

CRM 50th anniversary program
New Developments in Free Probability and Applications
March 1-31, 2019

Activities for week 3 (March 18-22)

Centre de recherches mathématiques
Montréal, Canada

WEDNESDAY March 20

Pavillon Claire-McNicoll, Université de Montréal
Room Z-220

16:15 Alice Guionnet (Aisenstadt Chair 2019)

“Free probability and Random matrices”

Free probability is the natural framework to consider matrices with size going to infinity. Since this key remark was made by Voiculescu in the nineties, these two fields have enriched each other continuously. We will discuss a few of these fruitful crossovers. This talk will only require a general mathematical background.

THURSDAY March 21

Pavillon André-Aisenstadt, Université de Montréal
Room 5340

09:30 - 11:00 Mireille Capitaine

“Introduction to Outliers for Deformed Wigner Matrices”

14:30 - 15:30 Felix Leid

“Maps, Partitioned Permutations, and Free Probability”

16:00 - 17:00 Maxime Fevrier

“From conditional freeness to infinitesimal freeness”

This talk concerns two extensions of free probability, namely conditional freeness and infinitesimal freeness. These two notions, which are defined in the framework of a unital algebra equipped with not only one, but two linear functionals, have striking similarities. Belinschi and Shlyatkhtenko discovered some years ago a connection between them, at the level of their free convolutions of univariate distributions. We upgrade this connection to the level of free products of multivariate noncommutative distributions. This is based on a joint work with M. Mastnak, A. Nica and K. Szpojankowski.

FRIDAY March 22

Pavillon André-Aisenstadt, Université de Montréal
Room 1360

10:30 Alice Guionnet (Aisenstadt Chair 2019)

“Free probability and random matrices: Conjugate variables and the Dyson-Schwinger equations”

In this talk I will discuss some uses of integration by parts in free probability, random matrices and related topics. In particular I will show how it can be used to study the large dimension asymptotics in random matrices and tilings.