1112-52-346 **Ivan Soprunov** (i.soprunov@csuohio.edu), 2121 Euclid Ave, Cleveland, OH 44115, and **Jenya Soprunova*** (soprunova@math.kent.edu), E Summit st, Kent, OH 44242. *Lattice geometry of toric codes.*

Fix a convex lattice polytope P in R^m, and define $\mathcal{L}(P)$ to be the $\mathbb{F}_q$-vector space spanned by the monomials whose exponent vectors lie in P. The codewords of a toric code are obtained by evaluating polynomials in $\mathcal{L}(P)$ at the points of the torus $(\mathbb{F}_q^*)^m$, taken in some fixed order. The question of computing or giving bounds on the minimum distance of toric codes has been studied by Hansen, Joyner, Little and Schenck, and others. In this talk, I will explain our results that demonstrate a strong connection between the minimum distance of a toric code and the geometry of its lattice polytope P.

The geometric invariant $L(P)$ that appears in our bounds on the parameters of toric codes is called the Minkowski length of a polytope P. It's defined to be the smallest number of primitive lattice segments whose Minkowski sum is in P. I will explain why $L(tP)$ is an eventually quasi-linear function in t. (Received August 08, 2015)