Séminaire de physique statistique

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Lundi 18/11/2019, 14:00-15:00

Orme des Merisiers Salle Claude Itzykson, Bât. 774

Large deviations and optimal control in growing systems, and other simple models

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We consider dynamical fluctuations in a simple model where clusters of particles grow with time [1]. There are two types of particle (for example, red and blue) and the typical long-time behaviour may be either mixed or de-mixed. We analyse rare events where the cluster composition at long times differs from its typical value [2]. The mechanisms for these events are unusual – they are coupled to large fluctuations in the early-time behaviour of the system, which impacts the long-term behaviour because of a long-range memory effect. We explain how these can be described by combining large deviation theory with ideas of stochastic optimal control. We discuss connections to simple models of diffusion with memory.

[1] K Klymko, JP Garrahan, and S Whitelam, Phys Rev E 96, 042126 (2017)
[2] RL Jack, Phys Rev E 100, 012140 (2019)