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Thermodynamic and electrical transport properties of the layered triangular Ce lattice compound CeAuAl4Ge2[1] SHENGZHI ZHANG, ANDREW GALLAGHER, YOU LAI, DAVID GRAF, TIGLET BESARA, KUAN-WEN CHEN, THEO SIEGRIST, LAURA GREENE, RYAN BAUMBACH, National High Magnetic Field Lab,Tallahassee — We report electronic and magnetic properties of single crystalline $CeAuAl_4Ge_2$. This compound crystallizes in a rhombohedral structure (S.G. #166) and may host geometrical magnetic frustration on the Ce sub-lattice. Electrical transport measurements show metallic behavior with a small residual resistivity ($\rho_0 = 3$ $\mu\Omega$cm). Quantum oscillations are seen in the ac magnetic susceptibility, which uncover a three-dimensional Fermi surface. Weak hybridization between the f- and conduction electron states is indicated by the simple-metallic temperature dependence of the electrical resistivity, the small electronic coefficient of the heat capacity, and the small charge carrier effective masses (m^* $\approx$ 0.4 - 1 m_e). As evidenced by the magnetic susceptibility, there is an appreciable difference between the Curie-Weiss temperature (Θ $\approx$ -90 K) and the onset of the magnetic ordering temperature (T_M = 1.4 K), suggesting that magnetic frustration dominates the magnetic behavior. We will discuss the prospects for studying magnetic frustration in a simple metallic environment, and for tuning the magnetic ordering towards a frustrated quantum phase transition.

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