WHEN CERTAIN BASIC HYPEROPERATIONS ON LATTICES COINCIDE

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Investigation of algebraic structures particularly in noncommutative algebra leads in natural way to hyperstructures formerly called multistructures - [3, 4, 22]. More in detail, decomposition of noncommutative groups by their non-invariant subgroups, or decomposition of rings by their subrings which are not ideals allow to creat structures with many-valued operations. Other motivation is coming from geometry. Analysis of geometrical structures leads to various binary hyperstructures, in particular, to the notion of a join space which has been introduces by Walter Premowitz and used by him and afterwards together with James Jantosciak to build again several branches of geometry. A join space is a special type of a hypergroups related to concept of a ternary relation called betweenness. Walter Prenowitz has given treatments (1943, 1946, 1950, 1961) of ordered and partially ordered linear geometry, spherical geometry and projective geometry which are join theoretical in character, in the sense that a central role is played by an operation "join" which assigns to any pair of distinct points an appropriate connective. Moreover, further motivation for investigation and application of hyperstructures can be found in chemistry and in nuclear physics.

Hyperstructures formed by various operators (transformation operators of real or complex functions, differential or integral operators) show that constructions with input hyperstructures on centralizers of elements of suitable semigroups (groups) are of a certain interest.

Recall that the present actual aim of the mathematical education of students on technical universities and classical universities, as well, is the transfer of new actual scientific results into curricula according to an appropriate didactical system of mathematical education.

Investigation of lattices in connection with the betweenness relation leeds to possibility to define various binary hyperoperations on these structures. This contribution presents characterizations of chains (bottleneck algebras) between lattices via coincidence of some of basic hyperoperations on lattices.

Choice from references is given below.

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