

Conference Pathwise Stochastic Analysis and Applications

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Distribution dependent SDEs driven by additive fBm

It is known, since the seminal work by Catellier and Gubinelli (SPA 2016), that strong uniqueness holds for SDEs driven by additive fBm even when the drift is highly irregular (possibly distributional). In this talk I will consider distribution dependent SDEs (DDSDEs, also called McKean-Vlasov SDEs) driven by fBm, where the drift is allowed to depend on the law of the solution itself; differently from the Brownian case, Ito calculus and PDE techniques are not available anymore, making the analysis harder. Uniqueness for the DDSDE can be established under a variety of structural assumptions on the drift, with prototypical cases being convolution-type kernels, which arise naturally in connection to particle systems. The key ingredient in the proof is a stability estimate for SDEs driven by different drifts, combined with the use of Wasserstein distances.

Based on an ongoing project with Fabian A. HARANG and Avi MAYORCAS.
