

Fluctuation theorems for stochastic resetting systems

Arnab Pal and Saar Rahav

Resetting is an event in which an external agent returns a system to a pre-ordained state. The dynamics of systems with resetting has been extensively studied due to the usefulness of resetting in search problems. Our understanding of the thermodynamics of processes with resetting is less developed. Interestingly, inclusion of resetting means that the system's dynamics is inherently out-of-equilibrium. The development of stochastic thermodynamics has considerably increased our knowledge regarding out-of-equilibrium systems and processes. We apply this theoretical framework to dynamics with resetting and find that stochastic resetting systems satisfy two distinct integral fluctuation theorems. We also discuss the physical interpretation of these fluctuation theorems.