

THE ASYMPTOTICS OF L-STATISTICS FOR NON I.I.D. VARIABLES WITH
HEAVY TAILS

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Abstract: The purpose of this paper is to study the asymptotic behaviour of linear combinations of order statistics (*L-statistics*)

$$L_n := \sum_{i=1}^{k_n} c_{i,n} X_{i:k_n}$$

with real scores $c_{i,n}$ for variables with heavy tails. The order statistics $X_{i:k_n}$ correspond to a non i.i.d. triangular array $(X_{i,n})_{1 \leq i \leq k_n}$ of infinitesimal and rowwise independent random variables. We give sufficient conditions for the convergence of L-statistics to non-normal limit laws and it is shown that only the extremes contribute to the limit distribution, whereas the middle parts vanish. As an example we consider the case, where the extremal partial sums belong to the domain of attraction of a stable law. We also study L-statistics with scores defined by $c_{i,n} := J(i/(n+1))$ with a regularly varying function J , a case which has often been treated in the literature.

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