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Growth functions of groups of surfaces. (English. Russian original) Zbl 0861.20034

Math. Notes 58, No. 5, 1156-1165 (1995); translation from *Mat. Zametki* 58, No. 5, 681-693 (1995).

The main result is a formula for the growth function (here the generating function $\sum d_n z^n$, where d_n is the number of the elements in a group G , whose minimal presentation as words in the alphabet $X = \{a_1, \dots, a_n, a_1^{-1}, \dots, a_n^{-1}\}$ has length n) of the fundamental group of a closed orientable surface of genus g : $G = \langle X \mid \prod_{i=1}^g [a_i, b_i] = 1 \rangle$. The proof uses the term rewriting approach and standard formula for calculating generating series in a confluent term rewriting system.

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MSC:

- 20F05 Generators, relations, and presentations of groups
- 57M05 Fundamental group, presentations, free differential calculus
- 20F34 Fundamental groups and their automorphisms (group-theoretic aspects)
- 20F10 Word problems, other decision problems, connections with logic and automata (group-theoretic aspects)
- 68R15 Combinatorics on words
- 68Q42 Grammars and rewriting systems

Cited in 1 Document

Keywords:

growth functions; generating functions; minimal presentations; words; fundamental groups; closed orientable surfaces; confluent term rewriting systems

Full Text: [DOI](#)

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