

REAL-TIME INTERFERENCE COMPENSATION IN MRI GUIDED RADIOTHERAPY

[Curcuru, Austen](#), [Gach, H. Michael](#), [Kim, Taeho](#), [Villa, Umberto](#)

[Maland, Brett](#)

T-019745

Technology Description

Researchers at Washington University in St. Louis have developed a method to improve image quality during MR imaging guided radiation therapy (MR-IGRT) by correcting for B₀ fluctuation in real-time. The corrections reduce electromagnetic interference (EMI) between the MRI scanner and linear accelerator, which creates imaging artifacts.

Currently, EMI-related imaging issues prevent physicians from using more advanced volumetric modulated arc therapy (VMAT) techniques. VMAT use with MR-IGRT would dramatically reduce the procedure time per patient while improving tumor targeting.

Publications

- Curcuru AN, Lewis BC, Kim T, Yang D, & Gach HM. (2021). [Effects of B₀ eddy currents on imaging isocenter shifts in 0.35-T MRI-guided radiotherapy \(MR-IGRT\) system](#). *Medical Physics*, 48(6): 2929-2938.

Applications

- MR imaging guided radiation therapy (MR-IGRT)

Key Advantages

- Reduces EMI between MRI and Linac subsystems
- Enables volumetric modulated arc therapy for MR-IGRT

Patents: Pending

Related Web Links: Villa [Profile](#) & [Lab](#); Gach [Profile](#); Kim [Profile](#)