Matrix Constructions derived from Group Rings and Group Matrix Rings with Applications to Algebraic Coding Theory

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a joint work with

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Abstract

During this talk, we are going to present a number of matrix constructions derived from group rings and group matrix rings with applications to algebraic coding theory. In particular, we are going to look at different variations of a well established isomorphism between group rings and a subring of the $n \times n$ matrices (given in [5]) and their applications to algebraic coding theory. We show that one can construct linear group codes ([3]), linear reversible group codes ([1]) or linear LCD group codes with the established isomorphism. We next show some variations of the well established isomorphism and present some interesting matrix constructions with applications to algebraic coding theory. We specifically show that one can construct many self-dual codes with these matrix constructions ([2, 4]).

Keywords

Group Rings, Group Matrix Rings, Frobenius rings, Group Codes, Composite Group Codes, DNA Codes, LCD Codes.

References

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