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**Hao Huang\*** (huanghao@math.ucla.edu), Department of Mathematics, UCLA, Los Angeles, CA 90024, and **Benjamin Sudakov**. *A counterexample to the Alon-Saks-Seymour conjecture and related problems.*

Consider a graph obtained by taking an edge disjoint union of  $k$  complete bipartite graphs, Alon, Saks, and Seymour conjectured that such graphs have chromatic number at most  $k + 1$ . This well known conjecture remained open for almost twenty years. In this talk, we will show a counterexample to this conjecture. This construction will also lead to some related results in combinatorial geometry and communication complexity. In particular, it implies a nontrivial lower bound of the non-deterministic communication complexity of the “clique versus independent set” problem. (Received July 29, 2010)