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Study of the Grüneisen Parameters at a Field-induced Quantum Critical Point in NiCl2-SC(NH2)2[1] FRANZISKA WEICKERT, Los Alamos National Laboratory, MPA-CMMS, Los Alamos, NM, 87545, USA, ROBERT KUECHLER, ALEXANDER STEPPKE, LUIS PEDRERO OJEDA, MICHAEL NICKLAS, MANUEL BRANDO, FRANK STEGLICH, Max Planck Institute for Chemical Physics of Solids, Dresden 01087, Germany, VIVIEN ZAPF, MARCELO JAIME, Los Alamos National Laboratory, MPA-CMMS, Los Alamos, NM, 87545, USA, A. PADUAN-FILHO, Univ. of Sao Paulo, Sao Paulo, Brazil — $NiCl_2$-$SC(NH_2)_2$, also known as DTN, is a quantum paramagnet, where the Ni^{2+} single ion anisotropy $D = 8.9$K opens an energy gap between the $S_z = 0$ ground state and the $S_z = \pm 1$ exited state. In this material an XY-antiferromagnetic ordered state is induced at low temperatures by applying magnetic fields between $H_{c1} \approx 2$T and $H_{c2} = 10.5$T. At the phase boundaries critical exponents consistent with Bose-Einstein condensation of magnons are found. Here we present investigations of quantum criticality close to H_{c1} by thermal expansion, magnetization and specific heat measurements. Our data reveal a divergency for T$\rightarrow$ 0 of the thermal and magnetic Grüneisen parameters as expected for a quantum critical point of a diluted Bose gas.

[1]Part of this work was carried out at the MPI for Chemical Physics of Solids in Dresden, Germany.

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