



Karlstad Applied Analysis Seminar (2021)

David Cohen, Chalmers University of Technology, Sweden.

September 29, Wednesday, 10:30

A fully discrete approximation of the one-dimensional stochastic heat equation

Abstract

A fully discrete approximation of one-dimensional nonlinear stochastic heat equations driven by multiplicative noise is presented. A standard finite difference approximation is used in space and a stochastic exponential method is used for the temporal approximation. This explicit time integrator allows for error bounds in $L^p(\Omega)$, uniformly in time and space. Furthermore, uniform almost sure convergence of the numerical solution is proved. Numerical experiments are presented and confirm the theoretical results. The presentation is based on a joint work with Rikard Anton (Umea University) and Lluís Quer-Sardanyons (Universitat Autònoma de Barcelona).