

Mixed-state Hall Effect of MgB₂ Thin Films

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We have measured the Hall resistivity (ρ_{xy}) and the longitudinal resistivity (ρ_{xx}) on superconducting MgB₂ thin films in an extended field up to 18 T. we found a universal scaling behavior between the Hall resistivity and the longitudinal resistivity, which is independent of the temperature and the magnetic field. At a wide magnetic field region from 1 to 18 T, a universal power law of $\beta = 2.0 \pm 0.1$ in a scaling relation, $\rho_{xy} = A\rho_{xx}^\beta$, was observed in c-axis-oriented MgB₂ thin films. These results can be well interpreted by using recent models.

keywords : MgB₂, thin film, Hall effect, scaling behavior