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**Existence of words over a binary alphabet free from squares with mismatches.** (English. Russian original) [Zbl 07126264](#)

*Discrete Math. Appl.* 29, No. 3, 175-188 (2019); translation from *Diskretn. Mat.* 30, No. 2, 37-54 (2018).

Summary: The paper is concerned with the problem of existence of periodic structures in words from formal languages. Squares (that is, fragments of the form  $xx$ , where  $x$  is an arbitrary word) and  $\Delta$ -squares (that is, fragments of the form  $xy$ , where a word  $x$  differs from a word  $y$  by at most  $\Delta$  letters) are considered as periodic structures. We show that in a binary alphabet there exist arbitrarily long words free from  $\Delta$ -squares with length at most  $4\Delta + 4$ . In particular, a method of construction of such words for any  $\Delta$  is given.

**MSC:**

68 Computer science

03 Mathematical logic and foundations

**Keywords:**

Thue sequence; square-free words; word combinatorics; mismatches

**Full Text:** [DOI](#)

**References:**

- [1] Thue A., "Über unendliche Zeichenreihen", *Mat. Nat. Kl. Khristiana*, 7 (1906), 1-22. · [Zbl 39.0283.01](#)
- [2] Salomaa A., *Jewels of formal language theory*, 1981, 144 pp. · [Zbl 0487.68064](#)
- [3] Thue A., "Über die gegenseitige Lage gleicher Teile gewisser Zeichenreihen", *Mat. Nat. Kl. Kristiania*, 1 (1912), 1-67. · [Zbl 43.0162.07](#)
- [4] Fraenkel A. S., Simpson R. J., "How many squares must a binary sequence contain?", *Research Paper #R2, Electr. J. Comb.*, 2 (1995). · [Zbl 0816.11007](#)
- [5] Crochemore M., Ilie L., Rytter W., "Repetitions in strings: algorithms and combinatorics", *Theor. Comput. Sci.*, 410(50) (2009), 5227-5235. · [Zbl 1180.68206](#)
- [6] Crochemore M., Rytter W., "Squares, cubes, and time-space efficient string searching", *Algorithmica*, 13:5 (1995), 405-425. · [Zbl 0849.68044](#)
- [7] Kotlyarov N.V., "Existence of arbitrarily long square-free words with one possible mismatch", *Discrete Math. Appl.*, 25:6 (2015), 345-357. · [Zbl 1345.68246](#)
- [8] Kotlyarov N.V., "Square-free words with one possible mismatch", 71:1, 31-34. · [Zbl 1344.68180](#)

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