

# Probabilistic Operator Algebra Seminar

Organizer: Dan-Virgil Voiculescu

May 3    **Mylene Maida**, University of Lille

Title: *Statistical deconvolution of the free Fokker-Planck equation at fixed time*

I will present a joint work with Tien Dat Nguyen, Thanh Mai Pham Ngoc, Vincent Rivoirard and Chi Tran. We are interested in reconstructing the initial condition of the free Fokker-Planck equation, from observation of a Dyson Brownian motion at a given time  $t > 0$ . We propose a nonparametric estimator for the density of the initial condition obtained by performing the free deconvolution via the subordination functions method, for which probabilistic tools have been developed by Arizmendi, Tarrago and Vargas. This statistical procedure involves the resolution of a fixed point equation and a (classical) deconvolution by a Cauchy distribution. I will explain in particular how we could study the rates of convergence of the estimator by building on fluctuation results for random matrices.