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Neutron scattering measurements of spin excitations in the spin ladder compound $(pip)_2CuBr_4$* A.T. SAVICI, C.L. BROHOLM, Dept. of Physics and Astronomy, Johns Hopkins Univ., Baltimore, MD, G.E. GRANROTH, S.E. NAGLER, NSSD, ORNL, Oak Ridge, TN, K.P. SCHMIDT, G.S. UHRIG, Technische Univ. Dortmund, Dortmund, Germany, D.M. PAJEROWSKI, M.W. MEISEL, Dept. of Physics, Univ. of Florida, Gainesville, FL, D.R. TALHAM, Dept. of Chemistry, Univ. of Florida, Gainesville, FL, C.M. BROWN, NIST Center for Neutron Research, Gaithersburg, MD — Recent theoretical and experimental work on S=1/2 ladders has been inspired, in part, by the realization of a novel quantum spin liquid state. Bulk magnetization measurements indicate that $(C_5H_{12}N)_2CuBr_4$ (BPCB) is a two-leg spin ladder with stronger coupling along the rung ($J_\perp$) than along the leg direction ($J_\parallel$) [1]. Here we report neutron spectroscopy measurements performed on a deuterated BPCB. We show that $J_\perp$ and $J_\parallel$ are consistent with the previous measurements. No dispersion in the inter-ladder direction means that the ladders are magnetically isolated, likely due to frustrated inter-ladder exchange. We show that any diagonal exchange is $< J_\perp/10$, confirming that BPCB is an excellent realization of a S = 1/2 ladder in the strong coupling limit. [1]B.C. Watson et al., Phys.Rev.Lett. 86, 5168 (2001). *Work supported by NSF DMR-0603126, DMR-0701400, DMR-0543362, DMR-0454672, DOE DE-AC05-00OR22725, ESF and EuroHorcs.

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