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Direct sum of q-matroids and linear sets

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q-Matroids, the q-analogue of matroids, have been intensively invest-
igated 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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