

Direct sum of q -matroids and linear sets

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q -Matroids, the q -analogue of matroids, have been intensively investigated in recent years in coding theory due to their close connection with rank metric codes. Indeed, in 2018 it was shown by Jurrius and Pellikaan that a rank metric code induces a q -matroid that captures many of the code's invariants. In this talk we will deal with the direct sum of q -matroids, a concept recently introduced by Ceria and Jurrius, with a particular focus on the question of representability. We will show that representing the direct sum of t uniform q -matroids is equivalent to constructing special linear sets which are almost scattered with respect to the hyperplanes. In addition, we will give explicit constructions of such linear sets, implying as a byproduct that the direct sum of uniform q -matroids is always representable. This is a joint work with Relinde Jurrius, Alessandro Neri and Ferdinando Zullo.

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