

States on algebras

Abstract:

States are defined as special cases of a mapping into a set of real numbers. In the thesis, we introduce states on ordered Abelian groups, many valued algebras (MV-algebras), generalized many valued algebras (GMV-algebras) and commutative dually residuated lattice ordered monoids (commutative DRL-monoids). We describe some properties of above-mentioned algebras and present a connection among them. For example, GMV-algebras (an algebraic counterpart of the non-commutative infinite valued propositional logic) are a non-commutative generalization of MV-algebras (an algebraic analogy of the Łukasiewicz infinite valued propositional logic) and we can obtain MV-algebras as special cases of DRL-monoids. Existence theorems for states, conditions for the uniqueness of states and formulas for the ranges of values of states are introduced here.