Otto, Friedrich (D-KSSL-MI); Narendran, Paliath (I-SUNYA-PG)

Codes modulo finite monadic string-rewriting systems.
(English. English summary)
Second International Colloquium on Words, Languages and
Combinatorics (Kyoto, 1992).

Let $T$ be a string-rewriting system on the alphabet $\Sigma$, and let $\leftrightarrow^*_T$ denote the Thue congruence on $\Sigma^*$ induced by $T$. $T$ is “confluent” if $x \leftrightarrow^*_T y$ implies that $x$ and $y$ have a common descendant; $T$ is “$\lambda$-confluent” if $T$ is confluent on the congruence class $[\lambda]_T$, where $\lambda$ is the empty word. A string-rewriting system $T$ is “length-reducing” if the right-hand side of each rule is strictly shorter than its left-hand side. And $T$ is called “monadic” (“special”) if $T$ is length-reducing and each right-hand side has length at most 1 [at most 0, respectively].

A language $L$ over $\Sigma$ is called a code modulo a string-rewriting system $T$, if for all words $v_1, v_2, \ldots, v_k, w_1, w_2, \ldots, w_m$ in $L, v_1 v_2 \cdots v_k \leftrightarrow^*_T w_1 w_2 \cdots w_m$ implies that $k = m$ and $v_i = w_i$ for $i = 1, \ldots, k$.

The authors prove that for a finite string-rewriting system $T$, it is decidable whether a regular language is a code modulo $T$, in the cases (i) $T$ is monadic and confluent, and (ii) $T$ is special and $\lambda$-confluent.

{For the entire collection see MR1299361 (95e:68002)}

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