

Abstract Submitted
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Magnetic Anisotropy of $CsCoCl_3$ at High Magnetic Fields¹ ELENI KYRIAZI, University of California, Los Angeles, SCOTT CROOKER, FEDOR BALAKIREV, JOHANNA PALMSTROM, JOHN SINGLETON, LAUREL WINTER, ARKADY SHEKHTER, ROSS MCDONALD, Los Alamos National Laboratory — $CsCoCl_3$ is a quasi one-dimensional Ising antiferromagnet, forming a hexagonal $P6_3/mmc$ structure [1], [2]. One peculiar aspect of this correlated spin system is the fine balance between the Coulomb energy, responsible for the observed large spin at high magnetic fields, and the crystal-field energy in the orthorhombic Cl environment, responsible for the spin-1/2 at low magnetic fields [1]. Related to that energy scale competition is the anomalously large magnetic anisotropy in this material with nominal spin-orbit interaction on the 3d transition-metal Co^{2+} ion. Here I will present comprehensive angular dependence studies of the magnetic anisotropy of $CsCoCl_3$ from measurements of the magnetotropic susceptibility in fields up to 15 Tesla and temperatures between 1.4 and 30 Kelvin. The nature of the strong magnetic anisotropy in this weak-spin-orbit system can potentially be resolved by analysis of the magnetization at high fields. I will discuss the angular dependence of the magnetic anisotropy in this system and its implication for the nature of the local spin and exchange Hamiltonian in $CsCoCl_3$. [1] Amaya, et al., Journal of the Physical Society of Japan 59 5, 1810-1816, (1990) [2] Soling, Acta Chemica Scandinavica 22, 2793-2802, (1968)

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