

Symmetry in the Theory of Dependence Relations

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Abstract: The dependence relations have been recently introduced to better describe, from an algebraically point of view, the interdependencies between sets of elements that appear in nature in numerous models, as for example, environmental variables, pieces of secrets, characteristics of materials, etc. These relations are not viewed as n-ary relations and generally they are not symmetric or transitive, while the reflexivity property is without any significant meaning. In simple words, a dependence relations can be read as a formula expressing that the value of one variable (situated on the left hand side of the relation) depends on the values of other variables (written on the right hand side of the relation). Therefore we can say that one variable has an impact or an influence on other variables and we are interested in characterizing these two degrees of impact and influence. In an initial study on this argument, the theory of algebraic hypercompositional structures has proved to be a useful tool to study the dependence relations. In this note we will continue in this direction, aiming to involve also some elements from fuzzy set theory.

Keywords: dependence relation; degree of influence; degree of impact; fuzzy set; hypercompositional algebra

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