

## Nils Berglund : Renormalisation of static and dynamic $\Phi^4_d$ models

*lundi 12 juin 2023 11:00 (1 heure)*

The static  $\Phi^4$  model on the  $d$ -dimensional torus is a well-known toy model in Euclidean quantum field theory. It is well-posed for  $d = 1$ , and its renormalisation is well-understood for  $d = 2$  and  $d = 3$ , thanks to works by Glimm, Jaffe, and many others. In the dynamic case, the model becomes a stochastic PDE, motivated by the idea of stochastic quantization. It is well-posed for  $d = 1$ . A proof of existence of solutions to a renormalised version for  $d = 2$  has been obtained by Da Prato and Debussche in 2003, while the case  $d = 3$  was first solved by Martin Hairer in 2014, using his theory of regularity structures. I will provide an overview of these results, focusing on algebraic techniques of the proofs, and briefly address more general recent results on renormalisation of singular SPDEs.

The talk is partly based on the book  
<https://ems.press/books/elm/232>