

Abstract Submitted
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Intrinsic Spin-Orbit Effects in Strontium Titanate CUNEYT SAHIN, Optical Science and Technology Center and Department of Physics and Astronomy, University of Iowa, Iowa City, Iowa 52242, USA, GIOVANNI VIGNALE, Department of Physics and Astronomy, University of Missouri, Columbia, Missouri 65211, USA, MICHAEL E. FLATTÉ, Optical Science and Technology Center and Department of Physics and Astronomy, University of Iowa, Iowa City, Iowa 52242, USA — We have calculated spin relaxation times via the Elliott-Yafet mechanism for strontium titanate as a function of temperature. The approach uses a low-energy effective spin-orbit Hamiltonian constructed from a tight-binding model with atomic spin-orbit interactions. The intrinsic spin Hall conductivity for strontium titanate has also been calculated from the same low-energy Hamiltonian using a Berry's phase technique. Modifications to the spin relaxation and spin Hall conductivity from elastic strain at an interface will also be described. This work was supported by an ARO MURI.

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