

CONCEPTUAL DESIGN OF A HIGH TEMPERATURE SUPERCONDUCTING SPECTROSCOPY-TYPE GANTRY SYSTEM FOR PARTICLE THERAPY

Hang ZHAO, Accelerator Research Group, RCNP

In order to realize the compactness and a continuous treatment angle, we are designing a HTS (High Temperature Superconducting) Spectroscopy-type Gantry System. In the HTS Spectroscopy-type Gantry System, treatment angle can be set by controlling magnetic field, instead of rotating the beam line around the patient with a huge mechanical arm. In this paper, a design of basic structure configuration will be presented. With the simulated magnetic field profile, we calculated the particle trajectory and its injection data for a certain treatment angle. In order to apply a pencil beam scanning system, we calculated the separate beam trajectories and injection data for pencil beam scanning. Considering an actual beam transportation system, phase space in beam dynamics is also discussed. With assumed beam emittance and momentum deviation, we calculated the beam phase during the transportation for typical treatment angles.