

Abstract Submitted  
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**The Friedel-Anderson Impurity with Orbital Degeneracy** LIYE

ZHANG, GERD BERGMANN, Univ. of Southern California — A recently developed compact solution for the non-degenerate Friedel-Anderson impurity is extended to impurities with orbital degeneracy. The singlet ground state is investigated for two and three orbits (corresponding to four and six d-states). The ground state energy and the multi-d-state occupations are calculated. The magnetic moment (above the Kondo temperature) is obtained in different regions of the parameter space of  $V_{sd}$  (s-d-hopping matrix element),  $E_d$  (d-state energy),  $U$  and  $U_x$  (Coulomb and exchange energies). The average d-state occupation can be adjusted to about one, two or three d-electrons. A comparison between different orbital degeneracy but the same d-state occupation is performed. The role of the Coulomb and the exchange interaction in the magnetic and singlet states is analyzed. The challenges for the treatment of a real d-impurity with five d-orbits is discussed.

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