

Asymptotics of zeros of Heine-Stieltjes polynomials and critical measures

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Heine-Stieltjes polynomials can be considered as generalized eigenfunctions of certain second order linear differential operators with polynomial coefficients. They generalize the families of classical orthogonal polynomials and arise in several areas of mathematics and physics. Their zeros are saddle points of discrete energy functionals, and the description of their asymptotics is made in terms of critical measures, that generalize the standard notion of equilibrium measures in potential theory. We discuss briefly a connection of these measures with trajectories of quadratic differentials and extremal problems on the plane.

This talk is based on a joint work with E. Rakhmanov.