Workshop on Graph Drawing and Intersection Graphs

Title: Additive structure in convex translates

Speaker: Ethan White (UIUC)

Abstract: The *unit distance problem* posed by Erdős asks for the maximum number of pairs of points from a set of n points in the plane that are distance 1 apart. At present, the best lower bound comes from a scaled square grid. More generally, the best constructions we know for obtaining many incidences between points and strictly convex curves, e.g., unit circles, have a lattice structure. I will show that if a pointset in the plane contains many translated copies of a strictly convex pointset, then a large subset of the translation vectors lies on a generalized arithmetic progression of low dimension. *Joint work with Gabriel Currier and Jozsef Solymosi.*