

## Magnetic Anisotropy and Weak Quantum Phase Transition in Antiferromagnetic YbNi<sub>4</sub>Cd

Te Zhang, Junsen Xiang, Zhaotong Zhuang, Shuai Zhang, Peijie Sun<sup>\*</sup>

*Institute of Physics, Chinese Academy of Sciences, China*

YbNi<sub>4</sub>Cd, which crystallizes in the spin-frustrated fcc structure, has been reported to show an antiferromagnetic transition at  $T_N \approx 1.0$  K [1]. Applying a small field of about 0.45 T can suppress the magnetic ordering, whereas non-Fermi-liquid behaviors cannot be observed in specific heat and resistivity in the vicinity of the putative quantum critical point. We have synthesized single crystal and made magnetic, specific heat and quasi-adiabatic demagnetization measurements down to very low temperature with fields applied along two crystal orientations, [001] and [111]. A clear magnetic anisotropy is found and the critical field where  $T_N$  is suppressed is moderately different, being about 0.4 and 0.6 T for [111] and [001], respectively. Markedly, the quasi-adiabatic demagnetization measurements below the ordering temperature reveals a significant temperature drop at the critical fields, indicative of an accumulation of the thermodynamic entropy as expected for quantum phase transition. Here, the magnetic Grüneisen parameter shows a divergent behavior on one side of the critical field. These results will be discussed as evidence of weak quantum phase transition in the presence of spin frustration.

[1] J. Lee et al., Phys. Rev. B 97, 195144 (2018).

\*Corresponding author

Peijie Sun

Affiliation

Institute of Physics, Chinese Academy of Sciences

E-mail address

pjsun@iphy.ac.cn