

Multivariate heavy tails, asymptotic independence and beyond

SIDNEY RESNICK

*School of Operations Research and Industrial Engineering, Rhodes Hall 284,
Cornell University, Ithaca, NY 14853 USA* [sir1@cornell.edu]

A random vector having a distribution which is multivariate regularly varying at infinity can have a dependence structure which is hard to specify in practice. One extreme but not uncommon case is "asymptotic independence" which roughly describes the situation where the random vector's components are not simultaneously large. In the absence of further assumptions, estimation of the probability of extreme risk sets yields estimates which are null. One way to remedy this is through hidden regular variation [5, 7, 2, 6] which measures variables on a different scale. Another is via conditioning on one component being large and using a limiting distribution as the conditioning variable is pushed to infinity [4, 1, 3]. We discuss detection of hidden regular variation along with other extensions into conditional models. An application to network data is provided. (Portions are joint with J. Heffernan, Lancaster, UK.)

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