

Talk 7: Ludovic Goudenège (Université d'Évry Paris-Saclay)**Title:** Numerical approximation of singular rough Heston model

Abstract. In this talk, I will present theoretical results that enable the simulation of trajectories for stochastic differential equations with singular drift terms and additive fractional Brownian motion. The singularities may arise from drift terms such as $1/x^\alpha$, measures like Dirac, or indicator functions of physical domains. These singular terms are often used to constrain the solution to remain within a bounded domain, acting, for instance, as a reflection.

This class of SDEs with singular drift covers a wide range of models. In particular, I will focus on a heuristic variant related to the rough Heston model, with special attention to the preservation of positivity. I will illustrate the theoretical results with numerical simulations of trajectories for a singular rough Heston model with Hurst parameter between 0 and 0.5. Finally, I will discuss the optimality of the theoretical convergence rates.