

主 論 文 要 旨

論文題名

Hölder Continuity Property of the Densities of Solutions of SDEs with Singular Coefficients

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主論文要旨

In this Ph.D. dissertation, we prove the Hölder continuity property of densities of weak solutions of a uniformly elliptic stochastic differential equations with non smooth coefficients.

Chapter 1 is an introduction to study about the regularity of densities by using Malliavin calculus.

In Chapter 2, we set up some notations and review of Malliavin calculus.

In Chapter 3, we will prove that solutions of one dimensional stochastic differential equations with locally smooth diffusion coefficient and Hölder continuous drift has a Hölder continuous density function. This result complements recent results of Fournier and Printems (2010), where the density is shown to exist if both coefficients are Hölder continuous and exemplifies the role of the drift coefficient in the regularity of the density of a diffusion.

In Chapter 4, we will show the global Hölder continuity of densities of multi-dimensional solutions of stochastic differential equations with deterministic diffusion coefficient and singular drift coefficient. In this result we assume that Fourier transform of the drift coefficient exists and it has “good” decay at infinity. This decay is important to show the Hölder continuity of densities.