



Contribution ID: 2294 Contribution code: WEPM060

Type: **Poster Presentation**

## Status of MQXFB quadrupole magnets for HL-LHC

*Wednesday, 10 May 2023 16:30 (2 hours)*

The MQXFB magnets are superconducting quadrupoles with nominal peak field on the conductor of 11.3 T. With their magnetic length of 7.2 m, they stand as the longest Nb<sub>3</sub>Sn accelerator magnets designed and manufactured up to now. Together with the companion MQXFA 4.2 m long units, built by the US Accelerator Research Program, they are at the heart of HL-LHC, as they shall replace the inner triplet quadrupoles at either side of the ATLAS and CMS interaction regions of the LHC. This technology has benefited from many years of development, and this specific design was validated with successful short models (MQXFS, 1.2 m long). More recently, several MQXFA magnets were shown to satisfy HL-LHC requirements. In this paper, we report on the cold test results of four MQXFB magnets, focusing on performance, training, behavior after thermal and powering cycles, and field quality. We then provide an update of the overall status, including ongoing verifications of design changes at the level of the coil fabrication.

### Funding Agency

### Footnotes

### I have read and accept the Privacy Policy Statement

Yes

**Primary author:** MILANESE, Attilio (European Organization for Nuclear Research)

**Co-authors:** MOROS, Alice (European Organization for Nuclear Research (CERN)); BALLARINO, Amalia (European Organization for Nuclear Research); VOURIS, Antonios (Fermi National Accelerator Laboratory); DEVRED, Arnaud (European Organization for Nuclear Research); PETRONE, Carlo (European Organization for Nuclear Research); BARTH, Christian (European Organization for Nuclear Research); DUARTE RAMOS, Delio (European Organization for Nuclear Research); RAVAIOLI, Emmanuele (Lawrence Berkeley National Laboratory); TODESCO, Ezio (European Organization for Nuclear Research); MANGIAROTTI, Franco (European Organization for Nuclear Research); WILLERING, Gerard (European Organization for Nuclear Research); AMBROSIO, Giorgio (Fermi National Accelerator Laboratory); APOLLINARI, Giorgio (Fermi National Accelerator Laboratory); PRIN, Herve (European Organization for Nuclear Research); AXENSALVA, Jerome (European Organization for Nuclear Research); FERRADAS TROITINO, Jose (European Organization for Nuclear Research); FISCARELLI, Lucio (European Organization for Nuclear Research); BALDINI, Maria (Fermi National Accelerator Laboratory); GUINCHARD, Michael (European Organization for Nuclear Research); CROUVIZIER, Mickaël (European Organization for Nuclear Research); LUSA, Nicholas (European Organization for Nuclear Research); Dr FERRACIN, Paolo

(Lawrence Berkeley National Laboratory); QUASSOLO, Penelope Matilde (European Organization for Nuclear Research); ROGACKI, Piotr (European Organization for Nuclear Research); PRINCIPE, Rosario (European Organization for Nuclear Research); CARCAGNO, Ruben (Fermi National Accelerator Laboratory); FEHER, Sandor (Fermi National Accelerator Laboratory); SGOBBA, Stefano (European Organization for Nuclear Research); RUSSENSCHUCK, Stephan (European Organization for Nuclear Research); Mrs IZQUIERDO BERMUDEZ, Susana (CERN); STRAUSS, Thomas (Fermi National Accelerator Laboratory)

**Presenter:** MILANESE, Attilio (European Organization for Nuclear Research)

**Session Classification:** Wednesday Poster Session

**Track Classification:** MC7: Accelerator Technology and Sustainability: MC7.T10: Superconducting Magnets