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**Neutron Scattering from a Coordination Polymer Spin-1/2 Ladder** TAO HONG, Johns Hopkins University, M.M TURNBULL, , C.P. LANDEE, Clark University, K.P. SCHMIDT, G.S. UHRIG, Universitat zu Koln, Y. QIU, National Institute of Standards and Technology, C. BROHOLM, D.H. REICH, Johns Hopkins University — Charge and spin dynamics in Heisenberg spin 1/2 ladders have attracted much attention because of their possible relevance to high-$T_C$ superconductivity. Coordination polymer magnets are excellent systems in which to explore quantum magnetism. However, several previous coordination polymers thought to be spin ladders have turned out to contain alternating spin chains or dimers coupled in two or three dimensions. Here we investigate another possible spin ladder system Cu(Quinoxaline)$Br_2$, in which neutral $Cu_2Br_4$ dimers appear linked to adjacent dimers by bridging quinoxaline molecules along the monoclinic b axis. Inelastic neutron scattering measurements were carried out on a powder sample. The singular onset of magnetic scattering above a finite gap, $\Delta = 1.9$ meV, in the spectrum indicates that the material is magnetically one-dimensional. Consideration of the crystal structure suggests that Cu(Quinoxaline)$Br_2$ in that case should be a spin ladder system. We also calculated the one-triplon contribution to the inelastic magnetic scattering by the method of continuous unitary transformation. The excellent agreement with the experimental data supports that conclusion. Final confirmation that Cu(Quinoxaline)$Br_2$ is a spin ladder will require single crystal neutron scattering experiments.

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