

Multivariate models connected with random sums and maxima

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We present recent results concerning a stochastic model for (X, Y, N) , where X and Y , respectively, are the sum and the maximum of N dependent, heavy-tail Pareto components. Models with this or similar structure are desirable in many applications, ranging from hydro-climatology to finance and insurance. Our construction is built upon a pivotal model described in [1], involving a deterministic number of i.i.d. exponential variables, where the basic characteristics of the involved multivariate distributions admit explicit forms. In addition to theoretical results, we shall present real data examples, illustrating the applications of the model.

References

- [1] Qeadan, F., Kozubowski, T.J., Panorska, A.K. (2012). The joint distribution of the sum and the maximum of n i.i.d. exponential random variables. *Comm. Statist. Theory Methods* **41**, 544–569.