



Contribution ID: 1266

Type: **Poster Presentation**

Wed-Af-Po3.15-10 [14]: Experimental test of the Magnetic Field Active Shimming Method for the Air-core HTS Quadruple Magnet

Wednesday 25 September 2019 14:00 (2 hours)

A quadruple magnet, one of the superconducting magnets in accelerator system, is used to focusing accelerated beam particles. Recently developed high-temperature superconductor(HTS) has characteristics of high critical temperature and operating current densities under high-field region. Therefore, developments of HTS quadruple magnets applied to the hot cell region that has a high heat load in the accelerator system are being conducted. In addition, the study of air-core HTS quadruple magnet(AHQM) that is removed iron yoke are also under way. The magnet is suitable for the hot cell region and generate a higher magnetic field. Further, magnetic field characteristic of the magnet is linear according to the operating current. However, the magnetic field of the AHQM could be sensitively changed by the manufacturing error and assembly error because the iron yoke is removed. The magnetic field shimming method is used to compensate the magnetic field error after manufacturing the magnet. In the previous paper, we introduced the copper wire bunch active shim (CBAS) method which utilizes the free space that is generated by the removal of the iron yoke in the air-core HTS quadruple magnet. In this paper, the optimum design method and process for the CBAS method is presented. Furthermore, a test model of the CBAS method based on the design is constructed and its characteristics and applicability for the air-core quadruple magnet are analyzed.

Author: Mr KIM, Junseong (Electrical and Electronic Engineering, Yonsei University)

Co-authors: BAEK, Geonwoo (Yonsei University); Dr LEE, Woo Seung (Massachusetts Institute of Technology, Francis Bitter Magnet Laboratory / Plasma Science and Fusion Center); HAN, Seunghak (Yonsei University); Prof. LEE, Sangjin (Uiduk University, Gyeongju, Republic of Korea); Prof. KO, Tae Kuk (Yonsei University)

Presenter: Mr KIM, Junseong (Electrical and Electronic Engineering, Yonsei University)

Session Classification: Wed-Af-Po3.15 - HTS Magnets and Conductors for Accelerators