

Role of weak congruences in theoretical and practical applications

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Abstract

Weak congruences on algebras were introduced at the end of the last century as relations that satisfied all features of congruences except reflexivity. All weak congruences on an algebra form an algebraic lattice, which has been used for the investigation of structural properties of algebras. In this talk, we will mention two aspects of applying weak congruences. The first is connected to the representation of various classes of groups and group-like algebras. Namely, we characterized several classes of groups by their weak congruence lattices, for example, abelian groups, Hamiltonian groups, nilpotent groups, solvable groups, etc. Another aspect is connected to applications with so-called Ω -algebras, which are ordinary algebras with generalized equality (a particular mapping from $A \times A$ to a complete lattice). Particular Ω -algebras like Ω -vector spaces have a big role in the approximate solving of systems of relational equations. Both aspects will be briefly presented with some examples.

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