

Abstract: Repeated interaction systems consist of a quantum system S interacting with a sequence of probes, one after the other. The physical paradigm of such systems is the one-atom maser model. These systems can be seen as either as discrete time quantum trajectories or as a particular class of open quantum systems, the sequence of probes representing here the environment. We will consider the open system point of view and will focus on a non-equilibrium situation: the various probes are not always the same but chosen from a finite set of possible ones (one should think of probes all initially in a Gibbs state but with possibly different temperatures). We will consider the situation where the sequence of probes is chosen randomly at each step and in an iid way. We are then interested in the large time behaviour of the system: relaxation to a steady state and questions related to entropy production and energy fluxes, e.g. linear response theory and entropic fluctuations.