

Entropy conditions for subsequences of random variables with applications to empirical processes

Abstract:

This is joint work with István Berkes and Robert Tichy. We introduce new entropy concepts measuring the size of a given class A of increasing sequences of positive integers. Under the assumption that the entropy function of A does not grow too fast most limit theorems in probability theory will continue to hold uniformly over all sequences in A . We demonstrate this fact by extending the Chung-Smirnov law of the iterated logarithm on empirical distribution functions for independent identically distributed random variables as well as for stationary strongly mixing sequences to hold uniformly over all sequences of A . We prove a similar result for sequences $(n \bmod 1)$ where the sequence (n) of real numbers satisfies a Hadamard gap condition.