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Anisotropic magnetoresistance in colossal magnetoresistive $La_{1-x}Sr_xMnO_3$ thin films JENG-BANG YAU, Yale University, X. HONG, Yale University, C. H. AHN, Y. BASON, Bar Ilan University, L. KLEIN, Bar Ilan University — We report on magnetic field and temperature dependent measurements of the anisotropic magnetoresistance (AMR) in epitaxial $La_{1-x}Sr_xMnO_3$ (LSMO) thin films. While in $3d$ ferromagnetic alloys increasing the magnetization, either by reducing the temperature or increasing the magnetic field, increases the AMR, in LSMO films the AMR dependence on magnetization displays non-monotonic behavior which becomes particularly pronounced in lightly doped compounds. This could imply that these samples may be electronically inhomogeneous, in which increased magnetization yields enhanced uniformity which suppresses spin-dependent scattering and hence reduces the AMR.

Jeng-Bang Yau
Yale University

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