An Overview and Open Research Topics in Statistics of Univariate Extremes

Jan Beirlant
Catholic University of Leuven, Belgium

Abstract: This talk focuses on statistical issues arising in modeling univariate extremes of a random sample. In the last three decades there has been a shift from the area of parametric statistics of extremes, based on probabilistic asymptotic results in extreme value theory, towards a semi-parametric approach, where the estimation of the right and/or left tail-weight is performed under a quite general framework. But new parametric models can still be of high interest for the analysis of extreme events, if associated with appropriate statistical inference methodologies. After a brief reference to Gumbel’s classical block methodology and later improvements in the parametric framework, we present an overview of the developments on the estimation of parameters of extreme events and testing of extreme value conditions under a semi-parametric framework, and discuss a few challenging open research topics. This work is in collaboration with Frederico Caeiro and Ivette Gomes.