Peter Keevash: *A hypergraph regularity method for generalised Turán problems*

We introduce a method that we believe may be foundational for a comprehensive theory of generalised Turán problems. The cornerstone of our approach is a quasirandom counting lemma for quasirandom hypergraphs, which extends the standard counting lemma by not only counting copies of a particular configuration but also showing that these copies are evenly distributed. We demonstrate the power of the method by proving a conjecture of Mubayi on the codegree threshold of the Fano plane, that any 3-graph on n vertices for which every pair of vertices is contained in more than $n/2$ edges must contain a Fano plane, for n sufficiently large. For projective planes over fields of odd size we show that the codegree threshold is between $n/2-q+1$ and $n/2$, but for $\mathrm{PG}_2(4)$ we find the somewhat surprising phenomenon that the threshold is less than $(1/2-c)n$ for some absolute $c>0$.