



Generalization of Boltzmann entropy to quantum systems

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Abstract:

Some people say that entropy of a closed quantum system remains constant. Of course, they have von Neumann entropy in mind. But is this entropy the right quantity to define thermodynamic properties of a closed system? For example, would you say that the entropy does not change when you throw ice into an insulated bottle? And from a macroscopic perspective, should there be really that much of a difference between a pure and a mixed state, when observer can detect change only in the macroscopic observables but not the microscopic ones? In this talk, I will present framework of Observational entropy, which is based on generalizing Boltzmann entropy rather than Gibbs entropy, that provides an alternative perspective on the thermalization of closed quantum systems.

