Stochastic unfolding and homogenization of evolution equations

Mario Varga

Abstract

In this talk we discuss a strategy for stochastic homogenization of gradient systems which are driven by random and rapidly oscillating energy and dissipation functionals. In particular, we present a stochastic homogenization result for an Allen-Cahn type gradient flow involving a non-convex energy functional. The notion of two-scale convergence and the periodic unfolding method are prominent and useful tools in periodic homogenization. The approach we use is motivated by the periodic unfolding procedure. In particular, we introduce a stochastic unfolding method that enjoys many similarities to periodic unfolding and it leads to a simple procedure for stochastic homogenization of evolutionary problems. The talk is based on a joint work with Martin Heida and Stefan Neukamm.