New Perspective on Geproci Sets

Jake Kettinger
Colorado Sate University (USA)

The geproci property is a recent development in the world of geometry. We call a set of points $Z \subseteq P3(k)$ an (a, b)-geproci set (for GEneral PROjection is a Complete Intersection) if its projection from a general point P to a plane is a complete intersection of curves of degrees a and b. Examples known as grids have been known since 2011 and nondegenerate non-grids have been known only since 2018. Previously, the study of the geproci property has taken place within the characteristic 0 setting; prior to the work in my thesis, a procedure was known for creating specific nondegenerate non-grid (a, b)-geproci sets for $4 \leq a \leq b$, but it was not known what other examples there can be. Furthermore, before the work in my thesis, almost all examples of geproci sets that were known were contained in unions of b disjoint lines (known as half grids) and there was no known way to generate new examples of non-half grids. Here, I will discuss how to use geometry in positive characteristics to find new methods of producing geproci half grids and non-half grids.