MT29 Abstracts and Technical Program



Contribution ID: 457

Type: Contributed Oral

Fri-Mo-Or4-04: Test results for the High Field Direct Wind magnet

Friday 4 July 2025 12:00 (15 minutes)

Brookhaven National Laboratory (BNL) has a unique Direct Wind (DW) technology which is used to fabricate complex multi-functional superconducting magnets. Some of these magnets have been integrated in currently operational accelerator complexes, such as, HERA, BEPC, JPARC, and RHIC. These multi-layer magnets do not require custom production tooling necessary for cabled magnets. The Electron Ion Collider (EIC) project is planning to use DW technology for most of the magnets at the Interaction Point IP6. To study the performance of a direct wind magnet at high magnetic field (and high Lorentz force), a High Field Direct Wind (HFDW) magnet was manufactured. It consists of three double layer coil-sets wound with a six-around-one 1.575 mm diameter conductor on a 38 mm radius mandrel. This magnet was tested up to Bpeak,conductor \approx 4T. This paper discusses 1) the magnet training behavior under repeated spontaneous quenches, and 2) quench behavior with spot heater induced quenches.

Author: KUMAR, Mithlesh

Co-authors: MARONE, Andrew (Brookhaven National Laboratory); PARKER, Brett (Brookhaven National Laboratory (US)); ANERELLA, Michael; JOSHI, Piyush

Presenter: KUMAR, Mithlesh

Session Classification: Fri-Mo-Or4 - Magnets for Electron Colliders