Séminaire de Probabilités et Statistique

Mardi 30 janvier à 14h00
Salle de conférence

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About the central limit Theorem for linear statistics of beta ensembles and the phenomenon of "Superconvergence"

We will introduce the classical model of Beta ensembles as well as its connection with random matrices. We will be more particularly interested in the Central Limit Theorem for the so-called linear statistics. We will adopt the point of view of "Stein's method" and "Gamma calculus," two techniques that I will introduce. Our goal will be to provide a simple and quantitative proof which gives better estimates (both in term of speed of convergence and required regularity) than recent advances on this subject by (Beckerman-Leblé-Serfaty) and (Lambert-Ledoux-Webb). We shall also discuss the question of the metric of convergence and will exhibit a regularization phenomenon enabling to upgrade the classical mode of convergence (Wasserstein) to the uniform convergence of the density and all its derivatives on the real line. If time permits, we will review some recent results related to this mode of convergence for Gaussian polynomials in relation with problems of anti-concentration and random graph theory.