Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Quantum critical dynamics in the one-dimensional spin chain compound copper pyrazine dinitrate probed by NMR spectroscopy HANNES KUEHNE, A.P. REYES, P.L. KUHNS, Florida State University/National High Magnetic Field Laboratory, A.A. ZVYAGIN, ILTPE, Kharkov, Ukraine, S. GROSSJOHANN, W. BRENIG, IThP, TU Braunschweig, Germany, M. GUENTHER, H.-H. KLAUSS, IFP, TU Dresden, Germany, C.P. LANDEE, M.M. TURNBULL, Carlson School of Chemistry and Department of Physics, Clark University, Massachusetts — The metalorganic compound copper pyrazine dinitrate is known to be one of the best realizations of the antiferromagnetic $S = 1/2$ Heisenberg chain model with a comparatively small nearest neighbor exchange constant $J/k_B = 10.7$ K. The zero temperature saturation field $B_c = 14.6$ T corresponds to a quantum critical point (QCP), where the system is driven from a Luttinger liquid state to ferromagnetic polarization. With an emphasis on the vicinity of the QCP, a comprehensive comparison of our experimental findings from ^{13}C NMR spectroscopy with both numerical (quantum Monte Carlo) and analytical (conformal field theory) approaches is presented. In particular, this comparison reveals a well-defined maximum of $1/T_1$ (B, T) *below* B_c as the signature of essential one-dimensional spin-spin interactions in the Luttinger liquid regime.

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Date submitted: 01 Nov 2012 Electronic form version 1.4