Connections of block designs with certain (α, β) stable matrices

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Abstract

Let A be a square $(0, 1)$ $v \times v$ matrix with constant row and column sums. A is (α, β) isolated if there is a single zero entry in some $\alpha \times \beta$ submatrix of A. A is (α, β) stable if A contains no (α, β) isolated zeroes. Under suitable conditions, we show that block designs can be associated with certain (α, β) stable matrices. In particular, a characterization of $(\lambda, 2)$ stable matrices can be interpreted in this fashion [1].

Keywords

Matrix Theory, Combinatorics, $(0, 1)$ matrices, Block designs.

References

[1] Bruen, A.A., T.C. Bruen, and R. Silverman (2011). A characterization of $(\lambda, 2)$-stable $(0, 1)$ matrices. *Linear Algebra Appl.* In press.