

## Quantum entropy generated by dynamical evolution

*Tuesday, 18 February 2020 17:00 (30 minutes)*

We introduce the notion of a time density matrix which captures a probabilistic ensemble of systems in specified states at different times. The quantum entropy of a time density matrix quantifies the information needed to track the unitary evolution of an arbitrary quantum system. As such it can grow with time, and is a finer probe of the dynamics of the system than the quantum entropy of a regular density matrix. This dynamical quantum entropy is expected to be useful in characterizing chaotic quantum systems, as well as in studying how certain quantum systems are encoded in dual gravity theories.

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**Session Classification:** Evening session