1051-14-95 **Ivan Soprunov*** (i.soprunov@csuohio.edu), 2121 Euclid Ave, Cleveland, OH 44115, and **Jenya Soprunova** (soprunova@math.kent.edu). *On higher dimensional toric codes.* Preliminary report.

Fix a convex lattice polytope P in $\mathbb{R}^n$ and consider a projective toric variety X_P over a finite field $\mathbb{F}_q$, together with an ample line bundle L_P on X_P. A *toric code* is defined by evaluating global sections of L_P over $\mathbb{F}_q$ at the points of the finite torus $(\mathbb{F}_q^*)^n$. It is a fundamental question to compute or give bounds for the minimum distance of toric codes, which was studied by Hansen, Joyner, Little and Schenck, and others.

In this talk I will show a strong connection between the minimum distance of a toric code and the geometry of the lattice polytope P. In particular, I will show that the minimum distance is multiplicative with respect to taking the product of polytopes, and behaves in a simple way when one builds a k-dilate of a pyramid over a polytope. This allowed us to construct a new large class of examples of higher dimensional toric codes where we can write an explicit formula for the minimum distance. (Received August 18, 2009)