

GENERATING THE PEANO CURVE AND COUNTING OCCURRENCES OF SOME PATTERNS

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ABSTRACT

We introduce *Peano words*, which are words corresponding to finite approximations of the Peano space filling curve. We find the number of occurrences of certain patterns in these words. We give a tag-system to generate automatically these words and, by showing that they are almost cube-free, we prove that they cannot be obtained by simply iterating a morphism.

Keywords: Peano words, ordered patterns, tag-system, DOL-system, cubes

1. Introduction

Different notions of *pattern* can be encountered in several domains of combinatorics.

In algebraic combinatorics, an occurrence of a pattern p in a permutation π is a subsequence of π (of the same length as the length of p) whose elements are in the same relative order as those in p . For example, the permutation $\pi = 536241$ contains an occurrence of the pattern $p = 2431$: indeed the elements of the subsequence

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