The Strongly Regular Subgraphs of the McLaughlin Graph

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Abstract

The McLaughlin graph [5] is a strongly regular graph on 275 vertices which contains several interesting strongly regular graphs as a subgraph. Several of those strongly regular subgraphs are known to be unique for their parameter set [1, 2, 3, 4]. Only for four parameter sets the uniqueness was not yet settled. Using an exhaustive orderly algorithm in combination with a clique search, we were able to settle three of these cases: we classified up to isomorphism all strongly regular graphs with parameter sets (105, 32, 4, 12), (120, 42, 8, 18) and (176, 70, 18, 34).

References


