Trivariate coefficient for extremal graphical models

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Contents

1 The trivariate coefficient χ_{ijk}

Let $X = (X_1, X_2, X_3)$ a random vector of marginal F, the distribution function of a standard Frechet. We define the trivariate extremal coefficient as below :

$$\chi_{ijk} = \lim_{q \to 1} \mathbb{P}(F(X_i) > q, F(X_j) > q \mid F(X_k) > q)$$

if the right-hand term exists.

In that case, if the vector X is in the attraction domain of Y, the corresponding generalized Pareto distribution, then we also get :

$$\chi_{ijk} = \mathbb{P}(Y_i > 1, Y_j > 1 \mid Y_k > 1) \tag{1}$$

2 Proofs

C'est bon ça marche