

**Polkovnikov, Anatoli:** *“Understanding thermodynamics through quantum chaos and eigenstates”*

In this talk I will review recent progress in understanding both equilibrium and non-equilibrium thermodynamic relations including laws of thermodynamics through quantum eigenstates. In particular I will review the Eigenstate Thermalization Hypothesis, its connections to quantum chaos and the random matrix theory. Then I will show how using these ideas one can prove various thermodynamic relations like fluctuation theorems, Onsager relations, drift diffusion relations and others.