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Low-Electric-Field Tuned Mobile Carrier Density and Heat Conduction in SrMnO₃¹ JOSHUA COHN, CORNELIU CHIORESCU, University of Miami, JOHN NEUMEIER, Montana State University — Nominally undoped CaMnO₃ (CMO) and SrMnO₃ (SMO), both G-type antiferromagnets with orthorhombic and cubic structure, respectively, exhibit very different low-temperature thermal conductivities (κ), with $\kappa^{CMO} \gg \kappa^{SMO}$. These compounds are lightly electron doped due to oxygen vacancies, with $n \sim 10^{18} - 10^{19} \text{ cm}^{-3}$ at room temperature. Measurements of the electrical conductivity and Hall coefficient indicate that the low-temperature mobile carrier density in SMO is larger by four orders of magnitude than that of CMO, suggesting that the disparity in κ values reflects enhanced phonon-electron scattering in the former compound. We will report results of thermal conductivity measurements on SMO designed to test this hypothesis by using applied electric fields to vary the mobile carrier density at fixed temperature.

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