PRECISE LARGE DEVIATIONS FOR LONG TAILED DISTRIBUTIONS

FOTIS LOUKISSAS

Abstract. Let us consider a sequence $\{X_n,\ n \geq 1\}$ of i.i.d. rv's with common df F and finite mean μ. We write $F(x) = P(X \leq x)$ and we denote the tail by $\overline{F} = 1 - F$. We say X (or its df F) is heavy tailed if it has no exponential moments. We investigate the precise large deviations for heavy-tailed random sums. We prove general asymptotic relations for both the partial sums S_n and the random sums $S_{N(t)}$, where the N(t) is an integer counting process. These relations holds under the assumption that the distribution tail is subexponential or long. We provide applications of the above relation for the random sums.

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Department of Statistics and Actuarial - Financial Mathematics, University of the Aegean, Karlovassi, GR-83 200 Samos, Greece

E-mail address: floukissas@aegean.gr

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