Abstract Submitted
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Numerically Exact Long Time Magnetization Dynamics Near the Nonequilibrium Kondo Regime[1] GUY COHEN, Department of Chemistry, Columbia University, EMANUEL GULL, Department of Physics, University of Michigan, DAVID REICHMAN, Department of Chemistry, Columbia University, ANDREW MILLIS, Department of Physics, Columbia University, ERAN RABANI, School of Chemistry, The Sackler Faculty of Exact Sciences, Tel Aviv University, Israel — The dynamical and steady-state spin response of the nonequilibrium Anderson impurity model to magnetic fields, bias voltages, and temperature is investigated by a numerically exact method which allows access to unprecedentedly long times. The method is based on using real, continuous time bold Monte Carlo techniques—quantum Monte Carlo sampling of diagrammatic corrections to a partial re-summation—in order to compute the kernel of a memory function, which is then used to determine the reduced density matrix. The method owes its effectiveness to the fact that the memory kernel is dominated by relatively short-time properties even when the system's dynamics are long-ranged. We make predictions regarding the non-monotonic temperature dependence of the system at high bias voltage and the oscillatory quench dynamics at high magnetic fields. We also discuss extensions of the method to the computation of transport properties and correlation functions, and its suitability as an impurity solver free from the need for analytical continuation in the context of dynamical mean field theory.

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