Abstract

The Maltsev product $\mathcal{V} \circ \mathcal{W}$ of varieties $\mathcal{V}$ and $\mathcal{W}$ of the same type, is the class of all algebras A that have a congruence θ such that the quotient A/θ belongs to $\mathcal{W}$ and every congruence class of θ which is a subalgebra of A belongs to $\mathcal{V}$. The class $\mathcal{V} \circ \mathcal{W}$ may not be a variety. We identify a class of varieties that behave well as the second factor of the Maltsev product. We call them *term idempotent varieties*. They include in particular all idempotent varieties. The main result of this work is a sufficient condition for the Maltsev product $\mathcal{V} \circ \mathcal{W}$ of a variety $\mathcal{V}$ and a term idempotent variety $\mathcal{W}$ to be a variety. We use this sufficient condition to derive a number of other sufficient conditions. One of the most interesting of these results states that the Maltsev product $\mathcal{V} \circ \mathcal{W}$ of any congruence permutable variety $\mathcal{V}$ and any term idempotent variety $\mathcal{W}$ is a variety. We provide an equational base for the variety generated by a Maltsev product of two varieties.

Keywords

Maltsev product, variety, term idempotent variety, equational base.