

American Association of Physicists in Medicine

1998 AAPM Summer School: Two Concurrent Sessions

I. Imaging in Radiotherapy

June 21-25

II. Advances in Nuclear Medicine: The Medical Physicist's Perspective

June 21-23

Imaging in Radiotherapy

Program Directors: Arthur L. Boyer, Ph.D. and John D. Hazle, Ph.D.

Advances in Nuclear Medicine: The Medical Physicist's Perspective

Program Directors: Michael V. Yester, Ph.D. and
L. Stephen Graham, Ph.D.

Local Arrangements Chair: Bruce R. Thomadsen, Ph.D.; assisted by members of the AAPM North Central Chapter

The Summer School will take place on the campus of the University of Wisconsin-Madison. The main Summer School session will address Imaging in Radiotherapy, however, a smaller concurrent session will be held on Advances in Nuclear Medicine: The Medical Physicist's Perspective. Both sessions will convene in the Memorial Union, although in separate meeting rooms. The Union is one block from the reserved dorms, the Chadbourne-Barnard complex. The excellent facilities provide a relaxed and comfortable environment in which to learn from and interact with the leading experts in this field. Time and occasions will be provided to socialize with peers and the faculty.

Local Arrangements Chair:

Bruce Thomadsen thomad@madrad.radiology.wisc.edu

For Further Information, Contact:

AAPM Headquarters aapm@aapm.org
One Physics Ellipse, College Park, MD 20740-3846; Tel: 301-209-3350; Fax: 301-209-0862

CONCURRENT SESSION I: IMAGING IN RADIO THERAPY

The main focus of this year's 1998 AAPM Summer School, Imaging in Radiotherapy, will review the current state-of-the-art in medical imaging as it is applied to radiotherapy treatment planning and delivery. Topics will cover treatment planning, simulation, and position and dose verification.

Program Directors:

Art Boyer boyer@reyes.stanford.edu
John Hazle jhazle@di.mdacc.tmc.edu

Imaging in Radiotherapy—Program Contents

Sunday, June 21

8:30 a.m. – 9:30 a.m.	State-of-the-Art in Medical Imaging	John Hazle
9:30 a.m. – 10:30 a.m.	Information Systems Overview	Douglas Tucker
10:30 a.m. – 11:00 a.m.	Break	
11:00 a.m. – 12:00 p.m.	Network Infrastructure: Hardware and Software	Peter Kijewski
12:00 p.m. – 1:30 p.m.	Lunch	
1:30 p.m. – 2:30 p.m.	Protocols and Standards for Image Communications	Bruce Curran
2:30 p.m. – 3:30 p.m.	Advanced Therapy Information Management Systems	Kenneth Brooks
3:30 p.m. – 4:00 p.m.	Break	
4:00 p.m. – 5:00 p.m.	Coordinate Systems in Radiotherapy and Imaging	George Starkschall
Evening	Demonstrations	

Monday, June 22

8:30 a.m. – 9:30 a.m.	Projection Imaging	J. Anthony Seibert
9:30 a.m. – 10:30 a.m.	Hounsfield Numbers and Electron Density	Cynthia McCollough
10:30 a.m. – 11:00 a.m.	Break	
11:00 a.m. – 12:00 p.m.	3D Data Derived from Spiral CT	Willi Kalender
12:00 p.m. – 1:30 p.m.	Lunch	
1:30 p.m. – 2:30 p.m.	Advanced Films for Therapy Imaging	Arthur Haus
2:30 p.m. – 3:30 p.m.	Real-Time Imaging for Frameless Stereotactic Radiotherapy	Martin Murphy
3:30 p.m. – 4:00 p.m.	Break	
4:00 p.m. – 5:00 p.m.	Subjective Target Volume and Normal Structure Segmentation	Mary Austin-Seymour
Evening	Demonstrations	

