MARINA ILIOPOULOU, UC Berkeley
Counting joints formed by lines and a k-plane

A joint formed by a set of lines in $\mathbb{F}^n$ (where $\mathbb{F}$ is a field) is a point in $\mathbb{F}^n$ through which at least n of the lines pass, with the property that their directions span $\mathbb{F}^n$. The problem of counting joints relative to the number of lines forming them was solved in 2009 by Quilodrán and independently by Kaplan, Sharir and Shustin, using the polynomial method. However, the problem of counting joints formed by higher dimensional planes is much more difficult. In this talk we will discuss some very small progress in this direction, in the case where each of the joints is formed by lines and a k-dimensional plane. This is joint work with A. Carbery.