition building with Colonial Williamsburg visitors, the Palace's luxurious furnishings are based on an inventory taken when Royal Governor Botetourt died in October 1770.

For lunch (1:00 – 2:30 PM), participants are not only in for a taste of excellent cuisine, but also a taste of real history. At the restored King's Arms Tavern of Colonial Williamsburg, participants can dine in the same settings that George Washington enjoyed in the 18th century. Participants will be served by waiters in Colonial attire. Lunch menu includes the following garden green salad, chicken pottage pie or vegetable pie, fresh baked tavern bread selection, vanilla ice cream with macaroon, and choice of fountain beverage.

After the tour, participants may explore on their own and discover the quaint shops in Merchant's Square.

THE HERMITAGE MUSEUM AND CHRYSLER MUSEUM TOUR

Thursday, November 14, 2002
Time: 9:30 AM - 2:30 PM

Participants will begin the day at the Hermitage Museum, which was originally built as the summer retreat of William and Florence Sloane in 1908 and later became their year-round residence. It has since become the permanent location of the Hermitage Foundation Museum. The Foundation was established in 1937 by the Sloanes to increase public awareness and appreciation of the arts and to offer encouragement and support to creative endeavors.

Although the home now serves as a museum, it is a work of art in its own right! The expert carving and attention to detail of two master craftsmen, C.J. Woodsend and M.F. McCarthy, resulted in a home of unparalleled craftsmanship and an appropriate showcase for the Sloanes' numerous collections of treasured artworks from around the world. The home is truly a celebration of the arts! Some of the works featured include Italian and French textiles and laces, English and European ceramics and paintings, handpainted glass from Germany, ivory carvings, Persian rugs, and ritual bronzes and ceramic tomb figures from China.

Participants will then go to the Chrysler Museum, where they will enjoy delicious bagged lunches. Lunches include choice of grilled chicken on sourdough with lettuce and tomato or vegetarian sandwich with avocado, mushrooms, tomato, creamy house dressing, Swiss cheese, and sprouts on honey wheat bread. Both lunches come with chips, a cookie, and soft drinks.

Following lunch, participants will visit the Chrysler Museum, which has been ranked by the Wall Street Journal among the top 20 museums in the country. The collection includes over 30,000 pieces, which span the ages, from 2700 BC to the present. Areas of particular strength are French and Italian painting and the internationally famous glass collection. The Chrysler also houses the only museum gallery in Virginia devoted solely to photography.

NORFOLK HISTORIC HOMES AND VIRGINIA BEACH HOMES TOUR

Friday, November 15, 2002
Time: 9:00 AM - 4:00 PM
Note: Participants must have photo ID with them to tour the lighthouse.

This morning, participants will begin their Norfolk Historic Homes tour by visiting the Hunter House Victorian Museum. This Romanesque Revival home was designed by Boston architect W.D. Wentworth. Its doorway consists of a massive round arch with coursed brown ashlar. The house remained in the Hunter family until 1965, and currently serves as a Victorian museum.

Next, participants will visit the Moses Myers House, which is amidst the bustle of downtown Norfolk. This home is from the Federal period and its original furnishings recall the hopes and determination of a newly independent nation. Today, it is the only historic house in the United States interpreting the traditions of early Jewish immigrants. The next home on the tour is the nearby Willoughby-Baylor House, which offers a gracious view of a middle-class family's lifestyle in 18th-century Hampton Roads. A visit to this Georgian-style house is enhanced by a stroll through its delightful garden. After the home tour, the group will take a break for a delicious boxed lunch, which includes a choice of veggie pita wrap, pasta salad, and a cookie or roast beef or tuna salad with Provolone on French bread with house dressing, chips, and a cookie.

The group will then proceed to Virginia Beach, where participants will visit Lynnhaven House, circa 1725. Lynnhaven House is one of America's best preserved 18th-century middle-class dwellings. From there, participants will go to Old Cape Henry Lighthouse, perched on sand dunes at the edge of the Chesapeake Bay. Authorized and funded by America's first Congress, the light-house was built in 1791. Participants will then visit The First Landing Cross, which marks the area where America's first permanent English settlers, the Jamestown colonists, first touched the shores of the New World on April 26, 1607 - 13 years before the Pilgrims landed at Plymouth Rock. Both the Lighthouse and the Cross are registered National Historic Landmarks.

