

# Discrete Mathematics & Combinatorics

A graph of a simple polytope without small separators

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Separation in graphs is related to graphs being expanders. A conjecture by Kalai generalizes the planar separation theorem to simple polytopes. It states that the graph of a simple  $d$ -polytope can be separated to two roughly equal parts by removing  $O(n^{(d-2)/(d-1)})$  vertices. We provide a counterexample to this conjecture.

This is joint work with Günter Ziegler.