Mathematics and CS Seminar

New coupling techniques for exponential ergodicity of SPDEs in the hypoelliptic and effectively elliptic settings

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Host: Jan Maas

We will present new coupling techniques for analyzing ergodicity of nonlinear stochastic PDEs with additive forcing. These methods complement the Hairer-Mattingly approach (2006, 2011). In the first part of the talk, we demonstrate how a generalized coupling approach can be used to study ergodicity for a broad class of nonlinear SPDEs, including 2D stochastic Navier-Stokes equations. This extends the results of [N. Glatt-Holtz, J. Mattingly, G. Richards, 2017]. The second part of the talk is devoted to SPDEs that satisfy comparison principle (e.g., stochastic reaction-diffusion equations). Using a new version of the coupling method, we establish exponential ergodicity of such SPDEs in the hypoelliptic setting and show how the corresponding Hairer-Mattingly results can be refined.(Joint work with Alexey Kulik and Michael Scheutzow) [1] O. Butkovsky, A. Kulik, M. Scheutzow (2018). Generalized couplings and ergodic rates for SPDEs and other Markov models. arXiv:1806.00395; to appear in "The Annals of Applied Probability".

Thursday, May 16, 2019 05:00pm - 06:00pm
Big Seminar room Ground floor / Office Bldg West (I21.EG.101)

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