

I-V Characteristic Measurements to Study the Nature of Vortex State and Dissipation in MgB₂ Thin Films

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The temperature dependence of current-voltage (*I-V*) characteristics of MgB₂ thin films has been studied at different magnetic fields (*H*) and angles (θ) between *H* and the *ab*-plane. The *I-V* characteristics obtained at different *H* and θ show critical scaling indicative of vortex glass transition. The critical exponents are found to be independent of *H* and θ indicating an universal behavior. The scaling functions are also seen to be field and angle independent when resistivity and current density are normalized with two parameters ρ_0 and J_0 , which are a function of *H* and θ . Field and angle dependences of parameters ρ_0 and J_0 , and vortex glass transition temperature, T_g , are seen to be in agreement with anisotropic GL model.