Abstract Submitted
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Validity of Equation-of-Motion Approach to Kondo Problem in the Large N limit[1] YUNONG QI, Texas Center for Superconductivity, University of Houston, JIAN-XIN ZHU, Theoretical Division, Los Alamos National Laboratory, CHIN-SEN TING, Texas Center for Superconductivity, University of Houston — The Anderson impurity model for Kondo problem is investigated for arbitrary orbit-spin degeneracy N of the magnetic impurity by the equation of motion method (EOM). By employing a new decoupling scheme, a set self-consistent equations for the one-particle Green function are derived and numerically solved in the large-N approximation. For the particle-hole symmetric Anderson model with finite Coulomb interaction U, we show that the Kondo resonance at the impurity site exists for all $N \geq 2$. The approach removes the pathology in the standard EOM for $N = 2$, and has the same level of applicability as non-crossing approximation. For $N = 2$, an exchange field splits the Kondo resonance into only two peaks, consist with the result from more rigorous numerical renormalization group (NRG) method. The temperature dependence of the Kondo resonance peak is also discussed.

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