Tuesday, June 23

8:30 a.m. – 9:30 a.m.	Objective GTV	Edward Chaney
9:30 a.m. – 10:30 a.m.	CT Scanners on Simulators	Steve Webb
10:30 a.m. – 11:00 a.m.	Break	
11:00 a.m. – 12:00 p.m.	Volume Rendering	Charles Pelizzari
12:00 p.m. – 1:30 p.m.	Lunch	
1:30 p.m. – 5:00 p.m.	Afternoon Off	

Wednesday, June 24

8:30 a.m. – 9:30 a.m.	Use of MRI Data for Treatment Planning	Marc L. Kessler
9:30 a.m. – 10:30 a.m.	CT Simulators	TBA
10:30 a.m. – 11:00 a.m.	Break	
11:00 a.m. – 12:00 p.m.	Imaging for Conformal Therapy	Gerry Kutcher
12:00 p.m. – 1:30 p.m.	Lunch	
1:30 p.m. – 2:30 p.m.	Spiral CT for Treatment Planning	Arthur Boyer
2:30 p.m. – 3:30 p.m.	Active Matrix Flat-Panel Imagers for Electronic Portal Imaging	Larry Antonuk
3:30 p.m. – 4:00 p.m.	Break	
4:00 p.m. – 5:00 p.m.	Role of EPIDS in Conformal Therapy	Gikas Mageras
Evening	Demonstrations	

Thursday, June 25

8:00 a.m. – 9:00 a.m.	Portal Image Correlation and Analysis	Lei Dong
9:00 a.m. – 10:00 a.m.	Imaging in Stereotactic Treatment Planning	Hanne Kooy
10:00 a.m. – 10:30 a.m.	Break	
10:30 a.m. – 11:30 a.m.	Cone Beam Imaging	Paul Cho
11:30 a.m. – 12:30 p.m.	3D Dosimetry Using Gels	Lars Olsson
12:30 p.m.	Adjourn	

CONCURRENT SESSION II: ADVANCES IN NUCLEAR MEDICINE: THE MEDICAL PHYSICIST'S PERSPECTIVE

This Summer School session is targeted for individuals who do not have primary responsibility in nuclear medicine but need to keep up with the latest developments. Those who devote most of their time to nuclear medicine will also find this program a good opportunity to expand their knowledge base.

Recent technological advances in nuclear medicine instrumentation have reached the marketplace and their usage is rapidly increasing. The quantitative accuracy of myocardial imaging has been improved by correction for nonuniform attenuation and scatter. Iterative reconstruction techniques are used with increasing frequency to improve image quality and quantitative accuracy. PET/SPECT cameras for imaging F-18 FDG are an important tool in oncology.

The topics listed above will be mixed with basic "bread and butter" lectures on quality control, acceptance testing and radiation safety. A review of the principles of dosimetry will be used as a bridge to discuss state-of-the-art applications in that area.

Program Directors:

Michael V. Yester myester@rad.uab.edu
L. Stephen Graham lsgraham@ucla.edu

Advances in Nuclear Medicine: The Medical Physicist's Perspective—Program Contents

Sunday, June 21

Camera Technology

8:30 a.m. – 9:45 a.m.	Current State-of-the-Art of Nuclear Medicine Imaging Cameras	Robert E. Zimmerman
9:45 a.m. – 10:15 a.m.	Break	
10:15 a.m. – 11:15 a.m.	Acceptance Testing	Michael V. Yester
11:15 a.m. – 12:00 p.m.	Quality Control Procedures and Programs	L. Stephen Graham

FDG Imaging

1:15 p.m. – 2:30 p.m.	Conventional PET	Timothy Turkington
2:30 p.m. – 3:45 p.m.	511-keV Coincidence Imaging with SPECT Cameras	James A. Patton
3:45 p.m. – 4:15 p.m.	Break	
4:15 p.m. – 5:00 p.m.	511-keV Imaging with Collimators	Douglas J. Wagenaar
5:00 p.m. – 5:15 p.m.	Discussion	

Monday, June 22

8:30 a.m. – 9:45 a.m.	Clinical Utility of FDG and SPECT	Martin P. Sandler
9:45 a.m. – 10:15 a.m.	Break	

