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Constructions of some classes of codebooks nearly meeting the Welch bound. (Chinese. English summary) [Zbl 1424.94099](#)

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Summary: Codebooks with low correlations have important applications in code-division multiple-access (CDMA) communication systems, quantum information processing, coding theory, and cryptography. Until now, most optimal codebooks are constructed by difference sets over abelian group. Recently, nearly optimal codebooks were considered. In this paper, by using the number theory such as Gauss sum, Gauss period and cyclotomic classes, we present three constructions of codebooks which are nearly meeting Welch bound.

MSC:

[94B65](#) Bounds on codes

Keywords:

codebook; Welch bound; Gauss sum; Gauss period; cyclotomic class

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