

Speaker: Benjamin WALTER (SISSA, Italy)

Title: **Extreme events of non-Markovian stochastic processes from field theory**

Abstract

(Joint work with Gunnar Pruessner (Imperial College London) and Guillaume Salbreux (U Geneva))

First-passage times, running maxima and the span of a stochastic process are extreme events which aptly characterise the out-of-equilibrium dynamics of many complex systems arising in biological or chemical problems, as well as active matter. In the presence of memory, however, the distribution of these extreme events is difficult to obtain. I discuss a perturbative framework which allows for a systematic expansion of the distribution of the survival probability. This perturbative framework, which is based in field theory, treats interactions and the effect of external, possibly self-correlated noise in a perturbation about a Markovian process, thereby providing a systematic, diagrammatic approach to extreme events. I illustrate the formalism by applying it to Brownian Motion and calculating its survival probability distribution subject to self-correlated noise.

Refs

BW, G Pruessner, G Salbreux. Phys. Rev. Res. (3), 013075 — (2021)