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Extended-DMFT Study of Quantum Phase Transitions in a Kondo Lattice: Dynamical Large-N limit STEFAN KIRCHNER, Rice University, Houston, LIJUN ZHU, University of California, Riverside, QIMIAO SI, Rice University, Houston — In one approach to the quantum critical heavy fermion metals, Kondo lattice systems are studied through self-consistent Bose-Fermi Kondo Model (BFKM) within the extended dynamical mean field theory. In the case with spin-rotational invariance, this model is still difficult to study theoretically or numerically. Very recently, it has been shown[1,2] that a dynamical large-N generalization provides an access to the quantum critical behavior of the spin-rotationally-invariant BFKM with a sub-ohmic boson spectral function. Here, we carry out a self-consistent EDMFT study of the model in this large-N limit. We determine the extent to which a second-order quantum phase transition exists in this limit for two- and three-dimensional spin fluctuations, as well as the critical exponents of the magnetic dynamics. [1] L. Zhu, S. Kirchner, Q. Si, and A. Georges, Phys. Rev. Lett, in press (cond-mat/0406293). [2] S. Kirchner, L. Zhu, and Q. Si, Physica B, in press (cond-mat/0407307).

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