

4:50-5:25 Anne de Bouard (CNRS, Ecole Polytechnique, France)

Finite volume schemes for the stochastic heat equation with transport noise

A. de Bouard (CNRS, Ecole Polytechnique), L. Goudenège (Univ. Evry-Paris-Saclay), F. Nabet (Ecole Polytechnique)

We prove that some finite volume approximation of a stochastic heat equation on a polygonal two-dimensional domain, with multiplicative transport noise in the Stratonovich sense, satisfies a pathwise discrete energy estimate. Coupled with two possible strategies for the time discretization, this yields, almost sure bounds on the discrete solutions. These estimates are proved to be sufficient to pass to the limit in the numerical scheme and to prove convergence of the approximation towards the unique solution of the limiting equation, under some condition on the space and time steps. Finally, I will illustrate the performance of the finite volume method with numerical simulations based on a two-point flux approximation.