

There are two simple ways to drive a persistent current in a loop: breaking detailed balance, or periodically changing parameters (i.e. using a stochastic pump or a ratchet). In both cases, the (time averaged) steady state probability profile is not the equilibrium distribution, and the current has a cost in terms of entropy production. In the talk I will compare these two scenarios, and will show that the two schemes are equivalent in discrete state systems, but not in a continuous ring.