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On the number of factors in codings of three interval exchange. (English) Zbl 1283.68274
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Summary: We consider exchange of three intervals with permutation $(3, 2, 1)$. The aim of this paper is to count the cardinality of the set $3\text{iet}(N)$ of all words of length N which appear as factors in infinite words coding such transformations. We use the strong relation of 3iet words and words coding exchange of two intervals, i.e., Sturmian words. The known asymptotic formula

$$\#2\text{iet}(N)/N^3 \sim 1/\pi^2$$

for the number of Sturmian factors allows us to find bounds

$$1/3\pi^2 + o(1) \leq \#3\text{iet}(N)/N^4 \leq 2/\pi^2 + o(1).$$

MSC:

68R15 Combinatorics on words
05A05 Permutations, words, matrices
37B10 Symbolic dynamics

Keywords:

interval exchange; enumeration of factors; Sturmian words

Full Text: [arXiv Link](#)