

MR-Guided RT QA Recommended Publications

ArcCHECK[®]-MR

Clinical Experience of Patient-Specific QA for Online Adaptive Radiotherapy Using Elekta Unity MR-Linac

J Yang, et al., UT MD Anderson Cancer Center, Houston, TX, AAPM 2019

- Successfully used ArcCHECK-MR for Patient-Specific QA on 1.5T MR-Linac.

"Our patient-specific QA procedure ensured a safe delivery of online adaptive plan using the Unity MR-Linac."

First MR-Guided Online Adaptive Patient Treatment in North America On An In-Room High Field (1.5 T) MRI Linac

S Vedam, et al., MD Anderson Cancer Center, Houston, TX, AAPM 2019

- Used ArcCHECK-MR for Patient-Specific QA on first adaptive treatments on Elekta's new Unity 1.5T MR-Linac.

Comprehensive commissioning of MR-Linac online adaptive radiotherapy QA

O. Green, et al. Washington University School of Medicine, Radiation Oncology- Physics Division, Saint Louis, USA, ESTRO 2019

- Validated ArcCHECK-MR as part of a quality assurance process for online adaptive radiotherapy (ART) performed with a MRIdian MR-Linac.

"The complexity of online adaptation necessitates not only thorough commissioning but the establishment of on-going comprehensive quality assurance for each fraction that includes not only a phantom-less QA but also a method to ensure that all other components of the plan are accounted for and checked."

Performance of a cylindrical diode array for use in a 1.5 T MR-linac

Houweling A. et al., Physics in Medicine and Biology, 61(3) (2014)

- Study examining the performance characteristics of the ArcCHECK-MR in a transverse 1.5T magnetic field.

"The short term reproducibility, dose linearity, dose rate dependence, field size dependence, dose per pulse dependence and inter-diode variation of the ArcCHECK-MR diodes were not influenced by the presence of a 1.5 T magnetic field. Therefore, the ArcCHECK-MR can be used for QA of patient plans in the MR-linac."

No significant differences between the performance of the MR-linac and the clinical linac were observed.

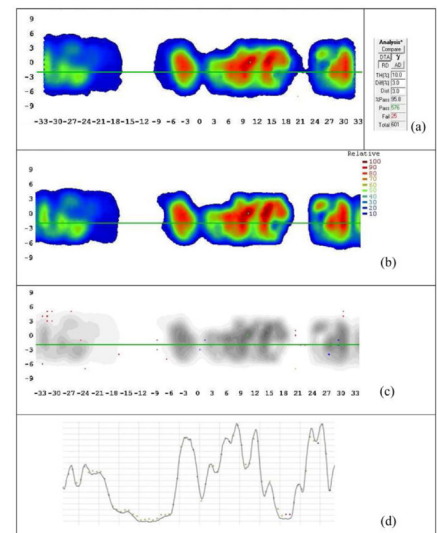
Patient-specific quality assurance for the delivery of (60)Co intensity modulated radiation therapy subject to a 0.35-T lateral magnetic field.

Li HH. et al., Int J Radiat Oncol Biol Phys, 91(1):65-72 (2015)

- This publication reviews a patient specific dosimetry quality assurance (QA) program for IMRT using ViewRay[®], the first commercial magnetic resonance imaging-guided RT device.

Examines the use of ArcCHECK-MR as part of a patient-specific intensity modulated radiation therapy quality assurance (QA) program for ViewRay.

AC-MR measurements indicated the mean SD passing rate using 3% relative/3 mm gamma criteria was 98.9%.



IC PROFILER™-MR

Performance of a multi-axis ionization chamber array in a 1.5 T magnetic field.

Smit K. et al., Physics in Medicine and Biology, 59(7) (2014)

- This publication investigates the performance of the IC PROFILER™, a multi-axis ionization chamber array, in a 1.5 T magnetic field.

The linearity, reproducibility, pulse rate frequency dependence, panel orientation and ionization chamber shape are unaffected by the magnetic field.

IC PROFILER™ dose profiles were compared with film dose profiles obtained simultaneously in the MR-linac. Deviation between the film and the IC PROFILER™ data was caused by the noise in the film, indicating correct performance of the IC PROFILER™ in the transverse 1.5 T magnetic field.



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