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Magnetic-field tuned ground states of $CeAuBi_2$ single crystals H. HODOVANETS, T. METZ, H. KIM, Y. NAKAJIMA, K. WANG, J. YONG, S. R. SAHA, J. S. HIGGINS, Center for Nanophysics and Advanced Materials, Department of Physics, University of Maryland, College Park 20742, USA, N. BUTCH, CNAM, UMD, College Park 20742, USA/NIST Center for Neutron Research, National Institute of Standards and Technology, Gaithersburg, Maryland 20899, USA, J. PAGLIONE, Center for Nanophysics and Advanced Materials, Department of Physics, University of Maryland, College Park 20742, USA — We present detailed temperature- and field-dependent data obtained from magnetization, resistivity and heat capacity measurement performed on nearly stoichiometric $CeAuBi_2$ single crystals. The compound orders antiferromagnetically at $\sim$ 13 K and shows large magnetic anisotropy at low temperatures with the c-direction being an easy axis. The field-dependent magnetization data at low temperatures reveal the existence of a spin-flop transition for $\mathbf{H}\|\mathbf{c}$ (H_c $\sim$75kOe and T=1.8K). The zero-field resistivity and heat capacity data show features characteristic of a Ce-based intermetallic with crystal electric field splitting and possible correlated, Kondo lattice effects. The constructed $T-H$ phase diagram, for the magnetic field applied along the easy, [001], direction shows that the magnetic field required to suppress T_N is $\sim$ 75 kOe. The possibility of realization of the field-tuned quantum critical point (QCP) in $CeAuBi_2$ will be discussed.

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