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Editorial

Infinite dimensional analysis has a long and successful history in probability theory and mathematical statistics. In the past decade there has been exciting developments in stochastic partial differential equations, applications of Malliavin calculus, rough paths theory, functional stochastic calculus and stochastic geometry, just to name a few examples. The aim of this special issue is to present some new research articles, which highlight various aspects of modern infinite dimensional analysis and related topics in stochastics.

E. Azmoodeh, G. Peccati and X. Yang present a survey paper about recent development of Malliavin–Stein methods and their applications in limit theory. They introduce the basic elements of Malliavin calculus on Gaussian and Poisson spaces, and establish their connection to Stein's method and normal approximation.

D. Berger and F. Mohamed investigate linear stochastic partial differential equations generated by Lévy white noise. Their main focus is on the proof of existence of generalized and mild solutions of certain second order elliptic partial differential equations.

L. Decreusefond and G. Moroz study optimal transport problems for determinantal point processes. They provide estimates of distances between distributions of determinantal point processes and apply the theory to evaluate the accuracy of a new simulation algorithm.

T. Kaufmann establishes sharp large deviation results for q-norms of random vectors in high-dimensional ℓ_p^n-balls. The new theory is applied to deduce sharp asymptotics for intersection volumes of different ℓ_p^n-balls and for the length of the projection of an ℓ_p^n-balls onto a line with uniform random direction.

C. Tudor demonstrates a new result in probabilistic number theory, which is related to the long term behaviour of the Riemann zeta function on the critical line. He derives the associated Wiener chaos expansion, which provides a better understanding of a famous theorem by Selberg.

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