Maximum size of a k-uniform intersecting hypergraph with a cover number k

Andrii Arman (University of Manitoba)

A k-uniform hypergraph $\mathcal{F}$ is called *intersecting* iff any two edges of $\mathcal{F}$ have a non-empty intersection. A subset C of vertices of $\mathcal{F}$ is called a *cover* if every edge of $\mathcal{F}$ has a non-empty intersection with C. The *cover number* of a hypergraph $\mathcal{F}$ is the number of vertices in the smallest cover of $\mathcal{F}$. Define $r(k)$ to be the maximal size of an intersecting hypergraph $\mathcal{F}$ with a cover number k.

In 1975, Erdős and Lovász proved that $r(k)$ is at most k^k. In 1994, Tuza improved the upper bound by a constant factor. In this talk I will outline the proof of a new upper bound which is of the order k^{k-1}. This talk is based on a joint work with Troy Retter.