

Extreme Value Models for Processes with Heavy-Tailed Interarrivals

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Classical extreme value models are based on the Poisson Process, where independent and identically distributed threshold exceedances of arbitrary distribution are separated by exponential interarrival periods. Heavy tailed interarrivals can not be accommodated under classical theory. The density governing the maxima of a sequence of random extreme events can be obtained by applying a continuous time random max (CTRM) model. The CTRM is similar to a continuous time random walk with random sums replaced by maxima. The general extreme value densities are obtained by transforming the classical extreme value distributions via subordination. This new class of extreme value densities can be used to obtain recurrence intervals for extreme events with power-law interarrivals.