Further remarks on reduced languages. (English. English summary)


A binary relation $R$ on an alphabet $\Sigma$ is called an independence relation if $R$ is symmetric and nonreflexive. A language $L$ over $\Sigma$ is said to be reduced with respect to an independence relation $R$ on $\Sigma$, if for no strings $x$ and $y$ in $L$ we have $x = uabv$, $y = ubav$, $u, v \in \Sigma^*$ and $(a, b) \in R$. A language reduced with respect to the maximal independence relation on $\Sigma$—viz. $\{(a, b) \mid a, b \in \Sigma, a \neq b\}$—is simply called reduced. For each family $F$ of languages, $F_R$ denotes the subfamily of reduced languages in $F$.

The authors show that it is decidable whether a regular language is reduced. For each $F$ that includes the family of linear languages it is undecidable whether a given language from $F$ belongs to $F_R$. Finally, a few characterizations of $F$ in terms of $F_R$ and language-theoretic operations (union, morphism, inverse morphism) are established.

Peter R. J. Asveld (NL-TWEN-C)