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Beta-ensembles of random matrices

Most models in Random Matrix Theory are solved by using techniques that depend on their symmetry properties. In the last two decades, however, general families of matrix models that provide a unifying framework for random matrices have been developed; they are called the beta-ensembles. In this talk, I will briefly introduce these ensembles and review recent advances. The presentation will focus on the interrelationships between beta-ensembles, stochastic differential equations, and remarkable special functions in many variables, such as Jack polynomials.