

Abstract Submitted
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Field-Induced Gap in a Quantum Spin-1/2 Chain in a Strong Magnetic Field¹ S. ZVYAGIN, M. OZEROV, J. WOSNITZA, Dresden High Magnetic Field Laboratory (HLD/FZD), Dresden, Germany, E. ČIŽMÁR, CLTP/P.J. Safarik University, Košice, Slovakia, R. FEYERHERM, HZB, Berlin, Germany, S.R. MANMANA, JILA, Dept. of Physics, University of Colorado, Boulder, USA, F. MILA, Inst. for Theor. Physics, EPF Lausanne, Lausanne, Switzerland — Magnetic excitations in copper pyrimidine dinitrate, a spin-1/2 antiferromagnetic chain with alternating g -tensor and Dzyaloshinskii-Moriya interactions that exhibits a field-induced spin gap, are probed by means of pulsed-field electron spin resonance spectroscopy. In particular, we report on a minimum of the gap in the vicinity of the saturation field $H_{sat} = 48.5$ T associated with a transition from the sine-Gordon region (with soliton-breather elementary excitations) to a spin-polarized state (with magnon excitations). This interpretation is fully confirmed by the quantitative agreement over the entire field range of the experimental data with the DMRG investigation of the spin-1/2 Heisenberg chain with a staggered transverse field.

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