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Kondo destruction and superconducting correlations in the two-impurity Bose-Fermi Anderson model LILI DENG, KEVIN INGERSENT, U. of Florida, JEDEDIAH PIXLEY, QIMIAO SI, Rice U. — The Bose-Fermi Kondo and Anderson models are among the simplest models for Kondo destruction, the phenomenon believed to underly the anomalous physics of certain heavy-fermion materials near the border of magnetism. With the goal of probing superconductivity near the Kondo-destruction local quantum critical point of the Kondo lattice, here we study the two-impurity Anderson model supplemented both by an inter-impurity exchange of either SU(2) or Ising symmetry and by a linear coupling between the impurity spins and a sub-Ohmic bosonic bath. Using the continuous-time quantum Monte Carlo method and the numerical renormalization group, we elucidate the phase diagram arising from the interplay of Kondo physics, inter-impurity exchange (ferromagnetic or antiferromagnetic), and bosonic decoherence, and demonstrate the existence of a Kondo-destruction quantum critical point in the model. We investigate the properties near this quantum critical point, as well as the effect of a critical suppression of the Kondo effect on superconducting pairing correlations.

Lili Deng
U. of Florida

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