

Abstract Vortrag Bhaskaran Rajeev am 27.06.2019 im Mathematischen Kolloquium

Title : The Monotonicity Inequality and its Applications

Abstract : The monotonicity inequality has been a natural tool to prove uniqueness results for SPDE's (and PDE's) after it was introduced by Krylov and Rozovskii (1979). While the abstract version has been known since then, the inequality was proved for a second order linear 'elliptic' operator with constant (but possibly random) coefficients in Gawarecki, Mandrekar and Rajeev (2009) and used to obtain uniqueness and translation invariance for SPDE's related to finite dimensional diffusions, in the setting of a scale of Hilbert spaces. In Bhar and Rajeev (2015), we derived the monotonicity inequality by an 'integration by parts' formula which considerably simplified the proof for the case of elliptic operators.

In this talk, we will present the proof of this inequality in the case of non-linear elliptic operators Rajeev (2019,2013). We will discuss applications to existence and uniqueness of SPDE's associated with finite dimensional diffusions.