# Connected $(n_k)$ configurations exist for almost all $n$

Leah Berman
*University of Alaska Fairbanks*
lwberman@alaska.edu

Gábor Gévay
*University of Szeged*
gevay@math.u-szeged.hu

Tomaž Pisanski
*University of Ljubljana and University of Primorska*
pisanski@upr.si

A geometric $(n_k)$ configuration is a collection of points and straight lines, typically in the Euclidean plane, so that each line passes through $k$ of the points and each of the points lies on $k$ of the lines. In a series of papers, Branko Grünbaum showed that geometric $(n_4)$ configurations exist for all $n \geq 24$, using a series of geometric constructions later called the "Grünbaum Calculus". In this talk, we will show that for each $k > 4$, there exists an integer $N_k$ so that for *all* $n \geq N_k$, there exists at least one $(n_k)$ configuration, by generalizing the Grünbaum Calculus operations to produce more highly incident configurations. This is joint work with Gábor Gévay and Tomaž Pisanski.