



Contribution ID: 2062 Contribution code: THPC13

Type: **Poster Presentation**

Optics design of a compact helium synchrotron for advanced cancer therapy

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

The design of a helium synchrotron for cancer therapy is being studied and optimized in the context of the Next Ion Medical Machine Study (NIMMS) at CERN. In particular, the effects of combined-function magnets and their geometry on the optics functions and hence on the beam size are evaluated. Moreover, the introduction of defocusing quadrupoles in the lattice is investigated as a means of better controlling the optics in both planes, while sextupoles for chromaticity control and resonant extraction are introduced. The updated lattice design is simulated to identify potential limitations in terms of nonlinear dynamics due to the low periodicity of the lattice and propose a regime for operations from the transverse beam dynamics' perspective.

Footnotes

Funding Agency

Paper preparation format

LaTeX

Region represented

Europe

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Session Classification: Thursday Poster Session

Track Classification: MC5: Beam Dynamics and EM Fields: MC5.D01 Beam Optics Lattices, Correction Schemes, Transport