Contribution ID: **88** Type: **Oral presentation Users Workshop**

Simulation studies of a therapeutic proton beam delivery system

Friday, 16 October 2009 17:30 (20 minutes)

We have been developing a Monte Carlo simulation software to be applied in clinical usage.
To apply a Monte Carlo simulation in clinical support, the reproducibility of real irradiation is prerequisite. From modeling the therapeutic nozzle to mimicking treatment scheme, we have successfully modeled our beam delivery system which is using rotation modulation wheels to generate a spread-out Bragg peaks(SOBP). The initial beam energy for Monte Carlo simulation was estimated based on the Bragg peak comparisons with measurement and used to simulate SOBPs resulting good agreement with measured SOBPs.In this presentation, we will summarize our status of development and introduce user studies applying the developed software.

Are you a Memeber of the Geant4 Collaboration (yes/no)

no

Keymords

Proton therapy, SOBP, modulation wheel

Summary

In order to apply Monte Carlo simulation to clinical support, the authors have been developing the Monte Carlo simulation for the proton therapy based on the Geant4 simulation toolkit.

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Session Classification: Parallel Session VIII - Medical

Track Classification: Users' Workshop