



## Objectives & Outline

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### Objectives

The AAPM Virtual Summer School Meeting has been approved by the Commission on Accreditation of Medical Physics Education Programs, Inc. (CAMPEP) for 28.02 MPECEC hours.

- 1) Understand the basic principles of MRI
- 2) Understand the current applications of MR in radiation therapy
- 3) Understand the latest commercial MRgRT technologies
- 4) Be able to evaluate options for integrating MR in RT
- 5) Be able to implement MR simulation
- 6) Be able to evaluate benefits and challenges of MRgRT

### Program Outline

Saturday, June 26		
All times are in Eastern time		
Day 1: MR Imaging		
9:45am - 10:00am	Opening remarks	
<b>10:00am - 12:00pm</b>	<b>Session 1.1: Overview and Basics</b> Moderator: James Balter	
10:00am - 10:30am	An Overview: Current Status of MR in RT	Dan Low
10:30am - 11:10am	Basic Physics of MR	Peng Hu
11:10am - 11:50pm	MRI Instrumentation	Jason Stafford
11:50am - 12:00pm	Q/A	
12:00pm - 12:20pm - Break		
<b>12:20pm - 2:30pm</b>	<b>Session 1.2: MR Sequences</b> Moderator: Neelam Tyagi	
12:20pm - 1:00pm	Image Reconstruction, Post-Processing, Artifacts	Peng Hu
1:00pm - 1:40pm	Introduction to MR sequences and common sequences for RT	Jihong Wang
1:40pm - 2:20pm	Introduction to multi-parametric MRI	Yue Cao
2:20pm - 2:30pm	Q/A	
2:30 pm - 2:50pm - Break		
<b>2:50pm - 4:40pm</b>	<b>Session 1.3: Registration, QA, Subspecialization</b> Moderator: Jihong Wang	
2:50pm - 3:20pm	Multi-modality image registration	Sridhar Yaddanapudi
3:20pm - 4:00pm	MRI safety and QA	Jason Stafford
4:00pm - 4:30pm	What should a RT physicist know about MRI?	Neelam Tyagi
4:30pm - 4:40pm	Q/A	
4:40pm - 5:00pm - Break		
5:00pm - 5:50pm	Debate: Deep understanding MR Science is Necessary for RT Physicists Pro: James Balter / Con: Jason Stafford Moderator: Dan Low	
5:50pm - 6:00pm	Recap of the day	Yue Cao
Sunday, June 27		
Day 2: MRI Simulation		
<b>10:00am - 12:10pm</b>	<b>Session 2.1: MR-Sim Implementation</b> Moderator: Jason Stafford	
10:00am - 10:40am	Technologies and requirements for MR sim	James Balter
10:40am - 11:20am	Commissioning and QA of MR simulator	Teo Stanescu
11:20am - 12:00pm	Operationalization and workflow for MR simulation	Carri Glide-Hurst
12:00pm - 12:10pm	Q/A	
12:10pm - 12:30pm - Break		
<b>12:30pm - 2:40pm</b>	<b>Session 2.2: MR-Sim Special Issues</b> Moderator: James Balter	
12:30pm - 1:10pm	Motion assessment: 4D-MRI, Cine MRI	Eric Paulson
1:10pm - 1:50pm	MR Only Simulation and Synthetic CT	Teo Stanescu
1:50pm - 2:30pm	Tumor-site specific issues and examples of MR Simulation	Victoria Yu
2:30pm - 2:40pm	Q/A	
2:40pm - 3:00pm - Break		
<b>3:00pm - 4:40pm</b>	<b>Session 2.3: MR Treatment Planning</b> Moderator: Allen Li	
3:00pm - 3:30pm	Introduction to MRI Interpretation	Paul Knechtges
3:30pm - 4:00pm	Introduction to MRI-based Delineation	Beth Erickson
4:00pm - 4:30pm	MR-based Treatment Planning - strategies and examples	Neelam Tyagi