IEEE Conference

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SYMPOSIUM ON NUCLEAR POWER SYSTEMS
SHORT COURSE PROGRAMS • TOUR PROGRAM

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NOVEMBER 10-16, 2002

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DEADLINE

Monday, October 21, 2002
(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 full payment.
If your payment is not received by the October 21st deadline, your registration will be cancelled.
In order to process refunds, cancellations must be received in writing by October 21, 2002 (less a $25 cancellation fee).
No refunds will be issued thereafter.

FEE SUMMARY

Please indicate appropriate fees below, using fee schedule on reverse:

1. Registration $ _____
2. Banquet Programs $ _____
3. Short Course Programs $ _____
4. Tour Program $ _____

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 are acceptable. Do not send cash.

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IEEE Conference

2002

1. REGISTRATION (NSS/MIC & SNPS, Nov.10-16)

	By Oct. 21	On-site
☐ IEEE Member (IEEE member number required)	$375	$525
☐ non-IEEE Member	$475	$625
☐ IEEE Student (proof of student status required)	$100	$200
☐ non-IEEE Student (proof of student status required)	$150	$250
☐ Retired/Unemployed (IEEE member only)	$100	$150
☐ One Day Only (specify day:_____)	$200	$275
☐ Short Course Program only	no charge	no charge

2. BANQUET PROGRAMS

	by Oct. 21	On-site	Qty.	Total
NSS Luncheon (Tue. Nov. 12)	$30	$35	_____	$ _____
MIC Dinner (Fri. Nov. 15)	$40	$45	_____	$ _____
General Welcome Reception (Wed. Nov. 13)	$20*	$25*	_____	$ _____

*Fee applies to guests and short course registrants only

3. SHORT COURSE PROGRAMS (Nov. 10-12)

	Date	IEEE Member	Non-Member
☐ SC #1: Radiation Detection & Measurement*	Sun. Nov. 11 & Mon. Nov. 11	$350	$450
☐ SC #2: Triggering for Particle Physics Experiments*	Sun. Nov. 10	$230	$310
☐ SC #3: Integrated Front Ends for Nuclear Pulse Processing*	Mon. Nov. 11	$290	$380
☐ SC #4: Nuclear Emission Imaging Detectors, Systems, and Methods for Breast Cancer Evaluation (PM)	Mon. Nov. 11	$125	$170
☐ SC #5: Multi-Modality Imaging Devices (AM)	Tue. Nov. 12	$125	$170
☐ SC #6: Analytical Image Reconstruction (AM)	Tue. Nov. 12	$125	$170
☐ SC #7: Statistical Methods for Image Reconstruction (PM)	Tue. Nov. 12	$125	$170
☐ SC #8: Task-Based Assessment of Image Quality (PM)	Tue. Nov. 12	$125	$170

Short course fees not received by Oct. 21 are subject to $50 additional per course.

* Lunch is provided at all full-day courses. Refreshments are provided at all courses.

4. TOUR PROGRAM (Nov. 11-15)

	Cost/Person	Date	Self	No. of Guests	Total Cost
1. Walking Tour of Olde Portsmouth (Bistro lunch)	$35	Mon. Nov. 11	☐	_____	$ _____
2. Jamestown Settlement & Yorktown (boxed lunch)	$65	Tue. Nov. 12	☐	_____	$ _____
3. Colonial Williamsburg (Tavern lunch)	$85	Wed. Nov. 13	☐	_____	$ _____
4. Chrysler and Hermitage Museums (bagged lunch)	$40	Thu. Nov. 14	☐	_____	$ _____
5. Norfolk and VA Beach Homes (boxed lunch)	$55	Fri. Nov. 15	☐	_____	$ _____

Tour prices include continental breakfast, lunch, transportation, admission fees, guide, taxes, & gratuity. Please see full tour description for additional information and restrictions.

Please mail or fax (credit cards only) this form and payment to:

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