Mathematics and CS Seminar

Stochastic PDEs in critical spaces

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Host: Julian Fischer

Critical spaces for non-linear equations are important due to scaling invariance, and in particular this plays a central role in fluid dynamics. In this talk we introduce and discuss local/global well-posedness, and blow-up criteria for stochastic parabolic evolution equations in critical spaces. Our results extend the celebrated theory of Prüss, Wilke and Simonett for deterministic PDEs. Due to the presence of noise it is unclear that a stochastic version of the theory is possible, but as we will show a suitable variation of the theory remains valid. We will also explain several features which are new in both the deterministic and stochastic framework. In particular, we discuss a new bootstrap method to prove regularization of solutions to (S)PDEs, which can also be applied in critical situations. Our theory is applicable to a large class of semilinear and quasilinear parabolic problems which includes many of the classical SPDEs. During the talk we give applications to stochastic reaction-diffusion equations and stochastic Navier-Stokes equations with gradient noise.This is a joint work with Mark Veraar (TU Delft).

Friday, January 15, 2021 01:00pm - 03:00pm
online via Zoom

This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station. Please find a schedule of the ISTA Shuttle on our webpage: https://ista.ac.at/en/campus/how-to-get-here/ The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.