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Large deviations of unitary characteristic polynomials

It is well-known that the logarithm of the characteristic polynomial on the unit circle of a Haar-sampled unitary matrix tends to a Gaussian as the matrix dimension grows. We study its density in a particular range, allowing for a transition from the CLT regime to moderate deviations. This is joint work with Sebastian Ortiz.

Universality limits for two-sided Jacobi matrices

Benjamin Eichinger

Universality describes the phenomenon that the local behavior of zeros of orthogonal polynomials depends only on general characteristics of the system, rather than on its precise properties. From a modern perspective, such local behavior is analyzed through local scaling limits of the Christoffel–Darboux kernel.

In this talk, we discuss scaling limits of Christoffel–Darboux kernels associated with finite truncations of a two-sided Jacobi matrix with two movable endpoints. In particular, we show that asymptotically equal eigenvalue spacing follows from a pointwise reflectionlessness condition. If time permits, we will also discuss analogous results for Schrödinger operators.

This talk is based on joint work with Milivoje Lukić and Giorgio Young.