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Mayo Clinic Florida Carbon and Proton Therapy Facility Design

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In 2021 there were 36 particle therapy facilities under construction world wide of which 5 are planned to be able to deliver Carbon. One in Caen France and four in Asia. In May 2022 Mayo Clinic Florida (MCF) broke ground to build a Proton and Carbon Ion treatment center in Jacksonville Florida. The MCF facility is comprised of a hybrid synchrotron 56.8 m in circumference with twelve dipoles and two injectors. One 7 MeV AccSys proton injector and a 4 MeV SHI Carbon injector which is also capable to deliver Helium. Beam is delivered using a feedback controlled one third resonant extraction using the RF Knock Out method and includes multi energy extraction. There will be initially three treatment rooms: a Fixed Beam room with one horizontal beam line that delivers up to 430 MeV/u Carbon as well as all other ions extracted from the hybrid synchrotron and two treatment rooms each equipped with a 360 proton gantry to deliver 70 to 230 MeV protons to isocenter. Provision was made in control system design to deliver to five treatment rooms which could include two Carbon gantries in the future. Accelerator and dosimetry control system advancements include more stored charge, advanced imaging, real time adaptive treatments, and high intensity delivery capabilities with clinically optimized safety systems. The facility was shielded to allow the system to deliver with maximum efficiency.

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Footnotes

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Yes

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