1145-52-1117 **Kyle Meyer** and **Ivan Soprunov*** (i.soprunov@csuohio.edu), Cleveland, OH 44115, and **Jenya Soprunova**. *On the maximum number of $\mathbb{F}_q$-zeroes of polynomials with a given Newton polytope.* Preliminary report.

Let $\mathbb{F}_q$ be a finite field. We are interested in estimating the largest number of $\mathbb{F}_q$-zeroes a polynomial $f$ with given Newton polytope may have. For large enough $q$, we provide such an estimate in the case of 3-variate polynomials in terms of some geometric invariants of the polytope. Our approach is based on analysing collections of 3-dimensional lattice polytopes appearing as the Newton polytopes of absolutely irreducible factors of $f$. The result has an application to minimum distance estimation for 3-dimensional toric codes. (Received September 19, 2018)