

Design Study of Sector Magnet for the RIKEN Superconducting Ring Cyclotron (I), S. FUJISHIMA, A. GOTO, T. KAWAGUCHI, J.W. KIM, T. KUBO, T. MITSUMOTO, H. OKUNO, Y. TANAKA, T. TOMINAKA, AND Y. YANO, RIKEN - The RIKEN Accelerator Research Facility (RARF) proposes "RIKEN RI Beam Factory" as a next facility-expanding project. One of the main accelerators of the factory is a superconducting ring cyclotron. The cyclotron has six sector magnets with superconducting coils and accelerates a variety of ions as a post accelerator of the existing K540 ring cyclotron. Design study of the sector magnet has been carried out. Injection radius is 2.37 m and extraction radius is 5.36 m. Magnetic field of the sector magnet is calculated by 3D magnetic field calculation program "TOSCA". Beam dynamics is analysed based on the result of the calculation. Mainly two extreme cases are studied: $^{238}\text{U}^{58+}$ up to 150 MeV/nucleon and $^{16}\text{O}^{7+}$ up to 400 MeV/nucleon. Structure of the magnets and configuration of the superconducting coils consisting of main coils and four sets of trim coils are studied .