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Strongly regular designs admitting fusion to strongly regular decomposition

A strongly regular decomposition of a strongly regular graph is a partition of the vertex set into two parts on which the induced subgraphs are strongly regular. Strongly regular designs are coherent configurations of rank 10 with two fibers in which the configuration on each fiber is a strongly regular graph. Haemers and Higman proved the equivalence between strongly regular decompositions, excluding special cases, and strongly regular designs with certain parameter conditions. In this talk we examine the SRDs that admit a fusion to SRG, and discuss parameter conditions, known families and (non)existence results.