# Probabilistic Operator Algebra Seminar

Organizer: Dan-Virgil Voiculescu

November 18      **Remi Bonnin**, University Aix-Marseille, CNRS

Title: *Freeness for tensors*

We pursue the current developments in random tensor theory by laying the foundations of a free probability theory for tensors and establish its relevance in the study of random tensors of high dimension. We give a definition of freeness associated to a collection of tensors of possibly different orders. Our definition reduces to the usual freeness when only tensors of order 2 are concerned. We define the free cumulants which are associated to this notion of tensor freeness. We prove that the basic models of random tensors are asymptotically free as the dimension goes to infinity. On the way, we establish Schwinger-Dyson loop equations associated to random tensors.