

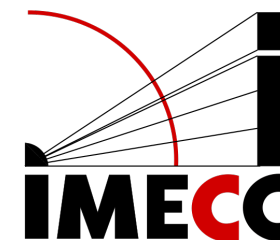


# V Workshop in Stochastic Analysis and Applications

IMECC - Unicamp

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## Solving the stationary stochastic Landau-Lifshitz-Gilbert equation

### **Abstract**

In this talk, we describe a version of Hashimoto's transform for the stochastic Landau-Lifshitz-Gilbert (LLG) equation. The latter equation is a singular stochastic PDE which is used for modeling the effects of a magnetic field in ferromagnetic materials. In the LLG equation the Laplacian of the solution is multiplied by the solution itself in the sense of the vector product. To handle the problem, we introduce a certain transformation (Hashimoto-type transform) allowing us to reduce the LLG equation to a system of first-order PDEs (containing the Cauchy-Riemann operator) with singular coefficients and ill-defined products of noises. We further discuss how to handle the latter equation by means of a renormalization. The talk is based on a joint work with Zdzisław Brzeźniak and Mikhail Neklyudov.