Hauptvortrag/Plenary lecture

Dienstag/Tuesday, 12:00, Wolfgang-Paul-Hörsaal

Stochastic Partial Differential Equations and Infinite Dimensional Analysis

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A major part of the talk will consist of a review about new analytic methods in the study of stochastic partial differential equations (SPDE) that have been developped in the past few years. Furthermore, we shall also describe some very recent progress within this subject. Main emphasis will be given to the approach of solving nonlinear SPDE through solving the corresponding linear Kolmogorov equations. Since these Kolmogorov equations are partial differential equations in infinitely many variables and known finite dimensional methods can only be applied in a very restricted way, new infinite dimensional analytic tools are required. We shall describe some of them in the talk. They lead to existence and uniqueness results for solutions of the SPDE, but also allow for analyzing their special properties, such as regularity or asymptotic behaviour. An interesting fact is that these techniques also lead to new results about deterministic PDE, since the case, where the stochastic noise term in the SPDE is identically equal to zero, is always included. Finally, applications to various classes of SPDE will be presented.