Probabilistic Operator Algebra Seminar

Organizer: Dan-Virgil Voiculescu

June 12   **Alice Cortinovis**, Stanford

Title: *Computing free convolutions via contour integrals*

In this talk, we propose algorithms for computing additive and multiplicative free convolutions of two given measures. We consider measures with compact support whose free convolution results in a measure with a density function that exhibits a square-root decay at the boundary (for example the semicircle distribution or the Marchenko-Pastur distribution). A key ingredient of our method is rewriting the intermediate quantities of the free convolution using the Cauchy integral formula and then discretizing these integrals using the trapezoidal quadrature rule, which converges exponentially fast under suitable analyticity properties of the functions to be integrated.