MILIVOJE LUKIC, Rice University

An approach to universality using Weyl m-functions

This talk describes an approach to universality limits for orthogonal polynomials on the real line which is completely local and uses only the boundary behavior of the Weyl m-function at the point. We show that bulk universality of the Christoffel–Darboux kernel holds for any point where the imaginary part of the m-function has a positive finite nontangential limit. This approach is based on studying a matrix version of the Christoffel–Darboux kernel and the realization that bulk universality for this kernel at a point is equivalent to the fact that the corresponding m-function has normal limits at the same point. Our approach automatically applies to other self-adjoint systems with 2×2 transfer matrices such as continuum Schrodinger and Dirac operators. We also obtain analogous results for orthogonal polynomials on the unit circle. This is joint work with Benjamin Eichinger and Brian Simanek.