

Weight distributions of Preparata codes over \mathbb{Z}_4

and

the construction of 3-designs

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Abstract

In this talk, we introduce our recent work on the construction of 3-designs from the Preparata codes over \mathbb{Z}_4 . We will calculate the number of codewords with Hamming weight 7 of each type in the Preparata codes over \mathbb{Z}_4 , then determine the parameter sets of 3-designs constructed from the supports of codewords of each type. Moreover, we will prove that the first two families of 3-designs are simple and the third family of 3-designs contain repeated blocks.