

Zbl 496.05009

**Erdős, Paul; Faber, Vance; Jones, F.**

*Projective  $(2n, n, \lambda, 1)$ -designs.* (In English)

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The paper deals exclusively of  $\lambda$ -covers, i.e. of sets  $S$  with  $2n$  elements with a system of blocks of  $n$  elements such that each point of  $S$  is in  $\lambda$  blocks and every two blocks have a non-empty intersection. The problem of existence of such covers with given parameters is completely solved in the paper. Interesting results on the existence of subcovers and on extensions of a cover with a not too great  $\lambda$  to a  $(\lambda + 2)$ -cover on the same set are obtained. As conclusion, a set of open problems with some remarks is given. Proofs are mainly by construction, by induction, by cases and by quotations, using graph theory too.

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Classification:

05B05 Block designs (combinatorics)

05B30 Other designs, configurations

05C65 Hypergraphs

05B40 Packing and covering (combinatorics)

Keywords:

pre-design; subdesign; lambda-covers; subcovers; primitive covers