
MR1954703 (2003j:11085)**[Kubilius, J.](#) ([LI-VILNM](#))****On the remainder term in the limit theorems for additive arithmetical functions. (English summary)***Paul Erdős and his mathematics, I (Budapest, 1999)*, 355–362, *Bolyai Soc. Math. Stud.*, 11, János Bolyai Math. Soc., Budapest, 2002.[11K65](#)[Journal](#)[Article](#)[Doc
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References: 0**Reference Citations: 0****Review Citations: 0**

This is a short, but very informative survey of results concerning the rate of convergence in the central limit theorem for additive arithmetic functions, written by one of the founders of probabilistic number theory. For simplicity only strongly additive functions are considered.

The paper begins with the statement of the fundamental Erdős-Kac Theorem [P. Erdős and M. Kac, *Amer. J. Math.* **62** (1940), 738–742; [MR0002374 \(2,42c\)](#)], followed by a discussion of the 1949 theorem of Wm. J. LeVeque [*Trans. Amer. Math. Soc.* **66** (1949), 440–463; [MR0030993 \(11,83i\)](#)] concerning the error term, a result that was proved with the help of Brun's sieve method and generated new ideas for subsequent research. In fact, as the author notes, using more precise versions of the sieve, several improvements of LeVeque's theorem were obtained by himself [J. Kubilius, *Vilniaus Valst. Univ. Mokslo Darbai. Mat. Fiz. Chem. Mokslu Ser.* **4** (1955), 5–43; [MR0111725 \(22 #2587\)](#); Litovsk. Mat. Sb. **5** (1965), 261–273; [MR0204388 \(34 #4230\)](#)], R. V. Uždavinis [in *Proc. Sixth All-Union Conf. Theory Prob. and Math. Statist. (Vilnius, 1960) (Russian)*, 125–127, Gosudarstv. Izdat. Političesk. i Naučn. Lit. Litovsk. SSR, Vilnius, 1962; [MR0190125 \(32 #7539\)](#)], M. B. Barban [*Izv. Akad. Nauk UzSSR Ser. Fiz.-Mat. Nauk* **1961**, no. 5, 3–9; [MR0138608 \(25 #2051\)](#)], and P. D. T. A. Elliott [*Probabilistic number theory. II*, Springer, Berlin, 1980; [MR0560507 \(82h:10002b\)](#)]. The proof of LeVeque's hypothesis by A. Rényi and P. Turán [*Acta Arith.* **4** (1958), 71–84; [MR0096629 \(20 #3112\)](#)], via the method of generating Dirichlet series, is also mentioned.

At the end of the paper one finds some more recent results in the field, in particular, a theorem of A. Mačiulis [*Liet. Mat. Rink.* **33** (1993), no. 3, 314–329; [MR1297459 \(96a:11078\)](#)], inspired by Kubilius' much earlier work [*Litovsk. Mat. Sb.* **2** (1962), no. 1, 61–73; [MR0153654 \(27 #3616\)](#)].

{For the entire collection see [MR1954675 \(2003h:00022\)](#)}

Reviewed by *[Filip Saidak](#)*

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