Quantitative SPECT

10:15 a.m. – 11:15 a.m.	Reconstruction Algorithms	G. Larry Zeng
11:15 a.m. – 12:15 p.m.	Quantitation	David R. Gilland
1:30 p.m. – 2:30 p.m.	Scatter Correction and Resolution Recovery	Stephen J. Glick
2:30 p.m. – 3:30 p.m.	Image Fusion and Image Communication	Frederic H. Fahey
3:30 p.m. – 4:00 p.m.	Break	

Dosimetry

4:00 p.m. – 5:00 p.m.	Dose Estimation	Daniel J. Macey
5:00 p.m. – 5:15 p.m.	Discussion	

Tuesday, June 23

8:30 a.m. – 9:30 a.m.	Dose Estimation Applications	Lawrence E. Williams
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Regulations and Radiation Safety

9:30 a.m. – 10:15 a.m.	Routine Audits of Nuclear Medicine Department/Current Concerns	Ralph P. Lieto
10:15 a.m. – 10:30 a.m.	Break	
10:30 a.m. – 11:15 a.m.	Current Regulations	L. Stephen Graham and Michael V. Yester
11:15 a.m. – 12:00 p.m.	Professional Activities: Standards and Practice Accreditation	Panel
12:00 p.m.	Adjourn	

To Register

Included in this brochure is the official registration form. The form consists of four parts: meeting registration, parking fees, housing registration, and companion registration. Please complete the form in its entirety and return with credit card information or enclose a check payable to AAPM in U.S. dollars only. Send completed form and payment to:

AAPM, P.O. Box 630554, Baltimore,
MD 21263-0554

Applicants will receive written confirmation regarding registration and housing.

Cancellation Policy

Fees for registration and meals will be refunded in full if written notice of cancellation is **received by May 15, 1998**. No refund will be given for cancellations received after May 15, 1998.

Continuing Education Credits

The Summer School has applied to CAMPEP for a maximum of 26 hours of Medical Physics Continuing Education Credits (MPCEC). Credits will be awarded to medical physicists who participate in the program and submit the required documentation to the Program Director.

Meeting Location

The University of Wisconsin-Madison spreads out on a series of wooded glacial hills along the south shore of Lake Mendota, a mile from the State Capitol. Since its founding in 1849, the University has matured to become one of the nation's leading institutions of higher learning. It combines teaching and research in basic humanities and sciences with professional education in a wide range of fields. The University has grown to accommodate about 44,000 students while continuing to emphasize quality in all its activities.

The city of Madison provides a pleasant and stimulating setting for the University that is appreciated by both students and faculty. It offers an abundance of cultural as well as outside activities at all seasons of the year, some of which include hiking, camping, sailing, skiing, biking, scuba, horseback riding and ballooning.

Madison is well known for its beautiful scenery, area lakes, and numerous parks. Madison also boasts the distinction of recently being ranked "Best Place to Live in America Overall" by *Money* magazine, July 1996. Other recent notable mentions include:

Ranked #9 of America's Safest Cities. *Money* magazine's 1997 Forecast.

"Healthiest City for Women" in the nation, *American Health*, January 1997.

Ranked #3 among "Great Places to Raise a Family," *Parenting* magazine, May 1997.

Ranked #10 for "America's 10 Most Enlightened Towns," *Utne Reader*, May 1997.

Ranked #9 among "America's Best Places to Live and Work," *Employment Review*, June 1997.

Ranked #4 for "Best City in the United States and Canada for Biking," *Bicycling* magazine, August 1997 and October 1995.

Upon Arrival

Registration will begin at 4:00 p.m. on Saturday, June 20, at Chadbourne Hall. Registration will include both the Summer School and housing. The Icebreaker reception will be held between 7:00 p.m. and 9:00 p.m., also at Chadbourne Hall.

All Summer School sessions will be held at the Memorial Union, and begin early Sunday morning.

