

Abstract Submitted
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The Spin Hall Effect in Rare Earth Thin Films NEAL REYNOLDS, JONATHAN GIBBONS, JOHN HERON, Physics Department Cornell University, DARRELL SCHLOM, Materials Science and Engineering Cornell University, DANIEL RALPH, Physics Department Cornell University — The spin Hall effect results in a spin current which flows transverse to an applied electric field in non-magnetic materials. We report measurements of the strength of the spin Hall effect in a series of lanthanide rare earth materials in order to determine whether the large spin and orbital moments in f-electron materials might enhance the spin Hall effect. To ensure trustworthy results, we compare the results of several complementary measurement techniques: off-resonant electrical and optical second harmonic detection of current-induced magnetic tilting, spin-torque ferromagnetic resonance, and spin pumping. We compare the results to ab-initio calculations of the intrinsic Berry curvature contribution to spin Hall effect.

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