

Conference Pathwise Stochastic Analysis and Applications

CIRM (Marseille, France) — March 8-12, 2021

Organized by GdR TRAG (INSMI-CNRS)

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A Microlocal Approach to Renormalization in Stochastic PDEs

We present a novel framework for the study of a large class of non-linear stochastic PDEs, which is inspired by the algebraic approach to quantum field theory. The main merit is that, by realizing random fields within a suitable algebra of functional-valued distributions, we are able to use techniques proper of microlocal analysis which allow us to discuss renormalization and its associated freedom without resorting to any regularization scheme and to the subtraction of infinities. As an example of the effectiveness of the approach we apply it to the perturbative analysis of the stochastic Φ_d^3 model.

Based on joint work with C. DAPPIAGGI, N. DRAGO and P. RINALDI

Ref: <https://arxiv.org/abs/2009.07640>
