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On Max-Stable Processes and the Functional D-Norm

Stefan Aulbach, Michael Falk, Martin Hofmann

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We introduce a functional domain of attraction approach for stochastic processes, which is more general than the usual one based on weak convergence.

The distribution function G of a continuous max-stable process on [0,1] is introduced and it is shown that G can be represented via a norm on functional space, called D-norm. This is in complete accordance with the multivariate case and leads to the definition of functional generalized Pareto distributions (GPD) W. These satisfy W=1+log(G) in their upper tails, again in complete accordance with the uni- or multivariate case.

Applying this framework to copula processes we derive characterizations of the domain of attraction condition for copula processes in terms of tail equivalence with a functional GPD.

\delta-neighborhoods of a functional GPD are introduced and it is shown that these are characterized by a polynomial rate of convergence of functional extremes, which is well-known in the multivariate case.

Submission history

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