

## Toric Codes

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Toric codes are a class of  $m$ -dimensional cyclic error-control codes introduced recently by J. Hansen. They may be defined as evaluation codes obtained from monomials corresponding to integer lattice points in an integral convex polytope  $P \subseteq \mathbf{R}^m$  and are a rather natural extension of the commonly-used Reed-Solomon codes. In this talk, we will first discuss upper and lower bounds on the minimum distance of a toric code constructed from a polygon  $P \subset \mathbf{R}^2$  obtained by means of intersection theory on the corresponding toric surface. We will also discuss a more elementary approach that applies equally well to many toric codes for  $m \geq 2$ . The methods here are based on a sort of multivariate generalization of Vandermonde determinants that has also been used in the study of multivariate polynomial interpolation.