Arno Kuijlaars (Leuven)

Multiple orthogonal polynomials in random matrix theory

Multiple orthogonal polynomials (MOPs) are a generalization of orthogonal polynomials where the orthogonality is distributed among a certain number of orthogonality weights. MOPs are related to certain determinantal point process in the same way that usual orthogonal polynomials are related to eigenvalues of unitary invariant random matrix ensembles. I will present examples arising from non-intersecting paths, random matrices with external source, and coupled random matrices. The large n-behavior of these models is described in certain special cases by a vector equilibrium problem.