Automatic declustering of extreme values
via an estimator for the extremal index

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Abstract. Inference for clusters of extreme values of a time series typically requires the
identification of independent clusters of exceedances over a high threshold. The choice of
declustering scheme often has a significant impact on estimates of cluster characteristics.
We propose an automatic declustering scheme that is justified by an asymptotic result
for the arrival times between threshold exceedances. The scheme relies on the extremal
index, which we show may be estimated prior to declustering. The scheme also supports
a bootstrap procedure for assessing the variability of estimates.

Keywords: automatic declustering, bootstrap, extremal index, extreme values, inter-
arrival times

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