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Abstract: We investigate the maximum increment of a random walk with heavy-tailed jump size distribution. Here heavy-tailedness is understood as regular variation of the finite-dimensional distributions. The jump sizes constitute a strictly stationary sequence. Using a continuous mapping argument acting on the point processes of the normalized jump sizes, we prove that the maximum increment of the random walk converges in distribution to a Fréchet distributed random variable.
Stichworte: Maximum increment of a random walk, dependent jump sizes; moving average process; GARCH process; stochastic volatility model; regular variation, extreme value distribution
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