

Ins and outs of Ion Radiography

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BACKGROUND

Dr. Charles-Antoine Collins-Fekete is a research fellow at University College London/National Physical Laboratory in London. Dr. Fekete has a B.Sc. in physics and a M.Sc. in medical physics from the University of Laval. In 2013, he started his Ph.D. in Medical Physics from the University of Laval. During his Ph. D., he conducted his research studies in the field of proton imaging at the Massachusetts General Hospital, USA and German Cancer Research Center (DKFZ), Germany. In 2018, he moved to London where he started his postdoctoral studies in proton radiography as an image guidance tool for intra-treatment lung radiotherapy.

ABSTRACT

In recent years, the interest in using charged particles, such as protons and carbon ions, to treat cancer has shown a considerable increase with more than 140.000 patients being treated in 2015. The growing interest in charged particle therapy can be explained by their characteristic depth-dose curve. However, to take full advantage of this depth-dose curve, precise knowledge of the particle's range and patient interfaces is necessary. Range uncertainties in charged particle therapy are significant and different imaging methods have been proposed to deal with these uncertainties, such is the case of Ion Radiography. The purpose of this seminar is to give an overview on Ion Radiography as a method do decrease these range uncertainties and increase the accuracy in charged particle therapy.