

ICTS Skype Seminar

Title : Effect of Time dependent potentials on mesoscopic transport

Speaker : Debashree Chowdhury, Ben Gurion University, Israel

Date : Tuesday, January 8, 2019

Time : 11:30 AM

Venue : Amal Raychaudhuri Meeting Room, ICTS Campus, Bangalore

Abstract : In our recent papers [1,2] we have discussed the particle and energy transport through a very simple set up having a single quantum dot connected to two reservoirs via two metallic leads. The novelty of our work is that the quantum dot is affected by external time-dependent potentials, which may either be periodic or random stochastic (telegraph noise). We have discussed the averaged particle and energy currents for these two scenarios, where the averaging techniques are different. While we average over time for periodic potentials, the averaging for random stochastic case was performed over the different histories of the noise. In contrast to the charge (or particle) current, which is established only when the junction is biased (either by voltage or by temperature gradient), disparate energy currents do flow from the dot to the two leads even when the two reservoirs are identical.

[1] O. Entin-Wohlman, D. Chowdhury, A. Aharony, and S. Dattagupta, Heat currents in electronic junctions driven by telegraph noise, Phys. Rev. B96, 195435 (2017); (arXiv:1710.05626)

[2] A Aharony et al., Is telegraph noise a good model for the environment of mesoscopic systems? J.Stat Phys, 2018, In press; (arXiv:1809.08924).