

Central convergence on Wiener chaoses always implies asymptotic smoothness and C -infinite convergence of densities

mardi 21 mars 2023 09:45 (55 minutes)

Let (F_n) be any sequence of Wiener chaoses of any fixed order converging in distribution towards a standard Gaussian. In this talk, without any additional assumptions, we shall explain how to derive the asymptotic smoothness of the densities of F_n , as well as the convergence of all its derivatives in every $L^q(\mathbb{R})$ for all $q \in [1, +\infty]$ towards the corresponding derivatives of the Gaussian density. In particular, these findings greatly improve the currently known types of convergence which are total variation and entropy that were obtained through Malliavin/Stein method.

Joint work with Ronan Herry and Dominique Malicet

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