

Seminaire Hypatie :  
**Regularity structures, models, and large deviations**

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*et*

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**Quand** : vendredi 10 octobre 2014

**Où** : Institut Camille Jordan, Université Lyon 1.

**Accès** : voir le lien suivant <http://math.univ-lyon1.fr/divers/?option=access>

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**Programme** :

Le matin : **Amphit atre Jordan** (batiment Braconnier)

10:30-11:30 **Martin Hairer** : General introduction into the theory

11:45-12:45 **Martin Hairer** : Models and renormalisation

Lunch

L'apr es-midi : salle **Fokko du Cloux** (Braconnier)

14:30-15:30 **Hendrik Weber** : Homogeneous integrals

15:45-16:45 **Hendrik Weber** : Large deviations

**R esum e** :

The theory of regularity structures was introduced in order to give a rigorous meaning to stochastic partial differential equations from Physics such as the KPZ equation or the dynamic  $\Phi_3^4$  equation. The equations of interest contain a very irregular random term, often space-time white noise, which causes them to fall outside of the scope of classical solution theories.

The treatment of any given equation contains of two steps. The first step consists of the construction of a suitable "algebraic framework" or regularity structure. This can be done as soon as the equation satisfies certain scaling properties. The second step consists of a (usually probabilistic) construction of a (usually) random "model", a concrete realisation of the algebraic framework.

In these lectures we will give an overview over this procedure, emphasising in particular the construction of models. We present some tricks how this construction can be reduced to the analysis of certain graphs and how to perform this analysis even in complicated example. We will also show how to obtain large deviation results for some random models and how these can be used to obtain large deviation bounds for renormalised stochastic PDEs.