



# Workshop on Stochastic Analysis

IMECC - Unicamp

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## Regularization by fractional (in time) noise for the stochastic heat equation with a singular drift

### Abstract

Regularization by noise is a phenomenon where apriori ill-posed systems benefit for noise. For instance, in this talk we consider the heat equation with a non-Lipschitz drift, so that the Cauchy-Lipschitz theorem no longer applies and, therefore, one can easily construct examples where there are infinitely many solutions. It was first noticed by Pardoux and Gyöngi in their 1993 seminal paper that it is possible to restore well-posedness of this equation by subjecting it to space-time white noise. Since then, many developments in regularization by noise for stochastic PDEs have been made, partly due to the discovery of the Stochastic Sewing Lemma by Khoa Lê in 2020. The idea of this talk is to explain how to adapt these techniques when one considers a noise that has fractional correlations in time and white in space. We focus on the case where the Hurst parameter  $H \in (1/2, 1)$  and explain how this prepares the terrain for the more singular case ( $H \in (1/4, 1)$ ).