

Séminaire de Probabilités et Statistique

Mardi 18 mai à 14h00

ZOOM

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McKean-Vlasov dynamics with a common noise

This talk concerns the distribution dependent stochastic differential equations—often referred to as McKean-Vlasov dynamics—derived from a family of mean-field interacting particle systems driven by correlated noises. I will focus on the setting where each particle is driven by their own private Brownian motion and one that is common to all particles. Particular attention will be given to the probabilistically weak formulation and I will discuss the notion of (conditional) propagation of chaos, connecting the finite particle systems to their mean-field limits. Next, I will present an extension of existence-uniqueness results of Mishura and Veretennikov ('16) for McKean-Vlasov dynamics without a common noise, to the case of a single common Brownian motion. The argument allows for the spatial dependence of the (bounded) drift coefficient to be merely measurable, with the price of total-variation Lipschitzianity in distribution and non-degenerate diffusion coefficients not dependent on distribution. Finally, I will discuss ongoing work to demonstrate the conditional propagation of chaos.