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【390】Compact Synchrotrons for Hadron Therapy: Development and Synergies with HEP Projects.

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Carbon-ion therapy has advantages over X-rays, because of the Bragg peak, and proton therapy, because of radio-biology properties that allow treating radio-resistant tumours.

Accelerator development aims at size reduction: within EU-funded projects and CERN, we study a super-conducting synchrotron and a gantry, based on a concept of TERA Foundation. The super-conducting magnets, of CCT type, are strongly curved and require extensive R&D and new tools for beam-optics.
Another development, with several beam-dynamics challenges, is accumulating 20-times larger intensity for FLASH irradiation, i.e. delivering high dose rates to spare healthy tissues.
SEEIIST, federating SE-European countries, will implement these developments and build a medical facility, to foster collaboration and scientific excellence.

Theoretical Work

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