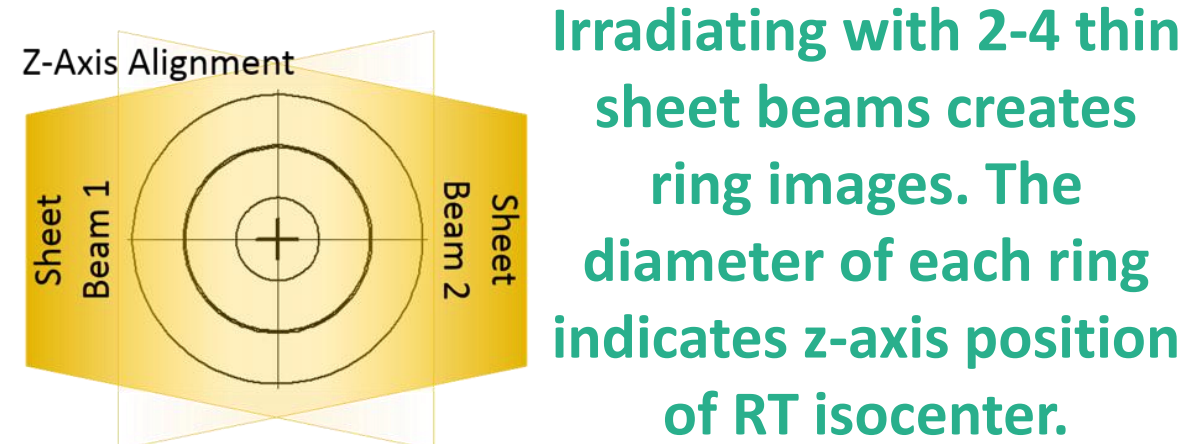


Abstract Title: Novel Phantom and Optical Imaging Technique Can Co-Align Magnetic Resonance Imaging and Radiation Isocenters for Integrated Therapy Systems

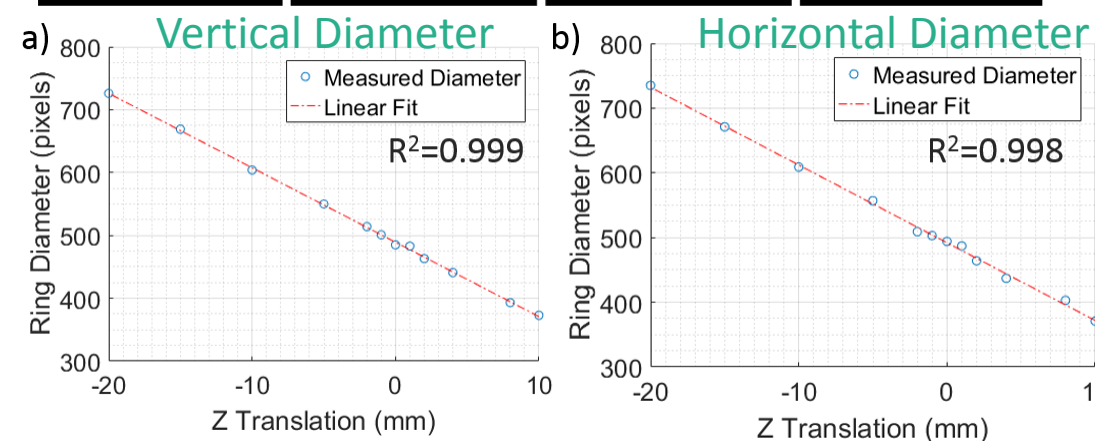
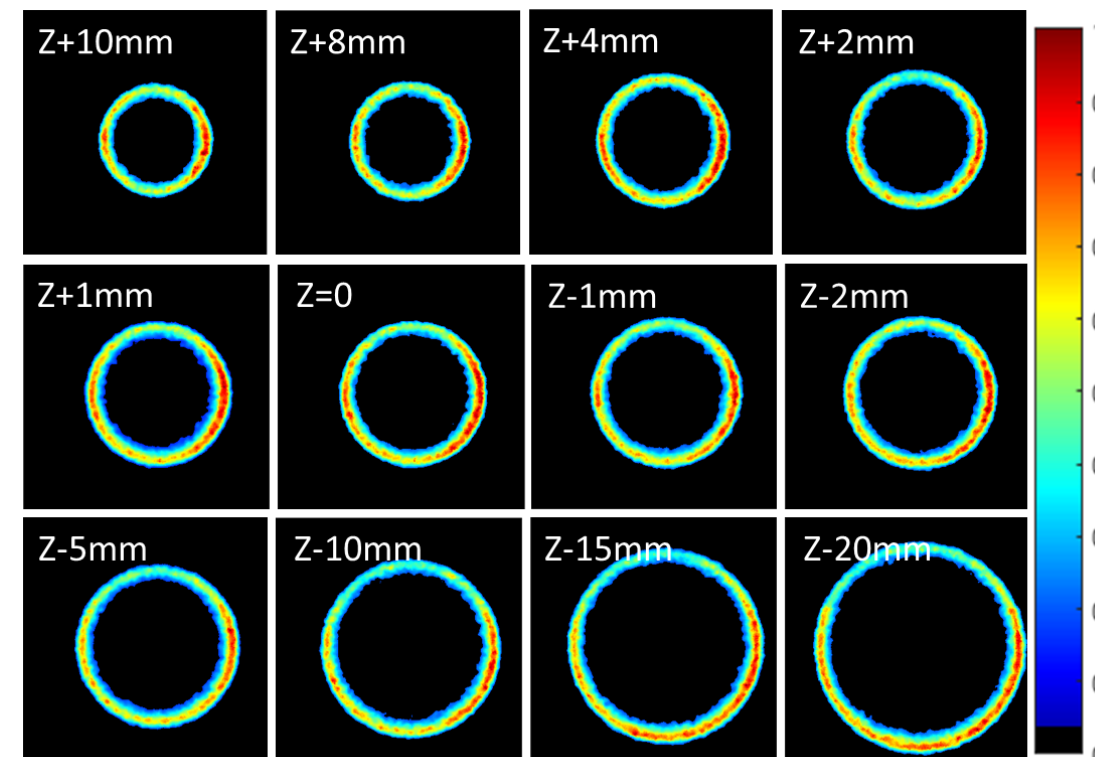
Date and Time: 08/01/2018 | 4:30PM — 6:00PM
 Session Title: QA for Advanced Imaging Applications
 Presenting Author: Jacqueline Andreozzi
 Abstract ID: 40176

