ÇAVUŞ A., ABDULLAYEV F.G.

ON THE UNIFORM CONVERGENCE OF THE GENERALIZED BIEBERBACH POLYNOMIALS IN REGIONS WITH K-QUASICONFORMAL BOUNDARY

Abstract

Let G be a finite domain in the complex plane with K-quasiconformal boundary, $z_\circ$ be an arbitrary fixed point in G and $p > 0$. Let $\varphi(z)$ be the conformal mapping from G onto the disk with radius $r_\circ > 0$ and centered at the origin 0, normalized by $\varphi(z_\circ)=0$ and $\varphi'(z_\circ)=1$. Let us set $\varphi_p(z) := \int_{z_\circ}^{z} [\varphi'(\zeta)]^{2/p} d\zeta$, and let $\pi_{n,p}(z)$ be the generalized Bieberbach polynomial of degree n for the pair $(G, z_\circ)$ that minimizes the integral $\iint_G |\varphi_p'(z) - P_n'(z)|^p d\sigma_z$ in the class $\bar{A}_n$ of all polynomials of degree $\leq n$ and satisfying the conditions $P_n(z_\circ) = 0$ and $P_n'(z_\circ) = 1$. In this work we prove the uniform convergence of the generalized Bieberbach polynomials $\pi_{n,p}(z)$ to $\varphi_p(z)$ on $\overline{G}$ in case of $p > 2 - \frac{K^2+1}{2K^4}$.