

# Probabilistic Operator Algebra Seminar

Organizer: Dan-Virgil Voiculescu

May 9    **Philippe Moreillon**, KTH Royal Institute of Technology

Title: *The support of the free additive convolution of multi-cut measures.*

Voiculescu's free additive convolution describes the distribution of the sum of two freely independent non-commutative random variables. In contrast to the classical convolution, it is difficult to infer, based upon intuition, qualitative properties of the free additive convolution measures. Starting from the definition of the free additive convolution via analytic subordination, we aim to determine properties of its support and density for a class of measures arising in random matrix theory. For multi-cut probability measures satisfying a certain power law behavior at the endpoints of their supports, we obtain an upper and lower bound on the number of connected components in the support of the free additive convolution measures by localizing the corresponding subordination functions in the extended upper-half plane. In a second step, we infer the qualitative behavior of the distributions' densities. The talk is based on joint work with Kevin Schnelli.