

ICTS Statistical Physics Journal Club Seminar

Title : Thermodynamic Uncertainty Relation in Quantum Transport: Theory and Experiments

Speaker : Bijay Kumar Agarwalla (Indian Institute of Science Education and Research, Pune)

Date : Thursday, 24th December 2020

Time : 03:00 pm (IST)

Abstract : Trade-off relations between the relative uncertainty of currents and the associated entropy production have been of enormous interest in the last few years in the field of non-equilibrium stochastic thermodynamics. It is now realized, for example, that the optimization of heat engines should balance power, efficiency as well as power fluctuations. In this talk, I will first present our recent results for steady-state thermodynamic uncertainty relation (TUR) for quantum charge and energy transport. In the second part of my talk, I will present our experimental results for heat exchange within the NMR setup. Our measurements of heat cumulants demonstrate the validity of generalized versions of the TUR, which are based on the fluctuation symmetry, but violations of the 'specialized' TUR, which holds only under certain dynamics. Theoretical calculations excellently trace experiments, providing deep insights about the violation of this specialized TUR.

Venue : Please click on the below link to join the seminar

<https://zoom.us/j/99653037033?pwd=LytvNVprbDZTQ1FMNlhsOE1laml2Zz09>

Meeting ID: 996 5303 7033

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