



## Choice of Threshold With a View Towards Inference on Angular Distribution of Regularly Varying Data

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Regular variation is often used as the starting point for modelling heavy-tailed multivariate data. A random vector is regularly varying if and only if the radial part  $R$  is regularly varying and independent of the angular part  $\Theta$  as  $R$  goes to infinity. In many applications, the primary goal is to estimate the limit distribution of the angular component; this could be either parametric, if there is a known parametric form of the limit distribution, or non-parametric. A typical strategy for carrying out this inference is based on the angular components of the data for which the radial parts exceed some threshold. So choosing a large threshold for which the angular and radial parts are nearly independent is an important piece of the inference procedure. In this talk, we would discuss a procedure for choosing the threshold that is based on distance correlation, a measure of independence. We provide some background theory for this procedure and illustrate its performance on both simulated and real data.

**Keywords:** multivariate regular variation; threshold for heavy-tailed data; distance correlation