

Managing local dependencies for weakly dependent sequences

Adam Jakubowski

Nicolaus Copernicus University

We shall discuss two questions: what does it mean “weak dependence” and how to deal with local dependencies (which may be very strong) in limit theorems for weakly dependent sequences.

In order to answer the first question we propose a formalism specific to the class of limit theorems under consideration. It follows that “weak dependence” for sums has a meaning different from “weak dependence” for maxima.

Once we are given an appropriate notion of “weak dependence”, we provide a general method for managing local dependencies in limit theorems, i.e. we show how to calculate parameters of limits.

The theory is illustrated with a number of examples, including limit theorems for ARCH and GARCH processes with heavy tails and limit theorems for maxima of Markov chains generated by the Metropolis algorithm.