[Talk 5] A non-equilibrium phase transition of a finite-size system

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Microcanonical analysis is a powerful method that can be used to generalize the concept of phase transitions to finite-size systems. However, microcanonical analysis has only been applied to equilibrium systems. I show that it is possible to conduct the microcanonical analysis of a finite-size nonequilibrium system by generalizing the concept of microcanonical entropy. A one-dimensional asymmetric diffusion process is studied as an example for which such a generalized entropy can be explicitly found, and the microcanonical method is used to define a phase transition for the finite-size nonequilibrium system.

[1] Julian Lee, "Microcanonical analysis of a finite-size nonequilibrium system", Physical Review E 93 (2016) 052148,