

*Department of Mathematics,
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Colloquium

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Geometric Incidences and the Polynomial Method

Abstract:

While the topic of geometric incidences has existed for several decades, in recent years it has been experiencing a renaissance due to the introduction of new polynomial methods. This progress involves a variety of new results and techniques, and also interactions with fields such as algebraic geometry and harmonic analysis.

A simple example of an incidences problem: Given a set of n points and set of n lines, both in R^2 , what is the maximum number of point-line pairs such that the point is on the line. While this may seem as a simple problem, incidence problems often have a deep underlying theory, which may involve the uncovering of hidden structure and symmetries.

In this talk we introduce and survey the topic of geometric incidences, focusing on the recent polynomial techniques and results (some by the speaker). We will see how various algebraic and analytic tools can be used to solve such combinatorial problems.

Host: Sam Buss

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