

Spectral Theory Sum Rules, Meromorphic Herglotz Functions and Large Deviations

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After defining the spectral theory of orthogonal polynomials on the unit circle (OPUC) and real line (OPRL), I'll describe Verblunsky's version of Szego's theorem as a sum rule for OPUC and the Killip–Simon sum rule for OPRL and their spectral consequences. Next I'll explain the original proof of Killip–Simon using representation theorems for meromorphic Herglotz functions. Finally I'll focus on recent work of Gamboa, Nagel and Rouault who obtain the sum rules using large deviations for random matrices.