A characterization of the Seidel spectrum for switching classes of graphs

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The Seidel matrix of a simple, undirected graph is defined as the matrix $S = J - 2A - I$ for adjacency matrix A. The Seidel spectrum partitions the set of graphs on n vertices into equivalence classes. We characterize the Seidel spectrum for complete bipartite graphs on n vertices and its complement class. It follows that for the complete graph K_n, if λ is an adjacency eigenvalue of K_n, then $-\lambda$ is a Seidel eigenvalue of K_n.

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