
THE ASYMPTOTICS FOR L_p EXTREMAL POLYNOMIALS CORRESPONDING TO POLYNOMIAL SZEGŐ MEASURE

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ABSTRACT

For a the polynomial Szegő class measure μ on the unit circle $\mathbb{T}$ in the complex plan, with $d\mu = \mu'_{ac}dm + d\mu_s$, where μ_{ac} is the absolutely continuous part of μ and $d\mu_s$ is singular and,

$$\int_{\mathbb{T}} p(t) \log \mu'_{ac}(t) dm(t) > -\infty. \quad (1)$$

We investigate the asymptotic behavior of $L_p(\mu)$ extremal polynomials ($1 < p < \infty$) corresponding to polynomial Szegő measure, our main result is the explicit strong asymptotic formulas for the $L_p(\mu)$ extremal polynomials.

Keywords Extremal polynomials · asymptotics for L_p extremal polynomials · polynomial Szegő condition.

References

- [1] Benghia FZ, Belabbaci Y. Asymptotics of orthogonal polynomials corresponding to polynomial Szegő measure with an infinite discrete part. *Journal of Chungcheong Mathematical Society* 2021; 34(3): 271-283.
- [2] Denisov S, Kupin S . Asymptotics of the orthogonal polynomials for the Szegő class with a polynomial weight. *J. Approx. Theory* 2006 ;139: 8-28.
- [3] Dijren PL. *Theory of H_P Spaces*, Academic Press, New York, 1970.
- [4] Geronimus YL. On some extremal problems in the space $L^{(p)}_{\sigma}$. *Mat. Sb. (N.S.)* 1952; 31(73): 3-26.
- [5] Li X, Pan K. Asymptotics for L_p extremal polynomials on the unit circle. *J. Approx. Theory* 1991; 67(3): 270283.

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