

Probabilistic Operator Algebra Seminar

Organizer: Dan-Virgil Voiculescu

September 11 **Philippe Biane**, Universite Gustave Eiffel

Title: *Free cumulants and large deviations for classical and quantum symmetric exclusion processes*

The symmetric exclusion process is a well known probabilistic model, describing propagation of particles in a narrow channel, which has generated a lot of activity in probability, physics and combinatorics. Recently a quantum version has been introduced, for which free cumulants turn out to describe the large size fluctuations of the system. The quantum version maps to the classical one and this allows to recover the large deviations for the density profile, a well known result of Derrida, Lebowitz and Speer, which is thus seen to have a hidden free probability structure. I will explain the necessary notions from the theory of exclusion processes to a free probabilistic audience. This is based on joint work with M. Bauer, D. Bernard and L. Hruza.