

2024 SEAAPM Symposium Agenda

February 8-9, 2024

Hilton Head Island, SC

Title: Applications of MRI and Advanced Imaging Technologies in Radiation Oncology and Radiology

Program Directors:

Kathryn Mittauer, Ph.D. - Miami Cancer Institute – Therapy Director

Megan Lipford, Ph.D. - Wake Forest University School of Medicine – Diagnostic Director

Value

Cancer therapy is at a pivotal moment that diagnostic imaging technologies have become integrated as on-board image guidance in radiation oncology. Furthermore, diagnostic imaging has had key temporal resolution advancements such as photon counting CT. These novel imaging capabilities enable new treatment approaches for cancer patients such as online adaptive treatment planning with MR/CT o-ring Linacs, biological-guided radiotherapy with PET-Linac systems, and soft-tissue visualization with MR Linac systems. These hardware advancements are accompanied by integration of AI in autosegmentation, deformable image registration, and adaptive planning opportunities. In totality, advancements in imaging have allowed for higher precision cancer therapy allowing hypofractionation, functional avoidance planning, margin reduction, and personalized medicine approaches. The clinical evidence of reduced toxicity and improved survival of these nascent technologies has demonstrated early clinical successes.

In this symposium we will introduce the technical evidence supporting advanced imaging applications, with focus on novel techniques in MRI, CT, and PET based systems. The symposium will benefit medical physicists and other healthcare professionals who seek to better understand advanced imaging techniques and how they are impacting current clinical practice and future direction of cancer care. Commissioning and clinical implementation of these novel modalities will be discussed. Lastly, medical physics educators will benefit from a robust discussion of evolving diagnostic residency curriculum and nuclear medicine integration.

Learning Objectives:

1. Understand the merits of CT and MRI online adaptive radiotherapy
2. Appreciate novel imaging technologies and their implementation in the clinic
3. Gain familiarity with utilization of functional avoidance in treatment planning
4. Understand the landscape of diagnostic and nuclear physics training and certification

Credits:

This meeting has applied to CAMPEP for approval of 11 MPCEC hours.

Symposium Agenda

DAY 1: Thursday, February 8th

6:30-7:50 AM	Breakfast
7:50-8:00 AM	Welcome Kathryn Mittauer, Ph.D. - Miami Cancer Institute – Therapy Director Megan Lipford, Ph.D. - Wake Forest University School of Medicine – Diagnostic Director
8:00-10:00 AM	Session: Functional Avoidance in Radiotherapy 1. The First of its Kind: A Multi-Center Prospective Clinical Trial in Lung Functional Avoidance – Richard Castillo, PhD, Emory University (30 min) 2. Imaging Applications of Lung Functional Avoidance for Treatment Planning – Shannon O'Reilly, PhD, University of Pennsylvania (30 min) 3. Hyperpolarized 129Xe Magnetic Resonance Imaging for Functional Avoidance Treatment Planning in Thoracic Radiation Therapy – Leith Rankine, PhD, University of North Carolina at Chapel Hill (30 min) 4. Q&A + panel (30 min)
10:00-10:15 AM	Lighting Vendor Introductions
10:15-10:45 AM	Morning Break Visit the Exhibitors
10:45-12:45 PM	Session: Novel imaging applications Part 1 1. Arterial Spin Labeling MRI in the Clinic – Megan Lipford, PhD, Wake Forest University School of Medicine (30 min) 2. Clinical Implementation of Biological-guided Radiotherapy (BgRT) on Reflexion X1 – Thomas Banks, PhD, University of Texas Southwestern Medical Center (30 min) 3. Clinical Advances in Cardiac PET – Jonathon Nye, PhD, Medical University of South Carolina (30 min) 4. Q&A + panel (30 min)
12:45-1:45 PM	Lunch Break Visit the Exhibitors
1:45-3:45 PM	Session: Online Adaptive Radiotherapy 1. Community Practice Experience with Implementation of Online Adaptive Radiotherapy on an MR Linac System – Tomi Ogunleye, MS, Northside Hospital (30 min) 2. MR-guided Radiotherapy: Functional Imaging Applications in Adaptive Radiotherapy – Brigid McDonald, PhD, MD Anderson Cancer Center (30 min) 3. A Preview of Task Group 395 Recommendations: X-Ray Online Adaptive Radiotherapy – Dennis Stanley, PhD, University of Alabama at Birmingham (30 min) 4. Q&A + panel (30 min)
3:45-4:15 PM	Afternoon Break Visit the Exhibitors
4:15 – 5:30 PM	Session: Debate on Current Imaging and Radiotherapy Topics 1. MR vs CT for Online Adaptive Radiotherapy (30 min) MR-guided Online Adaptive Radiotherapy — Kathryn Mittauer, PhD, Miami Cancer Institute CT Online Adaptive Radiotherapy — Dennis Stanley, PhD, University of Alabama at Birmingham 2. Should Residency Training for Diagnostic Imaging Physicists Be Expanded to Include Nuclear Medicine Physics? (30 min) Jonathon Nye, PhD, Medical University of South Carolina Stephanie Leon, PhD, University of Florida Q&A (15 min)

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DAY 2: Friday, February 9 th	
6:30-7:20 AM	Breakfast
7:20-7:30 AM	Welcome Kathryn Mittauer, Ph.D. - Miami Cancer Institute – Therapy Director Megan Lipford, Ph.D. - Wake Forest University School of Medicine – Diagnostic Director
7:30-9:00 AM	Session: AI in Practice 1. AI Opportunities in Adaptive Planning and Dose Accumulation – Neelam Tyagi, PhD, Memorial Sloan-Kettering Cancer Center (30 min) 2. AI Implementation in Radiation Oncology – Issam El Naqa, PhD, Moffitt Cancer Center (30 min) 3. Q&A + panel (30 min)
9:00-9:30 AM	Morning Break Visit the Exhibitors
9:30-12:00 PM	Session: Novel Imaging Applications Part 2 1. Photon-counting CT: One Step Closer to What Medical Images are Meant to Provide– Ehsan Samei, PhD, Duke University Health System (30 min) 2. Is There a Future for Low-field MRgRT? – Daniel Low, PhD, University of California, Los Angeles (30 min) 3. MRI/DECT Mass Density Mapping for Proton Therapy using Physics-Constrained Deep Learning – Matthew Goette, PhD, Emory Healthcare (30 min) 4. HyperSight Commissioning and Impact on Ethos Adaptive Radiotherapy – Eric Laugeman, MS, Washington University School of Medicine in St. Louis (30 min) 5. Q&A + panel (30 min)
12:00-1:00 PM	Lunch Break Visit the Exhibitors
1:00 PM	2024 SEAAPM Scientific Meeting Opens