

# Geometric, Algebraic, and Topological Combinatorics

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**Abstract** Geometric, Algebraic, and Topological Combinatorics establishes, explores, and deepens connections between geometric and topological structures, combinatorial problems, and algebraic and topological tools. This meeting will be devoted to the survey of recent progress and current development in this fascinating field with a focus on the following four broad topics:

- Beyond the  $g$ -conjecture: face and flag enumeration in spheres, manifolds, and pseudomanifolds.
- Matroids and algebraic geometry.
- Helly-type theorems: Convex geometry, topology and combinatorics.
- High dimensional expanders, testing, codes, and random simplicial complexes.

Other topics that will be covered in the workshop include: topological combinatorics in total positivity, tropical geometry, and lattice polytopes.

One of the goals of the meeting is to productively bring together methods and mathematicians from still rather separate communities, and also to provide an exciting stimulus for the many young researchers, including many postdocs and “fresh Ph.D.s” that are so successfully involved in the field.