

Flux Distributions in Coated Conductor under Applied Fields and Currents

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We measured the distributions of flux densities near the surface of a coated conductor for various applied currents and fields, using scanning Hall probe method. The width and length of the coated conductor were 5mm and 3cm, respectively. The sample was in LN₂. The field, which was applied in normal direction, was increased from zero to 170 Oe and then decreased to reversed one, -60 Oe. The current was also increased from zero to 20A and then decreased to reversed one, -14A. The magnetic effects of NiW substrate were negligible in those small fields. We analyzed our data using H. Brandt formula, which was modified as following. (1) the effects of the small distance between the probe and the superconducting film in the normal direction, (2) the effects of the coarse granular distribution of J_c , and (3) the effects of different penetration distances of fields from the two edges.