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Wed-Af-Po3.24-01 [95]: A cable-scale experiment to predict training characteristics of superconducting magnets and explore new magnet materials

Wednesday, 25 September 2019 14:00 (2 hours)

A previously commissioned system for exploring I_c pressure sensitivity in superconducting cables, the Transverse Pressure Insert, was instrumented and operated to examine signals resulting from strand motion and insulation/impregnation cracking in a fully-excited single strand embedded in an insulated and impregnated Rutherford cable stack at 4.2 K with transverse pressures up to 250 MPa and transverse applied fields up to 15 T. Voltage and acoustic signal traces from a CTD-101K impregnated cable stack were compared to those of a sample impregnated with Matrimid and some other materials. Pressure was applied and removed to simulate stresses seen during magnet operation. These experiments are in pursuit of developing smaller scale, cost, and time methods for exploring techniques and materials to decrease training in next-generation Nb₃Sn magnets.

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