

New MRD codes from linear cutting blocking sets

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Abstract

Minimal rank-metric codes or, equivalently, linear cutting blocking sets are characterized in terms of the second generalized rank weight, via their connection with evasiveness properties of the associated q -system. Using this result, we provide the first construction of a family of \mathbb{F}_{q^m} -linear MRD codes of length $2m$ that are not obtained as a direct sum of two smaller MRD codes. In addition, such a family has better parameters, since its codes possess generalized rank weights strictly larger than those of the previously known MRD codes. This shows that not all the MRD codes have the same generalized rank weights, in contrast to what happens in the Hamming metric setting.