

Odd covers with complete bipartite graphs

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The “odd cover problem” of finding the minimum number of complete bipartite graphs, or bicliques, which cover every edge of the complete graph an odd number of times was proposed by Babai and Frankl in 1992. A more general question asks, given a simple graph G , for the minimum number of bicliques such that each edge of G is in an odd number of bicliques and each non-edge in an even number, denoted $b_2(G)$. This talk will examine each of these problems. We show that $b_2(G)$ is at least half of the rank of the adjacency matrix of G over the field of order 2, and that this bound is tight for bipartite graphs. We also provide new bounds for the odd cover problem, and solve the problem for a density $3/8$ portion of complete graphs. Work began at GRWC 2021.

Keywords: Odd cover problem