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Structural and physical properties of new Ce-based silicides CeMAl4Si2 (M= Rh, Ir, Pt) and germanides[1] NIRMAL GHIMIRE, FILIP RONNING, DARRICK WILLIAMS, BRIAN SCOTT, YONGKANG LUO, Los Alamos Natl Lab, SAMANTHA CARY, THOMAS ALBRECHT-SCHMITT, Florida State University, JOE THOMPSON, ERIC BAUER, Los Alamos Natl Lab — There is a great deal of interest in the Ce-based intermetallic compounds because of the wide variety of strongly correlated electron behavior they exhibit including heavy Fermion behavior, quantum criticality, unconventional superconductivity and complex magnetic order. Recently we have synthesized new Ce-based tetragonal layered silicides - $CeMAl_4Si_2$ (M=Rh, Ir, Pt) that show anisotropic behavior in magnetic susceptibility and electrical resistivity. Furthermore, electronic structure calculations reveal a quasi 2D-character of the Fermi surface. We will discuss the importance of these observations and relevance of these and the related compounds in search of new heavy fermion superconductors. We will also present the structural and physical properties of the related Ce-based tetragonal/hexagonal germanides.

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