

Probabilistic Operator Algebra Seminar

Organizer: Dan-Virgil Voiculescu

May 24 **Camille Male**, CNRS Institut Mathématiques Bordeaux

Title: *Freeness over the diagonal and the second order distribution of Wigner matrices*

We characterize the limiting second order distributions of independent complex Wigner and deterministic matrices using Voiculescu's notions of freeness over the diagonal. For unitary invariant random matrices, Mingo and Speicher's notion of second order freeness gives a universal rule to compute the fluctuation. But this one is in general not valid for non Gaussian Wigner matrices, since the fluctuations are not universal, depending in particular on the moment of order 4 of the matrices. Yet, it is possible to adapt Mingo-Speicher's formulation and reformulate this notion for operator-valued random variables in a second order probability space, and prove a universal rule for more general Wigner matrices (for which the marginal second order distributions are not universal).