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## Monte Carlo simulations for magnetic resonance guided radiation therapy dosimetry (I)

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Image Guided Radiation Therapy (IGRT) technologies aim to improve the accuracy of the delivery of radiation with the hopes of decreasing damage to healthy tissues and sensitive organs. Synergetic MRI-Radiation therapy machines are a developing technology that can provide improved tumour tracking during treatment to help accommodate for patient motion or unaccounted for bodily changes over the full course of treatment. Porting the advantages of MRI technology into IGRT comes with the cost of introducing a magnetic field around the patient while a radiation beam is present. This magnetic field (MF) causes curvature in the charged particle trajectory, and can lead to significant variations in dose distributions, particularly at tissue-air interfaces, and lead to changes in the dose response of detectors. Here the influence of the MF on dosimetry systems and dose distribution is explored using the EGSnrc Monte Carlo code system.

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