

Design of a compact gantry with high energy acceptance for carbon-ion cancer therapy

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We presented gantry design with compact size and high energy acceptance satisfying rotation invariant condition. three identical 90 degree superconducting canted cosine theta (CCT) bending magnets (BMs) was used in a gantry to make gantry size be small, however, one BM have reverse bending angle. For high energy acceptance, low dispersion should be maintained through a gantry, therefore, alternating-gradient quadrupole coils was introduced in each 90 degree BM. Because rotator beam line was not introduced in this gantry, point-to-parallel imaging in the entire gantry is satisfied to ensure rotation invariant optics. Downstream scanning method is adapted in this gantry in order to ensure small nonlinear beam dynamics in a last BM by making the BM's bore radius be small. 90 degree CCT BM design was not fulfilled yet and it will be future work.

Paper submission Plan

Yes

Best Presentation

No

Contribution track

ICABU WG1. Accelerator Systems

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