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Remarks on generalized toric codes

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This note presents some new information on how the minimum distance of the generalized toric code corresponding to a fixed set of integer lattice points S in R^2 varies with the base field. The main results show that in some cases, over sufficiently large fields, the minimum distance of the code corresponding to a set S will be the same as that of the code corresponding to the convex hull of S. In an example, we will also discuss a [49,12,28] generalized toric code over GF(8), better than any previously known code according to M. Grassl's online tables, as of July 2011.

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