MT29 Abstracts and Technical Program



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Thu-Af-Po.06-03: Instrumentation and Control Systems for Operation of High Field HTS Coils for WHAM Magnetic Mirror

Thursday 3 July 2025 14:00 (2 hours)

Commonwealth Fusion Systems (CFS) completed the design, construction, assembly, and full field dual magnet factory acceptance testing of two identical compact (< 2 ton), high-field (20 T on tape, 17 T in warm bore) HTS REBCO magnets for a magnetic mirror in an axial fusion device. The CFS magnets now serve as the high field end coils for the ARPA-E funded project, "An HTS Axisymmetric Magnetic Mirror on a Faster Path to Lower Cost Fusion Energy."CFS is a subrecipient of the ARPA-E BETHE Fusion Grant with the University of Wisconsin-Madison. The magnets have now operated at full field for multiple test campaigns for > 110 cumulative days of full field operation (as of this writing, 1/15/2025), in the presence of numerous sources of electromagnetic interference. We will present the instrumentation systems and control schemes of the mirror system, and discuss their performance over an extended period of operation.

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