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Electrical Transport on the Shastry-Sutherland Lattice in Ising-type Rare Earth Tetraborides[1] LINDA YE, TAKEHITO SUZUKI, JOSEPH. G. CHECKELSKY, Massachusetts Institute of Technology — In the presence of a magnetic field, frustrated spin systems may exhibit plateaus at fractional values of their saturation magnetization. Study of the magnetic ordering and excitations at such plateaus are key to understanding the nature of the underlying ground states in these systems. Here we study the magnetization plateaus in metallic rare earth tetraborides RB_4 with Ising-type anisotropy (R = Er, Tm) in which R resides on a Shastry-Sutherland lattice. We focus on electrical transport and find that the response reflects scattering of charge carriers with the static and dynamic plateau structure. Modeling of these results is consistent with the expected strong uniaxial anisotropy and provides a framework for the study of plateau states in metallic frustrated systems.
References Cited: L. Ye, T. Suzuki, J. G. Checkelsky. Electronic Transport on the Shastry-Sutherland Lattice in Ising-type Rare Earth Tetraborides. arXiv:1606.04003 (2016).

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Linda Ye
Massachusetts Institute of Technology

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