

# Sampling constrained stochastic paths: some applications to biological systems

*Prof. Henri Orland, Commissariat à l'énergie atomique, CEA, IPhT, CNRS, UMR3681, Gif-sur-Yvette, France*

Transition paths are the stochastic paths that take a system from one state to another. These are exponentially rare events, that require very long simulation times. In this talk, we show how these transition paths can be formulated as conditioned stochastic paths, that can be generated exactly by a modified Langevin equation. It requires much shorter simulation times.

We illustrate this method on some analytical models, and then show how it can be applied to the knotting-unknottting of circular DNA (in presence of topoisomerase), and to some allosteric transitions in proteins.

