Abstract Submitted
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Neutron scattering studies on Yb_3Pt_4[1] Y. JANSSEN, Brookhaven National Laboratory, M.C. BENNETT, Brookhaven National Laboratory andUniversity of Michigan, C. MARQUES, L. WU, Brookhaven National Laboratory and Stoney Brook University, M.S. KIM, K.S. PARK, Brookhaven National Laboratory, Q. HUANG, J.Y. LI, Y. CHEN, J.W. LYNN, NCNR NIST, M.C. ARONSON, Brookhaven National Laboratory and Stoney Brook University — The antiferromagnetic (AF) intermetallic compound Yb_3Pt_4 shows a magnetic phase diagram which includes a quantum critical point, but is different from other Yb-containing quantum critical compounds. We elucidated the zero-field behavior by neutron scattering on both polycrystal and single-crystal samples. The magnetic structure due to the single-site-low-symmetry Yb moments was determined by diffraction. The AF unit cell coincides with the crystallographic unit cell, and shows pairs of Yb nearest-neighbor moments pointing directly towards each other. The order parameter is consistent with a continuous transition at the Néel temperature (2.4 K) and can be described by a simple mean-field model. The ordered moment amounts to $\sim 1.2\ \mu_B$/Yb at 0 K. Inelastic neutron scattering reveals that the crystal electric field lifts the degeneracy of the Yb 4f ground state into 4 doublets, consistent with specific heat results.

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