



北京理工大学

数学与统计学院学术报告

NONLINEAR FOKKER–PLANCK–KOLMOGOROV EQUATIONS AS GRADIENT FLOWS ON THE SPACE OF PROBABILITY MEASURES

报告人: Michael Röckner(Bielefeld University)

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地点: 北京理工大学良乡校区文萃楼B233

摘要: We propose a general method to identify nonlinear Fokker–Planck–Kolmogorov equations (FPK equations) as gradient flows on the space of Borel probability measures on \mathbb{R}^d with a natural differential geometry. Our notion of gradient flow does not depend on any underlying metric structure such as the Wasserstein distance, but is derived from purely differential geometric principles. Moreover, we explicitly identify the associated energy functions and show that these are Lyapunov functions for the FPK solutions. Our main result covers classical and generalized porous media equations, where the latter have a generalized diffusivity function and a nonlinear transport-type first-order perturbation.