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Monitoring Novel Proton Radiotherapy Treatment Modalities using MAPS

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Proton radiotherapy uses beams of protons to treat cancer. In Proton radiotherapy the dose can be localised to the cancer volume with a reduced dose to healthy tissue caused by the incident beam, and almost no dose downstream. Novel ways of delivering the dose during proton radiotherapy are under development, two such techniques form the basis of this work. The first is FLASH proton therapy, it has been shown that delivering the dose fast enough leads to futher sparing of healthy tissue whilst still maintaining tumour control.The second is spatially fractionated proton radiotherapy, known as grid therapy which also spares healthy tissues. We will present the development of delivery systems for these modalities at the University of Birmingham MC40 cyclotron and results obtained using a commercially available MAPS device to monitor the treatment delivery of these modalities, compare to the standard procedures, and discuss the dosimetry required for these novel beams.

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