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# Construction and Test Results of Coils 2 and 3 of a 3-Nested-Coil 800-MHz REBCO Insert for the MIT 1.3-GHz LTS/HTS NMR Magnet

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We present construction and test results of Coils 2 and 3 of a 3-nested-coil 800-MHz (18.8 T) REBCO insert (H800) for the MIT 1.3-GHz LTS/HTS NMR magnet currently under construction. Each of the 3-nested H800 coils is a stack of no-insulation REBCO double-pancakes (DPs). The innermost 8.7-T Coil 1 (26 DPs) was completed in 2016; the middle 5.7-T Coil 2 (32 DPs) has been fully assembled and tested; and for the outermost 4.4-T Coil 3, its 38 DPs have been wound and preliminary tests performed to characterize the DP at 77 K. In this paper we present first results of Coil 2 and then those of Coil 3. Included in the Coil 2 test results are: 1) 77-K critical current, index number, turn-to-turn contact resistivity, and charging-delay time constant for all DPs; 2) final stacking order of the 32 DPs, optimized to maximize Coil 2's critical current margin and minimize its Joule dissipation from the pancake-to-pancake joints; 3) procedure to experimentally determine and apply a room-temperature preload; 4) 77-K and 4.2-K test results including resistance of pancake-to-pancake joints, before and after each of 64 pancakes was over-banded with 76-μm-thick stainless steel tape for a total radial thickness of 5 mm. Presented for Coil 3 are 77-K critical current, index number, turn-to-turn contact resistivity, and charging-delay time constant for all DPs.
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