13th Colloquium on Mathematics
and
Foundations of Quantum Theory

Friday, 02.07.2021

- 15:00–16:00 **Sergio Albeverio / Francesco De Vecchi (University of Bonn)**.

Stochastic methods in quantum fields: introduction and applications to scalar fields.

Abstract. We propose an introduction to stochastic quantization methods and their applications to constructive quantum field theory. Starting from the Euclidean reformulation of the relativistic quantum fields, we shall present new developments coming from the theory of stochastic partial differential equations (stochastic quantization equation). We discuss as a case of study the polynomial and exponential scalar bosonic models in two dimensions. We describe some analytic and probabilistic techniques which also find applications in more general settings (such as Besov spaces, singular SPDEs and their invariant solutions).

- 16:00–16:30 **Discussion**.
- 16:30–17:30 **Massimiliano Gubinelli (University of Bonn)**.

Some aspects of the stochastic quantisation of the Φ_3^4 model.

Abstract. In this talk I will illustrate how the general philosophy of stochastic quantisation applies to the Φ_3^4 measure, in particular how the Euclidean QFT axioms can be verified for this model using several features the stochastic dynamics. I plan also to touch upon non-Gaussianity and Dyson-Schwinger equation for the measure without cutoffs.

- 17:30–18:00 **Discussion**.

Zoom link: https://zoom.us/j/97854892794?pwd=b0R5SGgrOUxuMUtNbmp1TUlhZ3k5UT09

Passcode: pah31y

Organizers: D.–A. Deckert (LMU), W. Dybalski (UAM), F. Finster (Univ. Regensburg) and P. Pickl (Univ. Tübingen).