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Fermionic excitations in the spin liquid phase of Cs_2CuCl_4 as revealed by ^{133}Cs NMR VESNA F. MITROVIC, MARC-ANDRE VACHON, GEORGIOS KOUTROULAKIS, OOKIE MA, BRAD MARSTON, Brown University, ARNEIL P. REYES, PHILIP KUHNS, NHMFL, RADU COLDEA, Clarendon Laboratory, University of Oxford, T. TYLCZYNSKI, Institute of Physics, Adam Mickiewicz University — Nuclear magnetic resonance measurements of the spin-liquid phase of the spin-1/2 frustrated antiferromagnet Cs_2CuCl_4 as a function of temperature and applied magnetic field will be presented. Comparison of the magnetization and relaxation rate to the spin-1/2 antiferromagnetic chain α-CuNSal and to variational calculations using Gutzwiller-projected mean-field theory implies that the low energy excitations in Cs_2CuCl_4 are characterized, in the spin liquid phase at non-zero temperature and applied field, by gapless fermionic excitations. Furthermore, interactions in two dimensions are required to reproduce the low energy properties.

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