Ragimov, F. G.

On local probabilities of the crossings of nonlinear boundaries by sums of independent random values. (Russian) Zbl 0705.60041

Teor. Veroyatn. Primen. 35, No. 2, 373-376 (1990).

Let $\xi_1, \xi_2, ..., \xi_n, ...$ be i.i.d. r.v. with

$$\mu = E\xi_1 > 0, \quad S_n = \xi_1 + ... + \xi_n, \quad \tau_a = \inf\{n \geq a : \ S_n \geq f_a(n) + x\},$$

and there exists a sequence $B_n > 0$ such that

$$\lim_{n\to\infty} P\{S_n - n\mu \leq xB_n\} = G_{\alpha,\beta}(x),$$

where $G_{\alpha,\beta}(x)$ is a distribution function of a stable law with parameters $\alpha \in (1, 2]$, $\beta \in [-1, 1]$. Asymptotic expansions for

$$P\{\tau_a = n, \quad S_n \geq f_a(n) + x\}$$

for some class of functions $f_a(n)$, $n = n(a) \to \infty$, $a \to \infty$, are given.

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MSC:

60G50 Sums of independent random variables; random walks
60F05 Central limit and other weak theorems

Cited in **1** Review

Keywords:

stable distribution; local theorem; nonlinear boundaries; Asymptotic expansions