

Binary Linear Codes from the Group A_5

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Abstract

We examine all of the binary codes constructed from the primitive permutation representations of the group of degrees 5, 6 and 10 using modular representation method, determine the properties of codes obtained and establish the relationship of these codes with some designs and graphs. We use Magma and meat axe softwares to determine the irreducibility of the maximal modules. We develop algorithms that determine these codes and add the algorithms to the Magma software. These codes will be used in communication channels for error detection and error correction.

Mathematics Subject Classification: 05E15, 05E20, 05B05.

Key Words: *Binary Codes, Combinatorics, Designs and Graphs, Modules*