
Describing the fluctuations in stochastic homogenisation

Jean-Christophe Mourrat^{*1}, Yu Gu^{*}, James Nolen, and Felix Otto

¹École normale supérieure de Lyon (ENS LYON) – École Normale Supérieure (ENS) - Lyon – 15 parvis René Descartes - BP 7000 69342 Lyon Cedex 07, France

Abstract

Consider the solution of a divergence-form problem with random coefficients. Under suitable assumptions on the law of the coefficients, homogenisation theory ensures that as the correlation length of the random coefficients is sent to 0, this solution converges to the solution of a similar problem with constant, "homogenised" coefficients. The problem of quantifying the error in this convergence has witnessed tremendous progress recently. The goal of this talk is to explain how one can go beyond error bounds, and describe precisely the statistics of the fluctuations in terms of a finite number of new effective parameters. (Joint works with Yu Gu, James Nolen and Felix Otto.)

^{*}Speaker