Lodging and Meals

Rooms for the Summer School will be in the Chadbourne-Barnard complex, one block from the Memorial Union, site of the sessions. Both halls feature two single beds per room, with two desks and chairs. Attendees without companions will stay in Chadbourne Hall, with single-sex bathroom facilities in each hallway. (*Use the registration form to request a roommate.*) Attendees with companions will stay in Barnard Hall, with two oppositely gender-designated bathroom facilities per hallway. Attendees will need to bring their own alarm clocks.

The room fee includes breakfast and dinner, served in the dining room between Chadbourne and Barnard. While the participants' lunch is included in the tuition, companions will be on their own for lunch. Madison boasts of having the most restaurants per capita of any major city in the United States, so finding lunch will be a treat.

Ground Transportation/Parking

If you arrive from Dane County Regional Airport, take a cab or limousine, or rent a car and drive to Chadbourne Hall. Those planning to arrive by car should reserve a parking pass by using the meeting registration form. Parking is \$5 per day; \$20 per week. Parking passes can be picked up during registration at Chadbourne Hall.

From Chicago O'Hare airport, the Van Galder bus service leaves for Madison approximately every hour and a half. The 3-hour trip costs \$18. From Milwaukee's Mitchell Airport or the Milwaukee Amtrak station, the Badger Bus runs every two and a half hours into Madison: a 1^{1/2}-hour trip for \$12. Airfares into those airports are sometimes, but not always, less than into Madison Airport.

Weather and Wardrobe

The weather in Madison in late June usually is very pleasant, but can be unpredictable. While likely to be warm and humid, cold spells occasionally pass through, and rain is always likely sometime during the week (but not likely all week). Madison's many beaches will be open, providing opportunities to use your swim wear and sunscreen. Directions will be available for those wishing to use only sunscreen.

Child Care

The college does not provide on campus child care. Parents who require child care services must make their own arrangements prior to arriving on campus.

Athletic Facilities

The University has athletic facilities available for \$5 per day, or \$20 for the week, although many prefer simply jogging on the path along the lake.

Summer School Talent Show

Every attendee, including companions and especially children, is invited to participate in the Talent Show. This has become a tradition (so okay, maybe not that long) at the Summer School. The performances will be during the Tuesday Night Out. It's rumored that Hugh Grant was discovered at the AAPM Talent Show. You could be next. Participation requires no audition, just nerve.

Tuesday Night Out

Madison's newly inaugurated Convention Center, Monona Terrace, designed by Frank Lloyd Wright and beautifully situated on Lake Monona, will host the Night Out. Following dinner on the picturesque grand terrace, the evening will feature the Talent Show, music by Sotavento, and Comedy Sportz, a Madison tradition. The evening will provide entertainment for the whole family, or for whatever parts of the family can come.

City of Madison, featuring the State Capitol and Monona Terrace. Photo courtesy of the Monona Terrace Community and Convention Center. 

Area Attractions

Listed below are several area attractions that can be enjoyed independently. There is no meeting registration for these events.

- Elvehjem Museum of Art. U.W.-Madison campus location. No admission charge.
- Madison Children's Museum. No admission charge.
- Madison Geology Museum. Campus location. No admission charge.
- Henry Vilas Zoo. A beautiful zoo that includes a children's petting zoo, discovery center, and herpetarium. No admission charge.
- Olbrich Botanical Gardens and Conservatory. Short distance from capitol. No admission for outdoor specialty gardens and \$1 admission for tropical conservatory.
- Concert on the Square. Located on capitol square. Performance by Wisconsin Chamber Orchestra. Wednesday evenings. No admission charge.
- Forest Products Laboratory. Campus location. No admission charge.
- Budget Bicycle Center. Near lakes and Arboretum. Rental is \$7/day, \$21/week, tandems \$10/day, \$30/week.
- Williamson Bicycle Works, On Monona bike path. Rental is \$10/day.

Off-Campus Lodging

Registrants are encouraged to stay on campus. For those desiring to stay off campus, a list of hotels and their phone numbers is given. Please be aware that the Summer School has made no arrangements with these hotels for special rates or transportation. It is the responsibility of the individual to arrange their own transportation.

