KONDO LATTICE AND MAGNETIC PROPERTIES IN STRONGLY CORRELATED ELECTRON SYSTEMS.

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Recent works on the Kondo lattice and magnetism in heavy fermion systems are briefly reviewed here. First, the underscreened Kondo lattice model, which describes the case of a number of f-electrons larger than 1, gives a coexistence between the ferromagnetic order and the Kondo effect and explains the behavior of Uranium compounds, such as UTe, which present both a Kondo effect and a ferromagnetic order with a large Curie temperature of order 100K; this behavior is different from the classical Kondo lattice where there is a strong competition between the Kondo effect and the magnetic order, as observed in Cerium or Ytterbium systems. Second, the competition between Kondo, spin glass and magnetically ordered phases has been extensively studied within the Sherrington-Kirkpatrick and the Mattis models and some important results are presented here, in order to account for the peculiar phase diagrams, such as that of $Ce(Ni, Cu)$ disordered alloys. Finally, we present a brief analysis of thermal transport properties, like the thermoelectric power and the thermal conductivity of Cerium or other anomalous rare-earth systems.

9.7 cm

13.4 cm

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