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Superconducting magnet core fixation and alignment system

Hadron therapy for cancer treatment has been studied for decades and also the European Organization for Nuclear Research support by doing Next Ion Medical Machine Study are still actual and by coordinating other projects. Hadron Therapy is effective due to the reduced impact on healthy tissue. Moreover, by using a rotating gantry as a tool that provides precise patient treatment angles - effectiveness can be raised even more. Therefore, a superconducting rotating gantry is being designed within Heavy Ion Therapy Research and Integration project. However, there innovative solutions are needed to support superconductive magnets within the cryostat to ensure required tolerances and maintain those tolerances during gantry rotation as well as reducing thermal exchange with the environment. There those two main challenges are conflicting, so they were taken into account and the most critical magnet was analyzed further. The 6 fixed rod solution was chosen as a solution to support the magnet, where calculation for each rod in all gantry positions was performed. As a result of collaborative work with experts provided the promising design of a superconducting magnet support system.

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