

# Properties of the Copoint Graph of Convex Geometries

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## Abstract

The clique number of the copoint graph of a convex geometry is the size of the largest convexly independent set of the convex geometry. We prove that not all graphs are copoint graphs, and show that minors of the convex geometry can not have chromatic number larger than the original convex geometry. Given two component convex geometries, we construct a new larger convex geometry and describe the copoint graph of this new convex geometry. We will display some computational results for planar point sets in general position, which may help in resolving the famous conjecture of Erdős and Szekeres. Lastly, we present completed results for a generalization of the Erdős-Szekeres problem related to the chromatic number of the copoint graph.

**Keywords:** convex geometry, copoint graph, chromatic number, Erdős-Szekeres problem.