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Weak increase in ordering temperature with pressure in $KCuF_3^{1}$ ALEXANDER THALER, University of Illinois, ANDREW CHRISTIANSON, Oak Ridge National Laboratory, SHI YUAN, ISAAC BRODSKY, LANCE COOPER, University of Illinois, STEPHEN NAGLER, Oak Ridge National Laboratory, GRE-GORY MACDOUGALL, University of Illinois — The perovskite $KCuF_3$ has been extensively studied as a prototype for both orbital order and 1D Heisenberg antiferromagnetism. Despite decades of research, the nature of its orbital and spin order are still debated. Several interesting results have been shown recently, among them the discovery via Raman scattering of a glassy structural transition at $T_s = 50$ K, well below the known Jahn-Teller transition at $T_{OO} = 800$ K and argued to be a necessary precursor to the 3D Neel transition at $T_N = 39$ K. Recent experiments have demonstrated that this transition can be suppressed to zero temperature with hydrostatic pressures as low as $P_c \sim 7$ kbar. In order to directly probe the effect of pressure on the magnetic behavior at low-temperatures, we have followed the above Raman measurements with a neutron scattering study. Structural and magnetic properties of single-crystalline KCuF₃ were explored using elastic scattering of thermal neutrons under applied quasi-hydrostatic pressure. We will present data suggesting that the A-type antiferromagnetism observed at ambient pressure is slightly increased by our application of pressure well above 1 GPa, as well as showing a spin-reorientation with increasing pressure. We will discuss the results in the context of present literature.

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