

- NATALIA KORNEEVA, *On prefix realizability problems of infinite words for natural subsets of context-free languages.*

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In this paper we consider prefix realizability problems of infinite words over an finite alphabet for some classes of languages.

Let $\mathcal{L}_{\mathcal{CFL}}$ be the class of context-free languages, that is, those that are accepted by finite nondeterministic pushdown automata. Let $\mathcal{L}_1(\subseteq \mathcal{L}_{\mathcal{CFL}})$ be the class of languages accepted by finite deterministic pushdown automata by final states and $\mathcal{L}_2(\subseteq \mathcal{L}_{\mathcal{CFL}})$ be the class of languages accepted by finite deterministic pushdown automata by empty stack. Let $\mathcal{L}_{\mathcal{R}}$ be the class of regular languages, that is, those that are accepted by finite automata. Let \mathcal{L} be one of these classes.

Definition. An infinite word x over an finite alphabet Σ is called \mathcal{L} -prefix decidable if for any language $L \in \mathcal{L}$ over the alphabet Σ the problem $L \cap Pref(x) \neq \emptyset$ is decidable.

The conception of $\mathcal{L}_{\mathcal{R}}$ -prefix decidable infinite words was introduced by M. N. Vyalyi and A. A. Rubtsov [1].

We consider infinite words which are a result of applying finite initial Mealy automaton to some infinite words.

Theorem. Let $(S, \Sigma, \Sigma', \delta, \omega, s_0)$ be a finite initial Mealy automaton, $x \in \Sigma^\infty$ be a \mathcal{L} -prefix decidable infinite word. Then $\omega(s_0, x) \in (\Sigma')^\infty$ is a \mathcal{L} -prefix decidable infinite word.

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[1] M.N. VYALYI, A.A. RUBTSOV, *Decidability conditions for problems about automata reading infinite words*, **Diskretnyi Analiz i Issledovanie Operatsii**, vol. 19 (2012), no. 2, pp. 3–18 [in Russian].