Closest to Campus:

Howard Johnson Plaza Hotel, 608-251-5511
 Madison Inn, 608-257-4391
 University Inn, 800-279-4881

Local Hotels:

Best Western Inn on the Park, 800-279-8811
 Best Western InnTowner, 608-233-8778
 The Concourse, 800-356-8293
 The Edgewater, 608-256-9071
 The Ivy Inn, 608-233-9717
 Mansion Hill Inn, 800-798-9070

Companion Program

Tours for companions will be scheduled for Monday through Wednesday. The tours will be contingent upon a suitable number of participants. On the registration form included in this brochure, please place a check mark next to the tour or location about which you would be interested in receiving more information. Admission prices have been listed for your information but final costs, which will include transportation, will be determined by the number of participants indicating interest on the registration form. A separate mailing with final fees will be sent to those who have preregistered. On-site registration for tours will be made available but space may be limited so registration for the tours is encouraged.

Tour Descriptions

Tour 1: Spring Green

A one-day tour to Spring Green, which will include the Frank Lloyd Wright Visitor Center and a tour of Wright's beautiful home, Taliesin, grounds and school. Cafe and Bookstore open daily. Admittance price for the entire estate tour is \$50. Smaller tours at varying admittance prices are available.

Also included will be a tour of the House on the Rock, which is a 14-room house located on a 60-foot chimney rock with a large, attached "museum" of assorted, eclectic items, and is one of the area's most popular attractions for all ages. The tour is self guided

with the approximate tour time being 3 hours. Admittance price is \$14.70 for adults, \$8.50 plus tax for 7-12 year olds, and \$3.50 plus tax for 4-6 year olds.

Tour 2: Mount Horeb

A one-day tour to Mount Horeb, which will include the Cave of the Mounds. The Cave of the Mounds was discovered in 1939 and displays crystallized rock formations and underground pools. Admittance price for 1-hour tour is \$9.00 ages 13 and up, \$4.50 ages 5-12, and admittance for children under 4 years of age who are accompanied by a paying adult is free.

Also included will be a tour of another area attraction, Little Norway. The one- to three-hour tour of Little Norway, a re-creation of an 1856 Norwegian homestead settlement, includes antiques and arts and crafts from the 1800s. Admittance price is \$7.00 for adults (13-61), \$6.00 for senior citizens (61 and up), \$2.50 for children ages 6-12, and free for children under the age of 6.

Tour #3: Circus World Museum

A one-day outing which will include the Circus World Museum, a very popular attraction for children and adults. Circus World Museum is the original home of the Ringling Brothers Circus. It features 50 acres of shows and attractions. Admittance is \$11.95 for adults (ages 13 and up), \$10.95 for seniors (ages 65 and up); \$5.95 for children (ages 3-12), and free for children under the age of 3.

Also included will be a tour of the International Crane Foundation. The International Crane Foundation houses the world's most complete collection of cranes. Included is a whooping crane wetland exhibit. Admittance is \$4.50 for adults (12 and up) and \$1.50 for children (12 and under).

Tour #4: UW - Madison Arboretum

One- to two-hour morning or afternoon guided tour of the University of Wisconsin-Madison Arboretum, a unique and special place. Natural wonders abound and include an incredibly diverse variety of flora and fauna in every one of its 1,260 acres. Admittance is \$15.00 per group of 15.

Tour #5: American Players Theatre

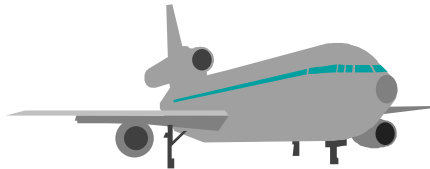
An evening trip to the American Players Theatre (APT) in Spring Green, Wisconsin. APT is a well-known and respected open-air amphitheater which performs works by Shakespeare and other famous playwrights. Admittance is \$17.50-\$32.00 (prices reflect seat location).

Get There for Less!

