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Tropical semirings. (English) [Zbl 0909.16028](#)

Gunawardena, Jeremy (ed.), Idempotency. Based on a workshop, Bristol, UK, October 3–7, 1994, Cambridge: Cambridge University Press. 50-69 (1998).

The paper is a brief self-contained introduction in some decidability problems for sets of matrices over semirings $(k, +, \cdot)$ as well as in such problems for rational languages. The connection between both types of problems comes from the matrix representation of k -automata which serve as recognizers for the languages. Here a semiring is always an additively commutative one with absorbing zero and identity. Moreover, in most results which are cited, $(k, +, \cdot)$ is a tropical semiring, i.e., $k = \mathbb{N} \cup \{\infty\}$ or $k = \mathbb{Z} \cup \{\infty\}$ or $k = \mathbb{R} \cup \{\infty\}$ or similar, and $a + b = \min(a, b)$ and $a \cdot b = a + b$, the latter in the usual meaning on the particular set k . The problems under consideration are: Burnside problem, finiteness problem, finite section problem, finite power property problem, polynomial closure problem.

For the entire collection see [[Zbl 0882.00035](#)].

Reviewer: [U.Hebisch \(Freiberg\)](#)

MSC:

- [16Y60](#) Semirings
- [68Q45](#) Formal languages and automata
- [68Q70](#) Algebraic theory of languages and automata
- [20M35](#) Semigroups in automata theory, linguistics, etc.

Cited in **44** Documents

Keywords:

[semirings](#); [rational languages](#); [decidability problems](#); [Burnside problem](#); [automata](#)