Chez Pierre

Presents ...

Monday, October 7, 2019

12:00pm Noon

MIT Room 4-331

Chez Pierre Seminar

Aharon Kapitulnik – Stanford University

"Thermal Transport in Complex Materials"

Analyses of thermal diffusivity data on complex crystalline insulators and on strongly correlated electron systems hosted in similar complex crystal structures suggest that high temperature thermalization processes in these systems are dominated by phonons. In particular we observe that for these systems diffusive thermal transport is controlled by a universal Planckian time scale $\tau_p = \hbar/k_BT$, and a unique velocity v_E. For Insulators $v_E \sim v_s$-the sound velocity, while for complex correlated electron systems $v_E > v_s$, where v_s includes the electrons contribution. Finally, we argue that if quantum chaos is applied at all to these systems, it is only the thermal (energy) diffusivity that describes chaos diffusivity.