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Abdullaev, F. G.
Uniform convergence of Bieberbach polynomials in domains with interior zero angles. (Russian. English summary) Zbl 0708.30039
Dokl. Akad. Nauk Ukr. SSR, Ser. A 1989, No. 12, 3-5 (1989).

Let G be a finite domain in $\mathbb{C}$ bounded by a Jordan curve L. Given a fixed point z_0 in G let f be the conformal map of G onto a disk $\{|w| < r\}$ such that $f(z_0) = 0$ and $f'(z_0) = 1$. Let B_n be the unique polynomial of degree $\le n$ (Bieberbach polynomial) for which the integral

$$\iint_G |P'(z)|^2 d\sigma$$

is minimal in the class of all polynomials P of degree $\le n$ with $P(z_0) = 0$, $P'(z_0) = 1$.

The author gives (without proofs) estimates of the expressions $\sup_{z\in G} |f(z) - B_n(z)|$ for some classes of domains G such that $L = \partial G$ is a union of quasiconformal arcs $L_1, ..., L_m$ meeting under zero inner angles. As a special case of his results the author obtains the following *S. N. Mergelyan*'s theorem [Trudy Mat. Inst. Steklov. 37, 92 p. (1951; Zbl 0045.353)]: If $L = \partial G$ is a Jordan curve with continuously turning tangent then for every $\epsilon > 0$

$$\sup_{z\in G} |f(z) - B_n(z)| \le C(\epsilon)n^{\epsilon-}.$$

Reviewer: J.Siciak

MSC:

30E10 Approximation in the complex plane
30C20 Conformal mappings of special domains

Cited in **3** Documents

Keywords:

conformal; Bieberbach polynomial

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