Regularity structures and stochastic partial differential equations

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Abstract

In this talk I wish to present some of the ideas at the heart of the theory of regularity structures (RS), introduced by Martin Hairer in 2014. RS are perhaps best described as a theory of Taylor expansions in a fractal (random) setting. I plan to show how this theory is based on a fascinating interplay between several different disciplines, ranging from physics to probability, from analysis to algebra, from combinatorics to geometry.