Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Thermo-Electric Transport Out-of-Equilibrium[1] PRASENJIT DUTT, Yale University, KARYN LE HUR, Ecole Polytechnique — The manipulation of mesoscopic systems to engineer quantum circuits has become a crucial tool to test and explore novel phenomena which arise due to quantum coherence effects. Electronic transport through these systems under the combined influence of voltage biases and thermal gradients poses several open questions, the understanding of which has an immense scope for future applications. We provide an effective equilibrium description of the steady state dynamics of quantum impurity models far-from-equilibrium, which generalizes the theory presented in P.Dutt et al. (Annals of Physics, 326, 2963(2011)), to include thermal gradients. We study the interplay of strong voltage biases and large thermal gradients and its effect on the emergent Abrikosov-Suhl resonance. Taking the linear response limit, we compute the various thermo-electric coefficients of the system, such as the Peltier coefficient and thermal conductance, and verify the reciprocity relations of Onsager.

[1]DE-FG02-08ER46541

Prasenjit Dutt
Yale University

Date submitted: 07 Nov 2012 Electronic form version 1.4