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# The New Radiation Shielding Methodologies for Medical Imaging and Therapy – A Primer for the Next 30 Years

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## *An Educational Symposium For the Clinical Medical Physicist*

Robert L. Dixon, Course Director

March 3-4, 2005

*Embassy Suites Hotel  
Charleston, SC*

*Sponsored by the*  
**Southeast Chapter of the  
American Association of Physicists in Medicine  
(SEAAPM)**

### **Symposium Faculty**

<b>Jon Anderson, PhD</b> Associate Professor UT Southwestern Medical Center Dallas, Texas	<b>Jim Deye, PhD, FAAPM</b> Bethesda, Maryland
<b>Ben Archer, PhD, FAAPM</b> Professor Baylor College of Medicine Center Houston, Texas	<b>Nisy Ipe, PhD</b> San Carlos, California
<b>Rob Barish, PhD, FAAPM</b> New York, New York	<b>Patton McGinley, PhD</b> Stone Mountain, Georgia
<b>Peter Biggs, PhD, FAAPM</b> Associate Professor Massachusetts General Hospital Boston, Massachusetts	<b>Jim Rodgers, PhD, FAAPM</b> Associate Professor / Chief of Radiation Physics Division Georgetown University Hospital Washington, D.C.
<b>Robert Dixon, PhD, FAAPM</b> Professor Wake Forest University Winston-Salem, North Carolina	<b>Doug Simpkin, PhD, FAAPM</b> Senior Radiation Physicist St. Luke's Medical Center Milwaukee, Wisconsin

# The New Radiation Shielding Methodologies for Medical Imaging and Therapy – A Primer for the Next 30 Years

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## Symposium Schedule Wednesday, March 2, 2005

<b>6:00 PM - 8:00 PM</b>	<b>Symposium Registration &amp; Ice Breaker</b>
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## Thursday, March 3, 2005

<b>7:30 AM – 8:15 AM</b>	<b>Registration &amp; Continental Breakfast</b>	
8:15 AM – 8:30 AM	Welcome & Introduction	<i>Bob Dixon</i>
	<b>Symposium Session I Diagnostic Imaging Shielding</b>	
8:30 AM - 9:00 AM	Dose Limits for Medical Shielding Design – NCRP recommendations (NCRP report #147)	<i>Ben Archer</i>
9:00 AM - 9:30 AM	Diagnostic X-ray shielding - Basic Concepts (occupancy factors, workload distributions, primary with pre-shielding, scatter and leakage)	<i>Bob Dixon</i>
9:30 AM - 10:00 AM	Models for Diagnostic X-ray Shielding Calculations (NCRP #147): scatter and leakage, data sets, simple graphical method using “standard room” model	<i>Doug Simpkin</i>
<b>10:00 AM-10:30 AM</b>	<b>Morning Break</b>	
10:30 AM - 11:00 AM	Diagnostic Shielding Examples: Radiographic and R/F rooms	<i>Ben Archer</i>
11:00 AM - 11:30 AM	Mammography and Bone Densitometer Shielding	<i>Doug Simpkin</i>
11:30 AM - 12:00 PM	NCRP #147 CT Scanner Shielding Model and Examples	<i>Bob Dixon</i>
<b>12:00 PM-1:30 PM</b>	<b>Lunch Break</b>	
1:30 PM - 2:30 PM	PET/CT Shielding	<i>Jon Anderson</i>
2:30 PM - 3:00 PM	Panel Discussion: Diagnostic Shielding	<i>Faculty</i>
<b>3:00PM-3:30PM</b>	<b>Afternoon Break</b>	

<b>Session II Radiation Therapy Shielding</b>		
3:30 PM - 4:30 PM	Basic Principles of Radiation Therapy Shielding Design: primary and secondary barriers, maze and door design	<i>Peter Biggs</i>
4:30 PM - 5:15 PM	Photoneutron Physics: production, transport, and shielding methodology	<i>Nisy Ipe</i>
5:15 PM - 5:30 PM	Panel Discussion	<i>Faculty</i>

### Friday, March 4, 2005

<b>7:30 AM - 8:00 AM</b>	<b>Continental Breakfast</b>	
	<b>Session III Advanced Shielding Topics and Examples</b>	
8:00AM - 8:30 AM	AAPM/NCRP Radiotherapy Shielding Report: status and methodology	<i>Jim Deye</i>
8:30AM - 9:15 AM	Examples of Radiotherapy Shielding Design based on proposed NCRP methods	<i>Jim Rodgers</i>
9:15AM - 10:00 AM	Neutron Door Shielding: sliding and swinging door design and review of measured data	<i>Pat McGinley</i>
<b>10:00 AM-10:30 AM</b>	<b>Morning Break</b>	
10:30 AM - 11:15 AM	Innovative Linac Vault Design and Practical Shielding Tips (backwards linac, inverted bump, partial arc table clearance, etc.)	<i>Robert Barish</i>
11:15AM - 11:45AM	Radiation Surveys: Methods and Instrumentation	<i>Bob Dixon,</i>
11:45PM - 12:30 PM	Panel Discussion	<i>Session Faculty</i>