Institute for Applied Mathematics, Bonn University

Oberseminar Stochastik

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Degenerate Diffusion Processes: Beyond Hörmander's condition

In this talk we present a class of diffusion processes satisfying the so-called UFG condition, introduced by Kusuoka and Stroock in the eighties. The UFG condition is weaker than Hörmander's condition (i.e. the class of UFG processes contains the class of uniformly hypoelliptic processes). The goal of this talk is to describe the long-time behaviour of such processes; which is more challenging than for non-degenerate processes since these processes can exhibit more than one invariant measure. It is well known that for dynamics exhibiting multiple equilibria, the problem of determining the basin of attraction of each equilibrium is in general out of reach. However, the geometrical structure of such a condition allows one to completely describe the set of initial data converging to a given equilibrium. In this talk we discuss the geometric, analytic and probabilistic implications of the UFG condition and how to determine for a given initial datum when we have convergence and to which invariant measure it will converge to.