The Correlated Kondo-Lattice Model

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We investigate the ferromagnetic Kondo lattice model with a correlated conduction band. A moment conserving equation of motion approach is proposed to determine the electronic self-energy, with the on-site Coulomb repulsion U taken into account by the Hubbard-I-approximation. Mapping the interaction between conduction electrons and localized spins onto an effective Heisenberg Hamiltonian we can calculate the magnetization of the localized moment system self-consistently. The exchange integrals are thereby functionals of the electronic self-energy, giving rise to a strong influence of the two subsystems on each other. We discuss the results in terms of quasiparticle density of states, correlation functions, magnetization, and the Curie temperature. The Coulomb interaction in the conduction band leads to the formation of an upper Hubbard band and has considerable influence on the magnetic properties of the system. There is enhancement as well as suppression of magnetic stability depending on the parameter region.

9.7 cm

13.4 cm

Subject category :
6. Theory of Magnetism

Presentation mode :
poster

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