

THE DOMAIN OF ATTRACTION OF STABLE LAWS AND EXTREME
ORDER STATISTICS

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Abstract: The purpose of this paper is to study the asymptotic behaviour of trimmed sums of order statistics

$$Y_n = a_n^{-1} \left(\sum_{i=k}^{k(n)} X_{i:n} + \sum_{i=n+1-r(n)}^{n-r} X_{i:n} \right) - b_n,$$

where the order statistic $X_{i:n}$ arises from an i.i.d. sequence belonging to the domain of attraction of a stable law with index $0 < \alpha < 2$. If we use a special representation for $X_{i:n}$ related to $F^{-1}(U_{i:n})$ coming from uniformly distributed random variables U_1, \dots, U_n , then we can prove the convergence in probability or even L^1 -convergence for Y_n in various cases. Special attention is devoted to the convergence of Y_n to one-sided stable laws showing that we may choose $\min(k(n), r(n)) = 0$. As an example we obtain the limiting distribution of student's t type statistics.

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