



In the framework of the activities of the PhD programme in Mathematical Sciences

Prof. **Massimiliano Gubinelli**

Institute for Applied Mathematics  
University of Bonn

will offer a PhD course on

## **Stochastic quantization of the Euclidean $\Phi_3^4$ quantum field theory**

### **Abstract**

*In this course we will learn about the stochastic quantization of the Euclidean quantum field theory of a scalar boson with quartic interaction on  $R^d$  and its main properties. We build the  $\Phi_3^4$  measure as the limit of the invariant measure of a finite dimensional system of stochastic differential equations. The proof proposed uses several analytic and probabilistic techniques, such as white noise analysis, weighted Besov spaces on lattice and para-products, which find also applications in other problems arising in the study of deterministic and stochastic singular differential equations. All these tools and ideas will be gradually introduced and explained during the lectures. The course is as much as possible self-contained and requires as prerequisite only basic knowledge of stochastic and functional analysis.*

### **Scheduling**

The course will be held via Zoom platform  
**from February 15 to February 25, 2021**

**from 10.00 to 12.00 and from 14.00 to 16.00** with the following scheduling:  
**15, 16, 18, 22, 25 February**

Link for updates: <https://www.iam.uni-bonn.de/abteilung-gubinelli/sq-lectures-milan-ws2021>

Responsible of the course: Prof. Stefania Ugolini (stefania.ugolini@unimi.it)