Workshop in Stochastic Analysis and Applications

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Wishart matrix and the stochastic heat equation

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Abstract

We consider the random matrix $\mathcal{X}_{n,d}$ with n rows and d columns in which the entries are increments of the solution to the stochastic heat equation driven by a space-time white noise. Besides that the elements of the random matrix $\mathcal{X}_{n,d}$ located on different rows are independent while those on a same row are correlated. This correlation is given by the spatial or temporal increments of the solution to the stochastic heat equation. Thus, the goal of this work is to analyze the asymptotic behavior of the Wishart matrix $\mathcal{W}_{n,d}$ associated to the random matrix $\mathcal{X}_{n,d}$ by using the techniques of the Stein-Malliavin calculus. Joint work with Ciprian A. Tudor and Julie Gamain (Université de Lille - France).