**American Association of Physicists in Medicine
Summer School, June 21–25, 1998
Madison, WI**

Travel Information**Conventions in America**

Get there for less by calling Conventions in America, our official travel agency, at 1-800-929-4242 and ask for Group #608. You will receive a 5–10 percent discount off the lowest applicable fares on American Airlines and Northwest Airlines, or the lowest available fare on any other carrier. Take an additional 5 percent off if you purchase at least 60 days prior to departure. Travel between June 16–30, 1998. All Conventions in America customers receive free flight insurance of \$100,000. Avis Rent-A-Car is offering special low rates with unlimited free mileage.



Conventions in America (CIA): 1-800-929-4242

Group #608

Outside U.S. & Canada: 619-453-3686, fax: 619-453-7976

Reservation Hours: M-F 6:30 a.m.–5:00 p.m. (Pacific Time)

e-mail: flycia@scitravel.com • web: www.scitravel.com

If you call direct or use your own agency, refer to the codes:

American: 1-800-433-1790, Starfile #7068UH

Northwest: 1-800-328-1111, Worldfile #NY3GE

Avis: 1-800-331-1600, AWD #J949031

1998 AAPM Summer School Registration Form

Return completed registration forms with full payment by **May 15** to: AAPM, P.O. Box 630554, Baltimore, MD 21263-0554 ~ ~ Credit card payments only may be faxed to 301-209-0862.

Register by April 30 to receive reduced registration fees. This form must be received at AAPM Headquarters by May 15 to pre-register. After May 15, only on-site registration will be available. Registration forms received by the May 15 deadline will be acknowledged by mail. No refunds will be given for cancellations received after May 15.
NEW!! Register with credit card information on-line through AAPM's SECURE server at <http://www.aapm.org> today.

SCIENTIFIC REGISTRANT

LAST NAME	FIRST NAME
	DEGREE
TITLE	NICK NAME FOR BADGE
INSTITUTION	
DEPARTMENT	
MAILING ADDRESS	
CITY	STATE
COUNTRY	ZIP / POSTAL CODE
PHONE	FAX

/ " Please check here if you have any special needs or requirements and attach a letter describing needs.

IMAGING IN RADIOTHERAPY REGISTRATION -- <i>Includes tickets to the Icebreaker, Night Out.</i>	FEE	TOTAL
Discounted Rate -- Discounted thru April 30 " AAPM Member " Member - Partnership in National Medical Physics Organization " Resident - Developing Country	\$720	\$ _____
Regular Registration -- AFTER April 30 " AAPM Member " Member - Partnership in National Medical Physics Organization " Resident - Developing Country	\$820	\$ _____
Non-AAPM Member Discounted Rate -- Discounted thru April 30	\$995	\$ _____
Non-AAPM Member Rate -- AFTER April 30	\$1,095	\$ _____
IMAGING IN RADIOTHERAPY REGISTRATION FEES TOTAL		\$ _____
ADVANCES IN NUCLEAR MEDICINE REGISTRATION -- <i>Includes ticket to the Icebreaker.</i>	FEE	TOTAL
Discounted Rate -- Discounted thru April 30 " AAPM Member " Member - Partnership in National Medical Physics Organization " Resident - Developing Country	\$275	\$ _____
Regular Registration -- AFTER April 30 " AAPM Member " Member - Partnership in National Medical Physics Organization " Resident - Developing Country	\$375	\$ _____
Non-AAPM Member Discounted Rate -- Discounted thru April 30	\$550	\$ _____
Non-AAPM Member Rate -- AFTER April 30	\$650	\$ _____
Optional Night Out Ticket	_____ x \$50	\$ _____
ADVANCES IN NUCLEAR MEDICINE REGISTRATION FEES TOTAL		\$ _____
PARKING PASSES -- <i>See instructions listed under "Ground Transportation/Parking."</i>	FEE	TOTAL
" Daily Rate: \$5 per day (Please circle days) S S M T W Th F S	_____ x \$ _____	\$ _____
" Weekly Rate: \$20 per week	\$ _____	\$ _____
PARKING FEES TOTAL		\$ _____

Registrations will not be processed until full payment is received. Send completed form with payment to:
AAPM, P.O. Box 630554, Baltimore, MD 21263-0554