Moment estimates for Lévy Processes

Harald Luschgy, *Univ. Trier*
Gilles Pagès, *Univ. Paris 6*

Abstract

For real Lévy processes $(X_t)_{t geq 0}$ having no Brownian component with Blumenthal-Getoor index $beta$, the estimate $E sup_{s leq t} |X_s - a_p s|^p leq C_p t$ for every $t in [0,1]$ and suitable $a_p in R$ has been established by Millar for $beta < p leq 2$ provided $X_1 in L^p$. We derive extensions of these estimates to the cases $p > 2$ and $p leq beta$.

Research Support Tool
Capture Cite
View Metadata
Printer Friendly
Context
Author Address
Action
Email Author
Email Others

Full text: PDF | PostScript

Pages: 422-434

Published on: August 5, 2008

Bibliography

1. Bingham, N. H.; Goldie, C. M.; Teugels, J. L. Regular variation. Encyclopedia of Mathematics and its Applications, 27. *Cambridge University Press, Cambridge,* 1987. xx+491 pp. ISBN: 0-521-30787-2 MR0898871 (88i:26004)
2. Blumenthal, R. M.; Getoor, R. K. Sample functions of stochastic processes with stationary independent increments. *J. Math. Mech.* 10 1961 493--516. MR0123362 (23 #A689)
3. Eberlein, E.; Keller, U. Hyperbolic distributions in finance. *Bernoulli* 1 1995 281--299
4. Jacod, Jean; Shiryaev, Albert N. Limit theorems for stochastic processes. Second edition. Grundlehren der Mathematischen Wissenschaften [Fundamental Principles of Mathematical Sciences], 288. *Springer-Verlag, Berlin,* 2003. xx+661 pp. ISBN: 3-540-43932-3 MR1943877 (2003j:60001)
5. Kallenberg, Olav. Foundations of modern probability. Second edition. Probability and its Applications (New York). *Springer-Verlag, New York,* 2002. xx+638 pp. ISBN: 0-387-95313-2 MR1876169 (2002m:60002)
6. Millar, P. W. Path behavior of processes with stationary independent increments. *Z. Wahrscheinlichkeitstheorie und Verw. Gebiete* 17 (1971), 53--73. MR0324781 (48 #3130)
7. Sato, Ken-iti. Lévy processes and infinitely divisible distributions. Translated from the 1990 Japanese original. Revised by the author. Cambridge Studies in Advanced Mathematics, 68. *Cambridge University Press, Cambridge,* 1999. xii+486 pp. ISBN: 0-521-55302-4 MR1739520 (2003b:60064)
8. Schoutens, W. Lévy Processes in Finance. *Wiley*, Chichester, 2003.