

COMPLETE EXACT LAWS

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Abstract: Consider independent and identically distributed random variables $\{X, X_n, n \geq 1\}$ with $xP\{X > x\} \sim a(\log x)^\alpha$, where $\alpha > -1$ and $P\{X < -x\} = o(P\{X > x\})$. Even though the mean does not exist, we establish Laws of Large Numbers of the form

$$\sum_{n=1}^{\infty} c_n P\left\{\left|\frac{\sum_{k=1}^n a_k X_k}{b_n} - L\right| > \varepsilon\right\} < \infty$$

for all $\varepsilon > 0$ and a particular nonsummable sequence $\{c_n, n \geq 1\}$, where $L \neq 0$.

1991 AMS Mathematics Subject Classification: Primary: -; Secondary: -;

Key words and phrases: Strong law of large numbers; weak law of large numbers; complete convergence.

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