Fondation mathématique
FMJH
Jacques Hadamard

HADAMARD LECTURES 2015

Professor Martin Hairer

«Regularity Structures»

//// **Abstract :** One of the main challenges of modern mathematical physics is to understand the behaviour of systems at or near criticality. In a number of cases, one can argue heuristically that this behaviour should be described by a nonlinear stochastic partial differential equation. Some examples of systems of interest are models of phase coexistence near the critical temperature, one-dimensional interface growth models, and models of absorption of a diffusing particle by random impurities. Unfortunately, the equations arising in all of these contexts are mathematically ill-posed to the extent that they defeat classical stochastic PDE techniques.

Recently, the theory of regularity structures has allowed us to give a rigorous mathematical interpretation to such equations and to build the mathematical objects conjectured to describe the abovementioned systems near criticality.

It also comes with a robust solution theory allowing to prove various approximation results by solutions to classical PDEs, possibly with diverging coefficients. The aim of these lectures is to give an overview of the main results and concepts of the theory. Whenever practical, we will give at least sketches of proofs that are as self-contained as possible. ////

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Monday, March 16 10:00 to 12:00
Thursday, March 19 10:00 to 12:00
Monday, March 23 10:00 to 12:00
Thursday, March 26 10:00 to 12:00
Monday, March 30 10:00 to 12:00

Thursday, April 2 10:00 to 12:00
Thursday, April 9 10:00 to 12:00

Information and registration
www.fondation-hadamard.fr/en/hadamard_lectures_martin_hairer

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