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 MRIldian 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.

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%.

Patient-specific quality assurance for the delivery of (60)Co intensity modulated radiation therapy subject to a 0.35-T lateral magnetic field.
• This publication reviews a patient specific dosimetry quality assurance (QA) program for IMRT using ViewRay®, the first commercial magnetic resonance imaging-guided RT device.
  Exams 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%. 

1 www.lightages.com
2 | SUN NUCLEAR CORPORATION // sunnuclear.com
This publication investigates the performance of the IC PROFILERTM, 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 PROFILERTM dose profiles were compared with film dose profiles obtained simultaneously in the MR-linac. Deviation between the film and the IC PROFILERTM data was caused by the noise in the film, indicating correct performance of the IC PROFILERTM in the transverse 1.5 T magnetic field.