

Theoriekolloquium

Am **24.01.2019** um **14.15 Uhr** in **W2 1-143** hält

Herr Dr. Vivien Lecomte (Grenoble-Alpes)

einen Vortrag mit dem Titel

Population dynamics and rare events

Rare trajectories of stochastic systems are important to understand, because of their potential impact. However, their properties are by definition difficult to sample directly. Population dynamics provide a numerical tool allowing their study, by means of simulating a large number of copies of the system which are subjected to a selection rule that favors the rare trajectories of interest. This method exhibits systematic errors which can be large in some circumstances, particularly for systems with weak noise, with many degrees of freedom, or close to phase transitions. We show how these errors can be mitigated by introducing "control forces" within the algorithm. These forces are determined by an iteration-and-feedback scheme, inspired by multicanonical methods in equilibrium sampling. They substantially improve the efficiency of the algorithm, allowing one to handle complex systems. They also provide, for actual biological systems with a population dynamics, an interesting picture of the effective forces generated by the selection-mutation process.

Interessierte sind herzlich eingeladen.

gez. Prof. Dr. Alexander Hartmann