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Dimension-Reducing Quantum Transition in Copper Elpasolite¹ ARTHUR RAMIREZ, NICOLAS BLANC, JENNIFER TRINH, UC Santa Cruz, LIANYANG DONG, Florida State University, XIAOJIAN BAI, Georgia Institute of Technology, ADAM ACZEL, Oak Ridge National Laboratory, MARTIN MOURIGAL, Georgia Institute of Technology, LEON BALENTS, Kavli Institute for Theoretical Physics, UC Santa Barbara, THEO SIEGRIST, Florida State University — The cubic compound K_2 PbCu(NO_2)₆ (elpasolite) undergoes Jahn-Teller-driven orbital ordering near 270K, which results in quasi-1D behavior below 5K. At $T_N = 0.7$ K, the Cu²⁺ s = 1/2 spins undergo Neel order, due to an inter-chain interaction approximately 10 times smaller than the intra-chain interaction of 5.4 k_B. Application of a magnetic field initially increases T_N due to spin-dimensionality reduction. We present measurements of the specific heat, susceptibility, and neutron diffraction to characterize both the zero-field ordered state as well as the phase boundary as T approaches zero.

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