

List-decoding for rank-metric codes

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A rank-metric code is a set of matrices over some finite field, with the rank distance of two matrices being the rank of their difference. These codes are of particular interest for their applications in communication over linear networks, and it is known that the so-called Gabidulin codes, a variant of Reed-Solomon codes, allow for efficient encoding and decoding up to half of the rank distance.

This talk addresses the problem of list-decoding for rank-metric codes. As with standard codes for the Hamming distance, list-decoding allows for correction from a larger error rate than unique decoding. I will discuss some of the known limitations for list-decoding in this model, and show how to choose a subcode of certain Gabidulin codes which allows for efficient encoding and list-decoding all the way up to the rank distance.

This is a joint work with Venkatesan Guruswami and Chaoping Xing.