Generation of Association Schemes

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Abstract

We are interested in the exhaustive generation (up to isomorphism) by computer of all association schemes [1] (strongly regular graphs, distance regular graphs, ...) with a given parameter set. The generation algorithms require a recursive traversal of a tree-like search space. We use various pruning methods and heuristics to limit the size of the search space. The developed pruning techniques use criteria that exploit the inherent symmetries and the mathematical properties of the objects.

On the one hand we try to design, improve and study such generation algorithms in general, but on the other hand we also apply these algorithms to specific parameter sets, hoping to obtain new mathematical results [2, 3, 4, 5] in combinatorial theory.

References


