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Critical points of polynomials

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This talk is concerned with properties of the critical points of orthogonal polynomials with respect to a measure on the unit circle (OPUC). The main result states that the asymptotic distribution of the critical points of OPUC coincides with the asymptotic distribution of its zeros and Nevai-Totik points attract the same number of critical points as zeros of the OPUC. Analogous results are also presented for para-orthogonal polynomials and for orthogonal polynomials with respect to a regular measure supported on a continuum set.

References

[1] H.-P. Blatt, E. B. Saff, and M. Simkani, Jentzsch–Szegő type theorems for the zeros of best approximants, *J. London Math. Soc.* **38** (1988), 307–316.

[2] B. de la Calle Ysern, The Jentzsch–Szegő Theorem and Balayage Measures, *Const. Approx.* **40** (2014), 307–327.

[3] J. Dégot, Sendov conjecture for high degree polynomials, *Proc. AMS* **142** (2014), 1337–1349.

[4] P. Nevai and V. Totik, Orthogonal polynomials and their zeros, *Acta Sci. Math. (Szeged)* **53** (1989), 99–104.

[5] B. Simon, Fine structure of the zeros of orthogonal polynomials. II. OPUC with competing exponential decay. *J. Approx. Theory* **135** (2005), 125–139.

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