Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Imaginary-time formulation for strongly correlated transport in steady-state nonequilibrium[1] JONG E. HAN, RYAN J. HEARY, SUNY at Buffalo — We formulate steady-state nonequilibrium from the scattering state theory and show that an imaginary-time formalism exists for strongly correlated transport calculations in quantum dot devices[2]. Equilibrium imaginary-time method is extended to the steady-state nonequilibrium by mapping the chemical potential difference in the quantum got device into complex Matsubara voltage. Due to this formal similarity between equilibrium/nonequilibrium theories, we readily apply an equilibrium numerical technique to calculate the strong correlation effects in nonequilibrium. We use quantum Monte Carlo method to calculate Green functions at each Matsubara voltage and, after a numerical analytic continuation, we obtain nonperturbative Green function far from equilibrium. We show numerical results for the evolution of Kondo anomaly as a function of finite bias. We also discuss the splitting of Kondo anomaly at finite magnetic fields.

[1]Supported by NSF DMR-0426826.
[2]J. E. Han, R. J. Heary, Imaginary-time formulation of steady-state nonequilibrium: application to strongly correlated transport *accepted to Phys. Rev. Lett.* arXiv:0704.3198v2.

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Date submitted: 30 Nov 2007 Electronic form version 1.4