

## A NOTE ON STRONGLY REGULAR GRAPHS AND $(k,\tau)\text{-}\text{REGULAR}$ SETS\*

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**Abstract.** A subset of the vertex set of a graph  $G, S \subseteq V(G)$ , is a  $(k, \tau)$ -regular set if it induces a k-regular subgraph of G and every vertex not in the subset has  $\tau$  neighbors in it. This paper is a contribution to the given problem of existence of  $(k, \tau)$ -regular sets associated with all distinct eigenvalues of integral strongly regular graphs. The minimal idempotents of the Bose-Mesner algebra of strongly regular graphs are used to obtain a necessary and sufficient condition on the existence of  $(k, \tau)$ -regular sets for its two restricted eigenvalues.

Key words. Graph theory; Graph spectra; Integral graphs; Strongly regular graphs; Dominating sets.

AMS subject classifications. 05C50, 05C69

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