Physical features of phantom allow MRI isocenter verification

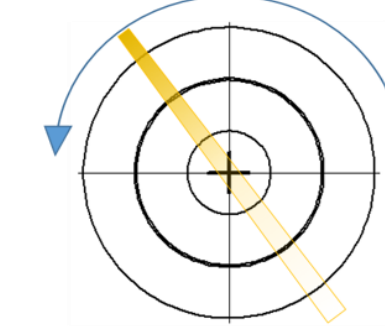
- 1) Proof of concept on TrueBeam linac
- 2) Submerged in water tank and imaged on ViewRay MR-linac (concurrent optical and MRI).



Integrated Optical Images of Two Sheet Beams



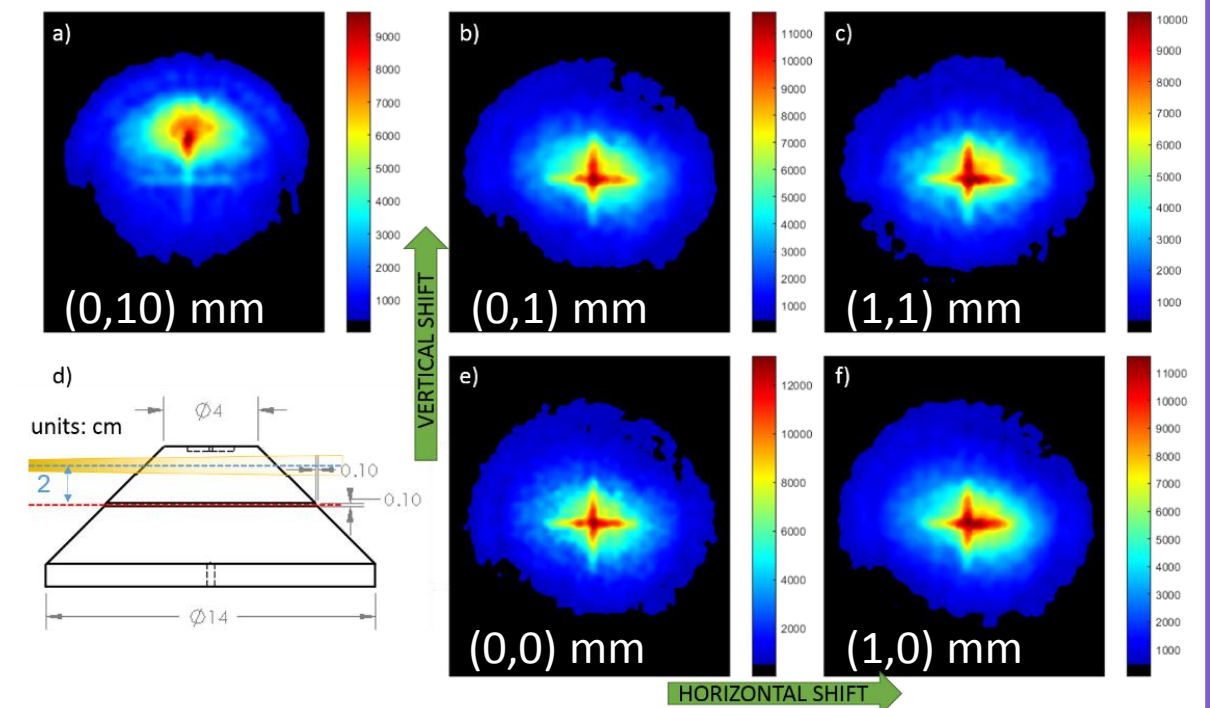
XY-Axes Alignment



Beamlet Arc

Hotspot of the integrated image of an arc or starshot pattern aligned to the front face provides xy-position of RT isocenter.

Integrated Optical Images of Beamlet Arc



Known Vertical Shift (mm)	Measured Vertical Shift (mm)	Error (mm)	Known Horizontal Shift (mm)	Measured Horizontal Shift (mm)	Error (mm)
0.00	0.00	-	0.00	0.00	-
0.00	0.00	0.00	1.00	1.02	0.02
1.00	1.02	0.02	0.00	0.00	0.00
1.00	1.02	0.02	1.00	1.02	0.02
10.00	9.86, 10.02*	-0.14, 0.02*	0.00	-0.17	-0.17