

# Generic Properties of Stochastic Entropy Production

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Entropy production is a central quantity to characterize non-equilibrium mesoscopic systems. Recently, new (and surprising) generic properties of entropy production have been discovered. It is unclear if there are even more generic properties of entropy production, and how these properties are related. In this talk, I will present a general theory for non-equilibrium physical systems described by overdamped Langevin equations †. For these system, entropy production evolves according to a simple stochastic differential equation. At steady state, a random time transformation maps this evolution into a model-independent form. This implies several generic properties for the entropy production, such as a finite-time uncertainty equality, universal distributions of the infimum and the supremum before the infimum, and universal distribution of the number of zero-crossings. In the second part of my talk I will discuss how the arcsine law, a general result in the theory of Brownian motion, applies to currents in stochastic thermodynamics \*.

† S. Pigolotti, I. Neri, E. Roldan, F. Julicher, *Phys. Rev. Lett.* **119**, 140604 (2017).

\* A. Barato, E. Roldan, I. Martinez, S. Pigolotti, submitted, arXiv/1712.00795 (2018).