Mathematics and CS Seminar

Universality limits via canonical systems

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It is often expected that the local statistical behavior of eigenvalues of some system depends only on its local properties; for instance, the local distribution of zeros of orthogonal polynomials should depend only on the local properties of the measure of orthogonality.The most commonly studied case is known as bulk universality, where Christoffel-Darboux kernels have a double scaling limit given by the sine kernel. In this talk, I will discuss the first completely local sufficient condition for bulk universality and, much more generally, necessary and sufficient conditions for regularly varying universality limits. The proofs of these results rely on the de Branges theory of canonical systems, and the results also apply to other self-adjoint systems with 22 transfer matrices such as Schrdinger operators. This talk is based on joint works with Milivoje Lukic, Brian Simanek and Harald Woracek.

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