

Insalate di Matematica

presents

Backward Kolmogorov equations: a link between PDEs and SDEs

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Google Meet meeting

Università di Milano Bicocca

Abstract

Backward Kolmogorov equations have been introduced by Kolmogorov in 1931 and are parabolic partial differential equations in which the final condition is known. A very important feature of this class of equations, investigated both in finite and infinite dimension, is the link between their solutions and the so called diffusion stochastic processes, which are stochastic processes that solve a stochastic differential equation. In this talk, I will introduce some classical results about existence and uniqueness of classical solutions to backward Kolmogorov equations on \mathbb{R}^d , making explicit the relation with the stochastic differential equations. Then, I will move to an infinite dimensional framework, introducing some measure-valued stochastic processes, namely filtering processes, and the associated backward Kolmogorov equations on spaces of measures. Then, I will show how the classical approach still lead us to existence and uniqueness of classical solutions to these pdes on spaces of measures.



Keywords:

partial differential equations · stochastic differential equations ·
backward Kolmogorov · nonlinear filtering processes ·
space of measures

"Obvious" is the most dangerous word in mathematics. - Eric Temple Bell

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