Screening in Non-Equilibrium Dissipative System\textsuperscript{1} 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 \cite{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.

\textsuperscript{1}Supported by NSF DMR-0907150.

\textsuperscript{1}Jiajun Li
State Univ of NY - Buffalo

Date submitted: 15 Nov 2013

Electronic form version 1.4