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Incommensurate correlations in a S=1/2 4-leg quantum spin tube ANDREY ZHELUDEV, OVIDIU GARLEA, Oak Ridge National Laboratory, LOUIS-PIERRE REGNAULT, CEA Grenoble, France, KLAUS HABICHT, Hahn-Meitner Institut, Berlin, Germany — Inelastic neutron scattering is used to investigate magnetic excitations in the quasi-one- dimensional quantum spin-liquid system Cu2Cl4-D8C4SO2. Contrary to previously conjectured models, the appropriate Heisenberg Hamiltonian is equivalent to that of a S=1/2 4-leg spin-tube with almost perfect one dimensionality and no bond alternation [1]. A partial geometric frustration of rung interactions induces a small incommensurability of short-range spin correlations. In high magnetic fields, a Bose-Einstein condensation of magnons induces a quantum phase transition to a incommensurate helimagnetic ordered state. Research at ORNL was funded by the United States Department of Energy, Office of Basic Energy Sciences- Materials Science, under Contract No. DE-AC05-00OR22725 with UT-Battelle, LLC. [1] V. O. Garlea , A. Zheludev, L.-P. Regnault, J.-H. Chung, Y. Qiu, M. Boehm, K. Habicht and M. Meissner, Phys. Rev. Lett., in press (2007); arXiv:0710.0891.

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