

Recent advances in biclique decompositions

Walter Morris, George Mason University, Fairfax VA – 22030

Abstract

The Graham Pollak theorem states that the edge set of the complete graph on n vertices is not the disjoint union of the edge sets of fewer than $n - 1$ complete bipartite graphs. Until recently, all proofs of this theorem used linear algebra. A new proof of Viswanathan is purely combinatorial. The Alon-Saks-Seymour conjecture held that the edge set of a graph with chromatic number n could not be the disjoint union of the edge sets of fewer than $n - 1$ complete bipartite graphs. A counterexample was recently found by Huang and Sudakov. I will give an easy-to-follow presentation of this proof and counterexample.

Keywords: edge partition of a graph, Graham Pollak theorem, Alon-Saks-Seymour conjecture.