

Between residual tail-dependence and Hüsler–Reiss triangular arrays

R.–D. Reiss, University of Siegen

For a bivariate normal random vector with correlation coefficient ρ it is well-known that the rate, at which the componentwise taken sample maxima are asymptotically independent, is determined by ρ . Therefore, ρ may be regarded as the residual tail-dependence parameter (coefficient of tail-dependence). If $\rho_n \rightarrow 1$ as the sample size n goes to ∞ , one speaks of Hüsler–Reiss triangular arrays in that context.

Limiting distributions of radial components and sample maxima will be studied under a certain second order condition with the Pickands dependence function as the leading term. This condition can be verified, e.g., for multivariate normal random vectors. Based on the radial component one gets, e.g., a uniformly most powerful critical test procedure for the testing of tail-dependence against residual tail-independence. An application to wave and surge data is indicated.

Literature:

1. Frick, M., Kaufmann, E., Reiss, R.–D. (2007). Testing the tail-dependence based on the radial component. *Extremes* 10, 109-128.
2. Frick, M., Reiss, R.–D. Expansions of multivariate Pickands densities and testing the tail-dependence. Submitted.