

Abstract

Normally regular digraphs

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A directed graph is said to be a normally regular digraph if its adjacency matrix A satisfies the equation

$$AA^t = \kappa I + \lambda(A + A^t) + \mu(J - I - A - A^t),$$

for some constants κ , λ and μ . Strongly regular graphs, certain non-symmetric association schemes and symmetric BIBDs satisfy an equation of this type.

Some normally regular digraphs can be constructed from a variation of difference sets. We also discuss non-existence results and characterizations of normally regular digraphs for certain parameters.