

**Budarina, N. V.**

**The Mahler problem with nonmonotone right-hand side in the field of complex numbers.**  
(English. Russian original) [Zbl 1338.11064](#)

*Math. Notes* 93, No. 6, 802-809 (2013); translation from *Mat. Zametki* 93, No. 6, 812-820 (2013).

The paper under review deals with a problem in metric Diophantine approximation. To state the result of this paper we first introduce some notation. Let  $P_n$  denote the set of integer polynomials of degree at most  $n$  and let  $\Psi$  be a positive function. Let  $W$  be the set of all complex numbers  $z$  which satisfy the inequality  $|P(z)| < \Psi(H(P))$  for infinitely many integer polynomials  $P \in P_n$ , where  $H(P)$  is the maximum of the modulus of the integer coefficients of  $P$ . It is proved that, for  $n \geq 3$  the Lebesgue measure of the set  $W$  is zero if

$$\sum_{k=1}^{\infty} k^{n-2} \Psi^2(k) < \infty.$$

The main novelty of this result is that the function  $\Psi$  is non-monotonic. The same result over the set of real numbers was established by *V. Beresnevich* [*Acta Arith.* 117, No. 1, 71–80 (2005; [Zbl 1201.11078](#))].

Reviewer: [Mumtaz Hussain \(Callaghan\)](#)

**MSC:**

**11J83** Metric theory

**13P05** Polynomials, factorization in commutative rings

Cited in **1** Document

**Keywords:**

integer polynomials; classical Khintchine theorem; Lebesgue measure; Baker's conjecture

**Full Text:** [DOI](#)

**References:**

- [1] K. Mahler, "Über das Maß der Menge aller  $\mathbb{S}$ -Zahlen", *Math. Ann.*, 106:1 (1932), 131 – 139 · [Zbl 0003.24602](#) · [doi:10.1007/BF01455882](#) · [eudml:159549](#)
- [2] В. Г. Спринджук, "О гипотезе Малера", *ДАН СССР*, 154:4 (1964), 783 – 786 · [Zbl 0134.04102](#)
- [3] В. Г. Спринджук, *Проблема Малера в метрической теории чисел*, Наука и техника, Минск, 1967 · [Zbl 0168.29504](#)
- [4] В. И. Берник, Д. В. Васильев, "Теорема Хинчина для целочисленных полиномов комплексной переменной", *Тр. ин-та матем. НАН Беларуси*, 3, Ин-т матем. НАН Беларуси, Минск, 1999, 10 – 20 · [Zbl 0952.11020](#)
- [5] A. I. Khintchine, "Einige Sätze über Kettenbrüche, mit Anwendungen auf die Theorie der Diophantischen Approximationen", *Math. Ann.*, 92:1-2 (1924), 115 – 125 · [Zbl 50.0125.01](#) · [doi:10.1007/BF01448437](#) · [www.zentralblatt-math.org](#) ·
- [6] V. V. Beresnevich, "On a theorem of V. Bernik in the metric theory of Diophantine approximation", *Acta Arith.*, 117:1 (2005), 71 – 80 · [Zbl 1201.11078](#) · [doi:10.4064/aa117-1-4](#) · [adsabs.harvard.edu](#)
- [7] V. I. Bernik, D. Kleinbock, G. A. Margulis, "Khintchine-type theorems on manifolds: the convergence case for standard and multiplicative versions", *Int. Math. Res. Notices*, 9 (2001), 453 – 486 · [Zbl 0986.11053](#) · [doi:10.1155/S1073792801000241](#) · [arxiv:math/0210298](#)
- [8] V. I. Bernik, "The exact order of approximating zero by values of integral polynomials", *Acta Arith.*, 53:1 (1989), 17 – 28 · [Zbl 0692.10042](#)

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.