SPECIAL M-HYPERIDENTITIES IN BIREGULAR LEFTMOST GRAPH VARIETIES OF TYPE (2,0)

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Abstract

Graph algebras establish a connection between directed graphs without multiple edges and special universal algebras of type (2,0). We say that a graph $G$ satisfies a term equation $s \approx t$ if the corresponding graph algebra $A(G)$ satisfies $s \approx t$. A class of graph algebras $V$ is called a graph variety if $V = \text{Mod}_g \Sigma$ where $\Sigma$ is a subset of $T(X) \times T(X)$. A graph variety $V' = \text{Mod}_g \Sigma'$ is called a biregular leftmost graph variety if $\Sigma'$ is a set of biregular leftmost term equations. An identity $s \approx t$ of a variety $V$ is called an $M$-hyperidentity of a graph algebra $A(G)$, $G \in V$ whenever the operation symbols occurring in $s$ and $t$ are replaced by any term operations in a subgroupoid $M$ of term operations of $A(G)$ of the appropriate arity, the resulting identities hold in $A(G)$.

In this paper we characterize special $M$-hyperidentities in each biregular leftmost graph variety. For identities, varieties and other basic concepts of universal algebra see e.g. [3].

Keywords: varieties, biregular leftmost graph varieties, identities, term, hyperidentity, $M$-hyperidentity, binary algebra, graph algebra.

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References


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