Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

μ^+SR study of spin dynamics in the one dimensional Heisenberg antiferromagnet Cu(pyz)$(NO_3)_2$ FAN XIAO, TOM LANCASTER, ROB WILLIAMS, University of Durham, UK, JOHANNES MOELLER, STEPHEN BLUNDELL, University of Oxford, UK, FRANCIS PRATT, PETER BAKER, ISIS Facility, Rutherford Appleton Laboratory, UK, JAMIE MANSON, Eastern Washington University, USA — We present the results of longitudinal-field muon spin relaxation (μ^+SR) measurements on the one-dimensional quantum Heisenberg antiferromagnet (1DQHAF) Cu(pyz)$(NO_3)_2$ (pyz=pyrazine). The intrachain coupling strength J/k_B in this compound is 10.6 K and the ordering temperature T_N is 0.11 K. Spin dynamics were studied with μ^+SR using applied longitudinal fields at two temperatures (T=0.33 K and 1.4 K) between T_N and J/k_B. For $B > 5$ mT, the nuclear contribution to the relaxation rate is quenched and the data can be fitted to an exponential decay along with a background correction. The relaxation rate λ was found to follow a $\lambda \propto B^{-1/2}$ power law between 10 mT and 100 mT at both temperatures, suggesting diffusive spin transport of excitations in this 1DQHAF.

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Date submitted: 15 Nov 2013 Electronic form version 1.4