Contribution ID: **772** Contribution code: **WED-OR2-103-06** Type: **Oral**

Test result of a full-scale prototype of beam separation dipole magnet for the High-Luminosity LHC upgrade

Wednesday 17 November 2021 09:45 (15 minutes)

Large aperture beam separation dipole (MBXF) will be constructed as a Japanese contribution for the High-Luminosity LHC upgrade. Those magnets will be installed at both sides of two interaction points, ATLAS and CMS. The required field integral is 35 Tm with the coil aperture of 150 mm. Nominal dipole field of 5.6 T at the nominal current of 12 kA is produced at 1.9 K by Nb-Ti based technology. Magnetic length of this magnet is 6.3 m. KEK is responsible for delivery of seven cold masses including one prototype and six series production magnets within the framework of CERN–KEK collaboration. Since 2020, Hitachi has been constructing a full-scale prototype (MBXFP1). Magnet test will be conducted by KEK to validate that magnet performance fulfills acceptance criteria.
This paper reports a summary of the test results of MQXFP1, including training, mechanical performance, field quality and protection studies.

Primary authors: Dr SUGANO, Michinaka (KEK); Dr SUZUKI, Kento (KEK); Prof. NAKAMOTO, Tatsushi (KEK); Dr IKEDA, Hiroshi (KEK); Ms IKEMOTO, Yukiko (KEK); Mr IIDA, Masahisa (KEK); Mr KAWAMATA, Hiroshi (KEK); Dr KIMURA, Nobuhiro (University of Tokyo); Mr OKADA, Naoki (KEK); Mr OKADA, Ryutaro (KEK); Prof. SASAKI, Kenichi (KEK); Mr TAKAHASHI, Naoki (KEK); Mr TANAKA, Kenichi (KEK); Mr TERASHIMA, Akio (KEK); Prof. OGITSU, Toru (KEK); Mr OHATA, Hirokatsu (KEK); Dr HORIKOSHI, Atsushi (Hitachi, Ltd.); Dr MUSSO, Andrea (CERN); Dr TODESCO, Ezio (CERN)

Presenter: Dr SUGANO, Michinaka (KEK)

Session Classification: WED-OR2-103 HL-LHC Accelerator Magnets I