

Abstract Submitted
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Effect of hydrostatic pressure on a low dimensional $S=1/2$ gapped quantum antiferromagnet by inelastic neutron scattering¹ TAO HONG, Oak Ridge National Laboratory, C. STOCK, NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD 20899, USA., I. CABRERA, C. BROHOLM, Department of Physics and Astronomy, The Johns Hopkins University, Baltimore, Maryland 21218, USA, Y. QIU, J.B. LEAO, S.J. POULTON, J.R.D. COPLEY, NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, MD 20899, USA. — We report an inelastic neutron scattering study of a quasi-two-dimensional $S=1/2$ dimer system piperazinium hexachlorodocuprate (PHCC) under hydrostatic pressure up to $P=9.0$ kbar. The spin gap Δ decreases with increasing pressure. The observation of three fold degenerate triplet excitation at $P=6.0$ kbar is consistent with the theoretical prediction and the bandwidth of the dispersion relation is unaffected within the experimental uncertainty. At $P=9.0$ kbar the spin gap is reduced to $\Delta=0.55$ meV from $\Delta=1.0$ meV at ambient pressure [1].

[1] T. Hong *et. al.*, Physical Review B 82, 184424 (2010)

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Tao Hong
Oak Ridge National Laboratory

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