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Magnetic field-tuned quantum critical point in $CeAuSb_2$ LUIS BALICAS, National High Magnetic Field Laboratory, SATORU NAKATSUJI, Physics Department, University of Kyoto, HANNOH LEE, Physics Department, University of California Davis, PEDRO SCHLOTTMANN, Physics Department, Florida State University, TIMOTHY P. MURPHY, National High Magnetic Field Laboratory, Florida State University, ZACHARY FISK, Physics Department, University of California Davis — Here we report on the anomalous metallic properties of $CeAuSb_2$. At $H = 0$, $CeAuSb_2$ displays AF ordering at $T_N = 6.0$ K. Above T_N, the resistivity ρ displays a T^α dependence with $\alpha < 1$ and C_e/T has the -lnT dependence characteristic of NFL behavior. For $T < T_N$, ρ has the AT^2 FL-like dependence and the extrapolation of C_e/T to $T = 0$ yields a Sommerfeld coefficient of $\gamma \sim 0.1$ J/mol.K^2, so that $CeAuSb_2$ is to be considered a heavy-Fermion system. A magnetic field along the inter-plane direction leads to two subsequent metamagnetic transitions and the concomitant *continuous* suppression of T_N to $T = 0$ at $H_C = 5.3 \pm 0.2$ T. As the AF phase boundary is approached from the paramagnetic (PM) phase, γ is enhanced and the A coefficient of the resistivity diverges as $H - H_C^{-1}$. As T is lowered for $H \sim H_C$, the T-dependence of ρ and C_e/T is sub-linear and -$ln\ T$, respectively. These observations suggest the existence of a field-induced QCP at H_C. At higher fields an unconventional T^3- dependence emerges and becomes more prominent as H increases, suggesting that the FL state is *not* recovered for $H >> H_C$.

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