

Precise Laplace Asymptotics for the generalised Parabolic Anderson Model

Tom Kloise
(TU Berlin)

16 April 2021
MPI MiS Leipzig

Abstract

The large deviations of the generalised Parabolic Anderson Model (gPAM) in the small noise limit have been quantified by Hairer and Weber. A classical result due to Varadhan therefore characterises the asymptotics of so-called *Laplace functionals* on a logarithmic scale. In this talk, I will review said results and explain how to generalise the log-asymptotics to a precise asymptotic expansion of arbitrary order. The proof combines classical arguments due to Ben Arous as well as Inahama and Kawabi with novel regularity structures techniques, which I will outline. In particular, I will present a Taylor expansion of gPAM in the noise intensity which might be of independent interest. If time permits, I will discuss obstacles to obtaining precise Laplace asymptotics for other singular stochastic PDEs and possible solutions. This talk is based on joint work with Peter Friz (TU Berlin and WIAS), available at [arXiv:2103.00028](https://arxiv.org/abs/2103.00028).