

Orthogonal polynomials on the unit circle and unitary matrices II

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This talk is a continuation of “Orthogonal polynomials on the unit circle and unitary matrices I”. We present some new results about orthogonal polynomials on the unit circle, related to the five-diagonal representation of unitary operators presented in the previous talk.

First, we derive new bounds for the derived set of the support of the orthogonality measure under very general assumptions for the Schur parameters a_n . Among other cases we study the class $\lim |a_{n+1}/a_n| = 1$, obtaining a natural generalization of the known result for the López class $\lim a_{n+1}/a_n = \lambda$, $|\lambda| = 1$, $\lim a_n = a \in (0, 1)$.

As a second result, we prove that the support of the measure coincides with the strong limit points of the spectra of certain finite unitary five-diagonal matrices. The importance of the limit points of these finite spectra for the convergence of PC-fractions is also shown.