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Proceedings

Codes Generated by Ordered Algebraic Structures

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Abstract: Error-control codes are used to detect and correct errors that occur when data are transmitted across some noisy channel or stored on some medium. The study of error-control codes is called coding theory and emerged in 1948 by Claud Shannon's paper which demonstrated that by proper encoding of the data, errors induced by a noisy channel can be reduced to any desired level without sacrificing the rate of information transmission. Some algebraic structures, includes the study and discovery of various coding schemes, are used to increase the number of errors that can be corrected during data transmission. One of the classes of logical algebra is ordered algebras which were introduced by Imai and Iseki in 1966. In this note, I study the codes generating by the ordered algebraic structures such as BCK-algebras and BL-algebras. For this goal, symmetric relations on these ordered structures facilitate us to design the correspondence codeword. Moreover, I show that the structure of ordered algebra and the code generated by it will be the same.

Keyword: 03G25; 06F35; 94B05; 94B60

Citation: Hashem, B. Codes Generated by Ordered Algebraic Structures. *Symmetry* **2021**

Published: 7 August 2021