# Discrete Geometry, Algebra, and Combinatorics

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## Abstract

Many problems in discrete and computational geometry can be viewed as finding patterns in graphs or hypergraphs which arise from geometry or algebra. Famous Ramsey, Turán, and Szemerédi-type results prove the existence of certain patterns in graphs and hypergraphs under mild assumptions. We survey recent results which show much stronger/larger patterns for graphs and hypergraphs that arise from geometry or algebra. We further discuss whether the stronger results in these settings are due to geometric, algebraic, combinatorial, or topological properties of the graphs.

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