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Anisotropic magnetoresistance in antiferromagnetic $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$ films ANAND BHATTACHARYA, Materials Science Division and Center for Nanoscale Materials, Argonne National Laboratory, TIFFANY SANTOS, Center for Nanoscale Materials, Argonne National Laboratory — Anisotropic magnetoresistance (AMR) is commonly used to probe magnetocrystalline anisotropy in conducting ferromagnets. Here, we have measured AMR in antiferromagnetic thin films of $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$ near $x=0.5$. These epitaxial films were grown using ozone-assisted oxide MBE. They exhibit *A*-type magnetic order where the spins are aligned ferromagnetically within the planes and coupled antiferromagnetically between neighboring planes. The transport within these films is presumed to be highly two-dimensional as a result of $d_{x^2-y^2}$ orbital occupancy. Upon cooling below the magnetic ordering (Néel) temperature, the AMR signal is found to be modulated with a periodicity of π , while at lower temperatures, a $\pi/2$ periodicity emerges. The amplitude of the $\pi/2$ modulation increases as the temperature is lowered. We shall discuss the data and possible explanations will be presented.

Anand Bhattacharya
Materials Science Division and Center for Nanoscale Materials

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