

## ON THE EXTREMES OF A CLASS OF NONSTATIONARY PROCESSES WITH HEAVY TAILED INNOVATIONS

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### Abstract

We consider a class of nonstationary time series defined by  $Y_t = \mu_t + X_t$  and  $X_t = \sum_{k=0}^{\infty} C_{t,k} \sigma_{t-k} \eta_{t-k}$  where  $\{\eta_t; t \in \mathbb{Z}\}$  is a sequence of independent and identically random variables with regularly varying tail probabilities,  $\sigma_t$  is a scale parameter and  $\{C_{t,k}, t \in \mathbb{Z}, k > 0\}$  an infinite array of random variables. In this article, we establish convergence of the normalized partial sum of  $X_t$ , and we deal with the asymptotic distribution for the normalized maximum. We also investigate, by Monte Carlo simulation, the goodness-of-fit of the limiting distribution.

**Keywords:** extreme value distributions, poisson random measure, regular varying function, nonstationary process.

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