

Abstract Submitted
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The Interplay of Quantum Criticality and Frustration in Columbite¹ RIBHU KAUL, Station Q, UCSB, SUNGBIN LEE, Department of Physics, UCSB, LEON BALENTS, KITP, UCSB — CoNb_2O_6 is a remarkable material. It can be modeled as a lattice of Ising chains coupled to each other in a frustrated anisotropic triangular lattice in the basal plane perpendicular to the chain direction. Applying a strong transverse field tunes the chains through a quantum phase transition into a paramagnetic phase. The interplay between two of the most interesting features of correlated quantum physics, quantum criticality and geometric frustration, produces a rich phase diagram which reflects the fundamental underlying quantum many-body physics. Using a variety of analytic and numerical techniques, we map out the phase diagram of this material in both transverse and longitudinal fields and provide a comparison with experiment.

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