

Probabilistic Operator Algebra Seminar

Organizer: Dan-Virgil Voiculescu

September 13 **Guillaume Cebron and Octavio Arizmendi**, Institut Mathématique de Toulouse and CIMAT Guanajato.

Title: *Where are the atoms? The universality of the free case.*

In this talk we are interested in the atomic part of the distribution of a fixed polynomial in a tuple of non-commutative random variables. We are able to compare the free case with any other case for a given tuple of marginal distributions. We will also briefly mention the generalization to rational functions. Moreover, this result allows us to elaborate new techniques in order to compute the atoms of a polynomial in freely independent variables. As a consequence, we can achieve a full description of the atoms for the product, the commutator and the anti-commutator of two free variables. This is a joint work with Roland Speicher and Sheng Yin (arXiv:2 2107.11507).