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Linked systems of symmetric group divisible designs

Symmetric group divisible designs (SGDD) are a generalization of symmetric designs, and are studied by Bose. Inspired by a recent work of uniform association schemes by van-Dam, Martin, and Muzychuk, we introduce a concept of linked systems of SGDD. We will show necessary conditions for existence, constructions, an equivalence between linked SGDD and association schemes. As a consequence, an upper bound on the number of linked systems of SGDD is obtained.