Programme du 50ᵉ : Nouveaux développements en probabilités libres et applications
« Atelier sur les probabilités libres : la théorie, ses applications »
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50ᵗʰ anniversary program : New Developments in Free Probability and Applications
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Linearizations meet the noncommutative Lindeberg method

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Using Linearizations, we push the noncommutative Lindeberg method to study polynomials in correlated sums of freely independent elements with amalgamation. The summands do not need to be identically distributed and are also allowed to have different covariances. We give explicit rates of convergence in terms of the associated Cauchy transforms to polynomials in a family of operator-valued semicircular elements.

As applications, we first give a Berry-Esseen type theorem for the speed of convergence in the multivariate free central limit theorem. We then consider polynomials in correlated Wigner matrices having free entries with (co)variance profile. For the special case of $P(X) = X$, the freeness hypothesis on the matrix entries can be dropped and replaced by exchangeability. In many situations, the quantitative bounds on the Cauchy transforms can be passed to the Kolmogorov distance.

Joint works with G. Cébron and T. Mai.

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