

Square Complementary Stable Graphs

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The stability number of the graph G , denoted by $\alpha(G)$, is the cardinality of a maximum stable set of G . We study square complementary stable graphs, that is, graphs whose $\alpha(G^2) = \alpha(\overline{G})$. We prove several necessary conditions for a graph to be square complementary stable, describe ways of building new square complementary stable graphs from existing ones, and construct infinite families of square complementary stable graphs. Also, we characterize when lexicographic and corona products are SCS-graphs.

Keywords: Stable set, square-complementary-stable graph, graph complement, independence number, clique, lexicographic, corona.