Abstract

This paper describes the probabilistic behaviour of a random Sturmian word. It performs the probabilistic analysis of the recurrence function which can be viewed as a waiting time to discover all the factors of length n of the Sturmian word. This parameter is central to combinatorics of words. Having fixed a possible length n for the factors, we let α to be drawn uniformly from the unit interval $[0, 1]$, hence defining a random Sturmian word of slope α. Thus the waiting time for these factors becomes a random variable, for which we study the limit distribution and the limit density.