Abstract Submitted
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Magnetic phase diagram of Yb3Pt4[1] L.S WU, Stony Brook University, Y. JANSSEN, C. MARQUES, M.S. KIM, K.S. PARK, Brookhaven National Lab, M.C. ARONSON, Brookhaven National Lab, Stony Brook University, S.X. CHI, J.W. LYNN, NCNR NIST — A unique system among f-electron based quantum critical systems, Yb3Pt4 orders antiferromagnetically at 2.4 K. Heat capacity, magnetocaloric effect and neutron diffraction experiments show the magnetic order can be suppressed to lower temperatures by magnetic fields applied in the easy ab plane of the rhombohedral structure. A mean-field-like anomaly in temperature-dependent heat capacity is reduced with increasing field (H //a), and disappears at (1.5K,1.6T). However, the anomaly seen in the field-dependent heat capacity at temperatures as low as 0.1K, indicates that the phase boundary line continues, showing a possible quantum critical point at about 1.8 T. Isentropes determined by direct measurements of the magnetocaloric effect (H//a) show a slope change, consistent with a continuous phase transition at all temperatures below 2.4K. Field-dependent (H//b) diffracted magnetic peak intensity is consistent with both thermodynamic measurements down to 1.5K. At lower temperatures, observations indicate two phase transitions. The upper field transition, a step in magnetization, appears to be first order. Details of the experiments and the H-T phase diagram will be discussed.

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