UNIVERSITÄT BIELEFELD

Faculty of Physics
Faculty of Mathematics

THE UNIVERSITY OF MELBOURNE

Seminar

Bielefeld - Melbourne Random Matrices

Tobias Mai

Universität des Saarlandes, Saarbrücken

Noncommutative rational functions evaluated in random matrices

Especially after Voiculescu's groundbreaking discovery of the phenomenon of asymptotic freeness, it has become a standard technique to use Hilbert space operators in order to describe the behaviour of random matrices when their size tends to infinity. Whenever possible, this is done in such a way that the asymptotic eigenvalue distribution of any hermitian polynomial evaluated in the considered random matrices converges in an appropriate sense towards the spectral distribution of the same polynomial evaluated in the limiting operators. The latter object can be studied by operator algebraic means, in particular using tools from free probability.

When involving inverses, i.e., when passing from polynomials to rational functions, the situation becomes more delicate. Indeed, not only the convergence can break down but already the evaluation might fail to exist. In my talk, which is based on joint work with Benoît Collins, Akihiro Miyagawa, Félix Parraud, and Sheng Yin, I will present some general approach to these problems, hereby answering a question of Roland Speicher.

Wednesday, 09 June 2021, 0900 hrs CEST

Zoom Conference Call— Please contact Anas Rahman (anas.rahman@live.com.au) for details regarding access

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