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**Pressure-Induced Order in the Gapped Quantum Magnet DTN**

ALEXANDRA MANNIG, JOHANNES MOELLER, ANDREY ZHELUDEV, ETH Zurich, Neutron Scattering and Magnetism Group, Laboratory for Solid State Physics, Zurich, Switzerland, V. OVIDIU GARLEA, CLARINA DELA CRUZ, Oak Ridge National Laboratory, Quantum Condensed Matter Division, Oak Ridge, Tennessee, USA, ZURAB GUGUCHIA, RUSTEM KHASANOV, ELVEZIO MORENZONI, Paul Scherrer Institute, Laboratory for Muon Spin Spectroscopy, Villigen-PSI, Switzerland — We present muon-spin relaxation, neutron diffraction and magnetic susceptibility data under applied hydrostatic pressure on the organometallic $S = 1$ quantum magnet $NiCl_2 \cdot 4[SC(NH_2)_2]$. The material consists of weakly coupled antiferromagnetic chains and has a spin gap resulting from a large single-ion anisotropy. Our muon spin rotation experiments provide local field dependencies on temperature as well as pressure and allow for the mapping of a detailed phase diagram up to 22 kbar. Thus, we demonstrate that the compound may be driven through two subsequent pressure-induced transitions into apparently distinct magnetically ordered phases. Neutron diffraction and susceptibility measurements support those results and show the potential of low-pressure transitions to be investigated by various techniques.

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