

The distribution of the overlapping function

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Abstract:

We consider the set of all the n -string over a finite alphabet \mathcal{C} .

We define a function over \mathcal{C}^n taking values on $\{1, \dots, n\}$. For each string in \mathcal{C}^n , this function gives the number of steps a string must be shifted to find the first possible overlap of this string with a copy of itself.

We compute the large deviation properties of this function. We prove that this limit is related to the Renyi entropy function. %of the process. We also prove the existence of this function.

Our results hold for a new wide class of mixing processes that we also introduce, the so called, very weak ψ -mix processes. We provide some examples.