



Department of Mathematics Seminar

Extremal Combinatorics of Lines and Planes

By

Ben Lund

(Institute for Basic Science, South Korea)

Abstract: A line is said to be spanned by a set of points if it passes through at least two of them. In 1983, Beck showed that if P is a set of n points in the real plane, and no line contains more than $n/2$ points of P , then P spans at least cn^2 lines for some constant $c > 0$. In 2018, I gave an analogous sufficient condition for point sets in higher-dimensional real spaces to span many hyperplanes. In recent joint work with Campbell and Kroeker, we sharpened this result to a necessary and sufficient condition.

I will discuss several related classical questions and results concerning the combinatorics of points and lines in real space, as well as more recent generalizations of some of these results to higher dimensions.

Date: Wednesday, April 16, 2025

Time: 15:30-16:30 (GMT+3)

Place: Mathematics Seminar Room, SA-141