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Measurement campaign on critical current for MgB₂ wires and tapes under a magnetic field up to 8T

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The critical currents of several configurations of MgB₂ conductor from “Columbus Superconductors” were characterized under high magnetic field. The measurements were performed at LNCMI Grenoble at a temperature of 4.2 K and a magnetic field ranging from 3 up to 8 T. The characterization of the different configurations takes into account different parameters as filling factor, number of filaments, shape, and type of matrix. Moreover, in order to define the minimum bending radius, the different samples were pre-bent on different diameters before the test, from a minimum of 25 mm to a maximum of 400 mm. This work investigates the critical current density (J_c) and the engineering current density (J_e). Measurement precisions are presented in detail according to the small length of voltage measurement that are only 1 cm long. The different types are compared according to their critical current density and engineering density. The influence of the parameters on the measurement result is discussed and the performance evolution of the Columbus engineering critical current density is also presented.

Submitters Country

FRANCE

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