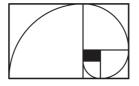
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Lectures on singular stochastic PDEs

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Abstract. These are the notes for a course at the 18th Brazilian School of Probability held from August 3rd to 9th, 2014 in Mambucaba. The aim of the course is to introduce the basic problems of non-linear PDEs with stochastic and irregular terms. We explain how it is possible to handle them using two main techniques: the notion of energy solutions in [Gonçalves and Jara, Arch. Ration. Mech. Anal., 2014] and [Gubinelli and Jara, Stoch. Partial Diff. Equations: Analysis and Computations, 2013], and that of paracontrolled distributions, recently introduced in [Gubinelli, Imkeller, and Perkowski, Forum Math. Pi, 2015]. In order to maintain a link with physical intuitions, we motivate such singular SPDEs via a homogenization result for a diffusion in a random potential.

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