ID de Contribution: **25**　　Type: **Non spécifié**

Singular Stochastic PDE: More Geometry and Less Combinatorics

mercredi 24 mai 2023 10:30 (1 heure)

Singular stochastic PDE are those stochastic PDE in which the noise is so rough that the nonlinearity requires a renormalization. The guiding principle of renormalization is to preserve as many symmetries of the solution manifold as possible. We follow the typical approach of mathematical physics, and of Hairer's regularity structures, which provides a formal series expansion of a general solution.
However, we advocate a more geometric/analytic than combinatorial version of this approach: Instead of appealing to an expansion in- indexed by trees, we consider all partial derivatives w. r. t. the "constitutive" function defining the nonlinearity. Instead of a Gaussian calculus guided by Feynman diagrams arising from pairing nodes of two trees, we consider derivatives w. r. t. the noise, i.e. Malliavin derivatives. This calculus allows to characterization the expansion without divergent terms; in conjunction with the spectral gap estimate, it provides a natural path toward stochastic estimates.
This is joint work with P. Linares, M. Tempelmayr, and P. Tsatsoulis, based on work with J. Sauer, S. Smith, and H. Weber.

Orateur: Prof. OTTO, Felix (Max-Planck Institut fur Mathematik)