4:30pm - 4:40pm	Q/A	
4:40pm - 5:00pm - Break		
5:00pm - 5:50pm	Debate: Modern RT Departments Require Owning MR Simulators Pro: Dan Low / Con: Carri Glide-Hurst Moderator: Jason Stafford	
5:50pm - 6:00pm	Recap	Yingli Yang
Monday, June 28		
Day 3: MRgRT - 1		
<b>10:00am - 11:50am</b>	<b>Session 3.1: MRgRT Systems</b> Moderator: Teo Stanescu	
10:00am - 10:25am	Overview of Elekta MR-Linac	Allen Li
10:25am - 10:50am	Overview of ViewRay MRgRT Systems	Dan Low
10:50am - 11:15am	Pre-commercial device - Alberta system	Gino Fallone
11:15am - 11:40am	Pre-commercial device - Australia system	Paul Keall
11:40am - 11:50am	Q/A	
11:50 am - 12:10pm - Break		
<b>12:10pm - 2:20pm</b>	<b>Session 3.2: MRgRT Commissioning and QA</b> Moderator: Olga Green	
12:10pm - 12:50pm	Commissioning of an Elekta MRgRT System	Xinfeng Chen
12:50pm - 1:30pm	Commissioning of a ViewRay MRgRT System	James Lamb
1:30pm - 2:10pm	Routine QA of MRgRT system	Eenas Omari
2:10pm - 2:20pm	Q/A	
2:20pm - 2:40pm - Break		
<b>2:40pm - 4:40pm</b>	<b>Session 3.3: MRgRT Workflow</b> Moderator: Eenas Omari	
2:40pm - 3:10pm	Pre-Beam and Beam-on Imaging	Yingli Yang
3:10pm - 3:50pm	MRgRT Workflows - Elekta	Eric Paulson
3:50pm - 4:30pm	MRgRT Workflows - ViewRay	Olga Green
4:30pm - 4:40pm	Q/A	
4:40pm - 5:00pm - Break		
5:00pm - 5:50pm	Debate: You Can't Do True Adaptive RT Without MRgRT Pro: Allen Li / Con: Uwe Oelfke Moderator: Carri Glide-Hurst	
5:50pm - 6:00pm	Recap of the day	Olga Green
Tuesday June 29		
Day 4: MRgRT - 2		
<b>10:00am - 12:10am</b>	<b>Session 4.1: Advances in MRgRT</b> Moderator: Olga Green	
10:00am - 10:40am	Management of intrafraction variations	Bas Raaymaker
10:40am - 11:20am	Acceleration of online adaptation	Allen Li
11:20am - 12:00pm	Functional MR Guided Adaptation	Uulke Heide
12:00pm - 12:10pm	Q/A	
12:10pm - 12:30pm - Break		
<b>12:30pm - 2:10pm</b>	<b>Session 4.2: Clinical and Operationization of MRgRT</b> Moderator: Allen Li	
12:30pm - 1:00pm	Clinical outcome of MRgRT	Michael Bassetti
1:00pm - 1:30pm	Potentials and promises of MRgRT	Bill Hall
1:30pm - 2:00pm	Practicality, staffing, and billing of MRgRT	James Lamb
2:00pm - 2:10pm	Q/A	
2:10pm - 2:30pm - Break		
<b>2:30pm - 4:10pm</b>	<b>Session 4.3: Magnetic Field Effects and Future</b> Moderator: Dan Low	
2:30pm - 3:00pm	Low vs. High Field -- Effects on Dosimetry and Imaging	John Bayouth
3:00pm - 3:30pm	IROC updates - imaging and dosimetry relevant to MRgRT	Paola Alvarez
3:30pm - 4:00pm	Next Generation of MRgRT Systems	Paul Keall
4:00pm - 4:10pm	Q/A	
4:10pm - 4:30pm - Break		
4:30pm - 5:20pm	Debate: MRgRT is Worth the Cost and Challenges Pro: David Fuller / Con: John Bayouth Moderator: Allen Li	
5:20pm - 5:30pm	Recap of the day	Minsong Cao
5:30pm - 6:00pm	Summer School Feedback and Wrap up	

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Advancing medicine through excellence in the science, education and professional practice of medical physics.

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