Bar-Ilan University
אוניברסיטת בר-אילן

Faculty of Exact Sciences
Department of Chemistry

הפקולטה למדעים מדויקים
המחלקה לכימיה

S P E C I A L S E M I N A R

Wednesday, 5/02/2020, 10:30 am

Building 211, seminar room

SPEAKER:

Dr. Amikam Levy

Department of Chemistry
University of California, Berkeley

TOPIC:

A quasiprobability distribution for heat fluctuations in the quantum regime

Abstract:
The standard approach to deriving fluctuation theorems fails to capture the effect of quantum correlation and coherence in the initial state of the system. I overcome this difficulty by showing that the heat exchange between two locally thermal states in the presence of initial quantum correlations is faithfully captured by the Margenau-Hill quasiprobability distribution. I will discuss the thermodynamic interpretation of the negative probabilities which witness non-classicality. Furthermore, I will provide inequalities for the heat flows that can only be violated in the presence of these negativities. The results are tested on data collected in a recent experiment studying the heat transfer between two spin half systems in an NMR setup.

A. Levy and M. Lostaligo, arXiv:1909.11116 (2019)