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Quantum Phase Transition in an Anisotropic Kondo Lattice M.T. GLOSSOP, K. INGERSENT, U. Florida — The Kondo lattice model (KLM), which captures the competition between Kondo screening of localized moments by conduction electrons and their ordering due to the RKKY interaction, is of interest in the context of non-Fermi-liquid behavior in quantum critical heavy-fermions. An important issue concerns the possibility of a local quantum critical point (QCP) — where Kondo screening is itself critical at the magnetic ordering transition — recently invoked [1] to explain anomalous properties of, e.g., $CeCu_{5.9}Au_{0.1}$. We study the anisotropic KLM using the extended dynamical mean-field theory (EDMFT), which maps the KLM onto a self-consistent Bose-Fermi Kondo model (BFKM). Whether a local QCP arises as a self-consistent EDMFT solution of the KLM is a contentious issue that we seek to resolve. Separate studies [2,3], both employing Quantum Monte Carlo (QMC) to solve the BFKM, have reached opposite conclusions, but limitations of QMC at low temperatures T obscures the picture at $T = 0$. We address this matter, providing reliable $T = 0$ solutions using our extension of [4] Wilson's numerical renormalization group method to solve the BFKM. We present results for both paramagnetic and antiferromagnetic phases, shedding light on the nature of the QPT. Supported by NSF Grant DMR-0312939. [1] Q. Si, S. Rabello, K. Ingersent, and J. L. Smith, Nature **413**, 804 (2001). [2] J-X Zhu, D. R. Grempel and Q. Si, Phys. Rev. Lett. 91, 156404 (2003). [3] P. Sun and G. Kotliar, Phys. Rev. Lett. 91, 037209 (2003). [4] M. T. Glossop and K. Ingersent, Phys. Rev. Lett. 95, 067202 (2005).

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