

Title: Tail process and related limit theorems

Abstract: Stochastic processes with regularly varying distributions are frequently suggested as an appropriate model for applications. In this lecture, we rigorously introduce this class of processes and investigate consequences of such a notion for the long range behaviour of extremes and partial sums of a given sequence. We show how one can rescale all observations in a neighbourhood of an extreme observation to obtain a local limit called the tail process. Furthermore, we show that the partial sums of such data often satisfy a particular kind of functional limit theorems. We also show how some classical probabilistic models fit into this framework.