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Magnetic structure and excitations in modified pyrochlore fluoride $CsCr_2F_6$ SACHITH DISSANAYAKE, Department of Physics, University of Virginia, Y. QIU, NIST Center for Neutron Research, M. MATSUDA, Oak Ridge National Laboratory, H. UEDA, Department of Chemistry, Kyoto University, Japan, A. HOSER, Helmholtz Zentrum Berlin, S.-H. LEE, Department of Physics, University of Virginia — In the newly synthesized fluorides, $RbCr_2F_6$ and $CsCr_2F_6$, the magnetic Cr ions have mixed ionic value of 3+ (Cr1) and 2+ (Cr2), and the two Cr1 and two Cr2 ions form a network of corner sharing tetrahedra. $CsCr_2F_6$ is an antiferromagnet with T_{cw} =-40 K which long range orders below 18 K and undergoes a field induced transition around 4 T. Using elastic and inelastic neutron scattering measurements with and without application of an external magnetic field H, we examined the magnetic structure and excitations of $CsCr_2F_6$. Our results show that Cr2 spins are antiparallel along the c-axis while Cr1 spins are also antiparallel almost along c-axis but canted towards a-axis by 20°. Upon application of H field, around 4 T, Cr1 moments spin-flop and start canting which corresponds to the jump in magnetization data. Linear spinwave calculations were also performed to shed light in understanding an effective spin hamiltonian for this system that explains our inelastic neutron scattering data with prominent excitation modes centered at 2.2 meV, 3.1 meV and 4.2 meV.

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