



Contribution ID: 1140 Contribution code: THPR53

Type: **Poster Presentation**

Optimizing the layout for a highly efficient multi-room particle therapy facility with a minimal footprint

Thursday, 23 May 2024 16:00 (2 hours)

Proton therapy has a significant advantage over conventional radiation therapy. Yet most hospitals do not offer it because of the significant cost associated with it. In this work, we developed the most compact, low-cost, expandable, and high-performance beamline for multi-room particle therapy. The accelerator is located at a lower level (underground) and the beamline guides the particles to treatment rooms located on the upper level of the floor. The treatment delivery rooms are then designed in a circular arrangement such that the rotating beamline can deliver a beam to each treatment room where the patient is treated in an upright position and rotated in front of a static treatment beam. The compact beamline can rotate 360° about the vertical axis. For this beamline, the beam characteristics for treatment are calculated with the BDSIM Monte Carlo simulations code. With this invention, we can fit a single-room proton facility within an existing LINAC vault and 4 room facility could fit within a tennis court. We believe that the high throughput and minimum investment cost will allow treating the patients with protons the same as the conventional radiation therapy treatment cost.

Footnotes

Funding Agency

SNF BRIDGE

Paper preparation format

Word

Region represented

Europe

Primary author: MARADIA, Vivek (Paul Scherrer Institut)

Co-author: LOMAX, Antony (Paul Scherrer Institut)

Presenter: MARADIA, Vivek (Paul Scherrer Institut)

Session Classification: Thursday Poster Session

Track Classification: MC8: Application of Accelerators, Technology Transfer, Industrial Relations, and Outreach: MC8.A28 Medical Applications