Abstract Submitted for the MAR05 Meeting of The American Physical Society

**Out-of-Equilibrium Transport near a Quantum Phase Transition** STEFAN KIRCHNER, Rice University, Houston, LIJUN ZHU, University of California, Riverside, QIMIAO SI, Rice University, Houston — Non-equilibrium properties are expected to be particularly rich at a second order quantum phase transition, given that statics and (imaginary time) dynamics are already mixed at the equilibrium level. The issue has so far received only limited study, partly because equilbrium methods are not readily generalizable to non-equilibrium situations. Here we consider the quantum critical point of a Bose-Fermi Kondo model, which we have recently shown[1] to model the magnetic quantum dot systems[2]. We extend the saddle-point equations in a dynamical large-N limit[3] to the Keldysh contours, and determine the linear and non-linear conductance in the quantum critical regime. [1] S. Kirchner, L. Zhu, Q. Si, and D. Natelson, to be published (2004). [2] A. N. Pasupathy et al., Science **306**, 86 (2004). [3] L. Zhu, S. Kirchner, Q. Si, and A. Georges, Phys. Rev. Lett, in press; cond-mat/0406293.

> Stefan Kirchner Rice University, Houston

Date submitted: 01 Dec 2004

Electronic form version 1.4