Abstract Submitted
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Quantum phase transition of a magnetic impurity in a dissipative environment[1] MENGXING CHENG, KEVIN INGERSENT, University of Florida, MATTHEW GLOSSOP, Rice University — We study the quantum phase transition (QPT) induced by dissipation in the Bose-Fermi Anderson model of a magnetic impurity that hybridizes with a metallic host and is also coupled (via its charge) to a bosonic bath having a spectral density proportional to ω^s. For sub-Ohmic bath exponents $0 < s < 1$, numerical renormalization-group calculations show that upon increasing the coupling to the bosonic bath from zero, there is a crossover from a conventional (spin-sector) Kondo effect to a charge-Kondo effect. Further increase of the bosonic coupling results in a zero-temperature transition to a phase in which charge fluctuations on the impurity site are frozen out. Critical exponents describing the response of the impurity charge to a locally applied electric field are found to obey the hyperscaling relations characteristic of an interacting critical point. The numerical value of these exponents suggests that the QPT lies in the same universality class as that of the sub-Ohmic spin-boson model. Results for the Ohmic case $s = 1$ will also be presented.

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