
Trajectorial coupling between one-dimensional diffusions with linear diffusion coefficient and their Euler scheme

Arnaud Gloter^{*1} and Emmanuelle Clément^{†2}

¹Laboratoire de Mathématiques et Modélisation d'Évry (LaMME) – Université d'Évry-Val d'Essonne – France

²Le Laboratoire d'Analyse et de Mathématiques Appliquées (LAMA) – Université Paris Est (UPE) – France

Abstract

It is well known that the strong error approximation, in the space of continuous paths equipped with the supremum norm, between a diffusion process, with smooth coefficients, and its Euler approximation with step $1/n$ is $O(n^{-1/2})$ and that the weak error estimation between the marginal laws, at the terminal time T , is $O(n^{-1})$. In this talk, we study the p -Wasserstein distance between the law of the trajectory of a diffusion process, with linear diffusion coefficient, and its Euler scheme. Using the Komlós, Major and Tusnády construction, we show that this Wasserstein distance is of order $\log n/n$.

*Speaker

†Corresponding author: emmanuelle.clement@u-pem.fr