Unusual phase boundary and altered Fermi surface in \( \text{CeOs}_4\text{Sb}_{12} \) at high magnetic fields\(^1\) PEI-CHUN HO, CSU-Fresno, JOHN SINGLETON, NHMFL/LANL, PAUL A. GODDARD, U of Warwick, UK, FEDOR F. BAL-AKIREV, SHALINEE CHIKARA, NHMFL/LANL, M. BRIAN MAPLE, UC San Diego, TATSUYA YANAGISAWA, Hokkaido U, Jpn — The filled skutterudite compounds \( \text{CeOs}_4\text{Sb}_{12} \) is a 1K antiferromagnetic (AFM) semimetal and candidate topological insulator. Using magnetization \( (M) \), MHz-conductivity and electrical resistivity \( (\rho) \) data recorded at magnetic fields of up to \( \mu_0H = 60 \) T and temperature \( T \) down to 0.4 K, we map out the \( (H,T) \) phase diagram. At low \( T \) and low \( H \) (L phase), the Ce \( 4f \) electron is delocalized, yielding heavy quasiparticles with a small Fermi surface, while at high \( T \) and high \( H \) (H phase) the \( 4f \) electron is quasi-localized, leaving a single, almost spherical Fermi surface of light-mass holes. The behavior of \( \rho \) and \( dM/dH \) on crossing the L-H boundary, plus comparisons with bandstructure calculations, suggest that the L-H phase transition in \( \text{CeOs}_4\text{Sb}_{12} \) is similar in origin to the \( \alpha - \gamma \) transition in Ce and its alloys. However, interplay between the free-energy contributions of the AFM and L phases results in a very unusual curvature of the phase boundary at low \( T \).

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