

Optimisation of Silicon Strip Trackers for Proton Computed Tomography

Thursday, 28 May 2020 11:18 (18 minutes)

Proton radiotherapy offers an improved healthy tissue to tumour ratio compared with conventional x-ray radiotherapy when treating certain forms of cancer. Conversion from x-ray CT to proton stopping powers can lead to uncertainties in the dose delivery of >3%. The development of proton CT to directly measure the stopping powers has proven very promising over the last five years. With the move to pencil beam scanning delivery systems the environment for proton tracking and proton CT is now much more challenging. We will present results on the optimisation of the OPTIma silicon strip proton trackers for proton tracking in such an environment. Particular emphasis will be placed on the strip thickness to minimise coulomb scattering, strip pitch to optimise data rate and position resolution, and the arrangement of the individual planes to negate the ambiguities caused by multiple protons traversing the system in a single readout cycle due to constraints of dose rate during delivery

Funding information

Primary authors: WINTER, Alasdair (University of Birmingham (GB)); COTTERILL, John Vincent (University of Birmingham (GB)); PRICE, Tony (University of Birmingham (GB)); ALLPORT, Philip Patrick (University of Birmingham (UK)); GREEN, Stuart (University Hospital Birmingham); ALLINSON, Nigel (U); ESPOSITO, Michela; WALTHAM, Chris

Session Classification: Technology Transfer

Track Classification: Technology Transfer