

1031-14-75

Leah Gold and **Ivan Soprunov*** (i.soprunov@csuohio.edu), 2121 Euclid Ave, RT 1515, Cleveland, OH 44115, and **Jenya Soprunova**. *Lower bounds for the minimum distance of a toric code*. Preliminary report.

A toric code is a linear evaluation code defined by a lattice convex polytope P in \mathbb{R}^n . The problem of computing the minimum distance of a toric code is related to finding the largest number of zeroes in $(\mathbb{F}_q^*)^n$ of sections of globally generated line bundles on the toric variety associated to P . John Little and Hal Schenck have recently shown that for $n = 2$ and large enough q reducible sections have more zeroes in $(\mathbb{F}_q^*)^2$ than irreducible ones. This inspired us to look at the toric codes defined by zonotopes. We obtain an upper bound for the number of zeroes in $(\mathbb{F}_q^*)^n$ of sections associated to zonotopes. We also prove a general lower bound for the minimum distance of a toric code in terms of the lattice diameters of the polytope P in n linearly independent directions. (Received August 03, 2007)