

Abstract Submitted
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Screening in Non-Equilibrium Dissipative System¹ JIAJUN LI, JONG HAN, State Univ of NY - Buffalo — Effect of screening is one crucial property of interacting electrons. However, it is still not completely understood in non-equilibrium dissipative system, partly due to a lack of convenient theoretical tool. It is recently shown that a DC-driven lattice attached to fermionic reservoirs [1,2] reproduces major physical properties of real system, and is accessible by comprehensive theoretical study even in strong field and correlated electron region. In this presentation, we will show a study of electronic screening within this model. First of all, current distribution out of impurities will be shown in steady-state non-equilibrium. With parameters changing in the regimes of linear and high-field, DC current shows distinctly different patterns, reflecting the underlying interplay between quantum dissipation and non-equilibrium physics. In addition, the density-density correlation function is calculated and RPA is used to study dielectric screening. The electron-hole excitation spectrum will be presented, which indicates interesting physics while fermionic dissipation, Coulomb interaction and external field compete with each other.

[1] J. E. Han, Phys. Rev. B **87**, 085119 (2013)

[2] J. E. Han, J. Li, Phys. Rev. B **88**, 075113 (2013)

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