Asymptotic normality of U-statistics via contractions

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We build on methods developed in a recent joint paper with G. Peccati in order to derive bounds on the normal approximation of U-statistics, whose (symmetric) kernel might still depend on the sample size n. It is well-known that, in this case, even degenerate kernels of order $p \geq 2$ can yield asymptotic normality. The error bounds presented are completely analytic in the sense that they are expressed rather in norms of so-called contraction kernels than in terms of moments of certain random functionals. Our results include uni- and multivariate approximation theorems for degenerate U-statistics as well as results for general U-statistics. Finally, we illustrate the utility of our bounds by means of a suitable application.

The talk is based on a recent joint paper with G. Peccati (Luxembourg).