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Electron scattering dependence of dendritic magnetic instability in superconducting MgB2 films ZUXIN YE, QIANG LI, YUFENG HU, Brookhaven National Laboratory, A.V. POGREBNYAKOV, Y CUI, X.X. XI, J.M. REDWING, QI LI, Pennsylvania State University — We studied magnetic stability in both ultra-pure and carbon-doped MgB_2 films using magneto-optical imaging, transport and bulk magnetization measurements. In the carbon-doped MgB_2 film, dendritic flux-jumps were observed at low temperature as reported in previous experiments. However, a remarkably stable flux penetration was observed in the ultra-pure MgB_2 film, clearly showing the classic behavior of the critical state model. Such different behaviors indicate that the electron scattering ultimately controls the magnetic stability of MgB_2 films.

Zuxin Ye
Brookhaven National Laboratory

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