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**Magnetic excitations in the geometric frustrated multiferroic  $\text{CuCrO}_2$**  MATTHIAS FRONTZEK, GEORG EHLERS, ANDREY PODLESNYAK, MASAOKI MATSUDA, ANDREW CHRISTIANSON, NScD, Oak Ridge National Laboratory, 37831 Oak Ridge, USA, RANDY FISHMAN, Materials Science and Technology Division, Oak Ridge National Laboratory, 37831 Oak Ridge, USA, JASON HARALDSEN, Theoretical Division, Los Alamos National Laboratory, 87545 Los Alamos USA, SERGEI BARILO, Institute of Solid State and Semiconductor Physics, Minsk 220 072, Belarus — The delafossite  $\text{CuCrO}_2$ , crystallizing in the rhombohedral  $R\bar{3}M$  space group, is an interesting case of a multiferroic compound due to its apparent strong coupling of spin and charge. In contrast to other multiferroic compounds  $\text{CuCrO}_2$  shows a spontaneous electric polarization upon antiferromagnetic ordering at  $T_N \approx 24$  K without an accompanying structural phase transition. Further,  $\text{CuCrO}_2$  is a rare example where the magnetoelectric properties are tunable by both an electric and a magnetic field. In our contribution we present inelastic neutron scattering experiments on  $\text{CuCrO}_2$  single crystals. The measured magnetic excitation spectra have been modeled by Monte-Carlo spin wave calculations and allowed the determination of the relevant exchange interaction and anisotropy terms. We will present evidence for a weak ferromagnetic Cr-Cr-interlayer exchange interaction and show that this interaction is relevant for the multiferroic properties of  $\text{CuCrO}_2$ .

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