"Weak error expansion for Mean Field SDE"

Jean-François Chassagneux
Laboratoire de Probabilité, Statistique et Modélisation - Université Paris Diderot - France

Abstract:

In this work, we study the weak approximation error by particle system of Mean Field SDE. We prove an expansion of this error in terms of the number of particle. Our strategy of proof follows the approach of Talay-Tubaro for weak approximation of SDE by an Euler Scheme. We thus consider a PDE on the Wasserstein space (called the Master Equation in mean-field games literature) and, relying on smoothness properties of the solution, obtain our expansion. We also prove the required smoothness properties under sufficient conditions on the coefficient function.