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Magnetic excitation spectrum of the spin ladder system $Cu_2Cl_4 \bullet D_8C_4SO_2$. VASILE OVIDIU GARLEA, ANDREY ZHELUDEV, ORNL, LOUIS-PIERRE REGNAULT, CEA-Grenoble, France, JAE-HO CHUNG, NIST, MARTIN BOEHM, ILL, France — The new triangular spin ladder system, $Cu_2Cl_4 \bullet H_8C_4SO_2$, is remarkable is remarkable by its small ratio of spin gap energy and excitation bandwidth. It consists of infinite double chains of the edge-sharing octahedra $CuCl_5O$ separated by large $H_8C_4SO_2$ molecules which ensure a weak enough inter-chain interaction. We report inelastic neutron scattering measurements carried out on deuterated single-crystal samples. Neutron scattering data collected in zero magnetic field revealed the presence of a gap excitation at approximately 0.58 meV with the global energy minimum located at q = (1/2, 0, 1/2). Our measurements show a considerable dispersion of the gap excitation along the chain direction and negligible dispersion perpendicular to it. A model for the ground state is proposed.

Vasile Ovidiu Garlea
ORNL

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