

Yin, Jianxing

Kirkman packing and covering designs with spanned holes of size 2. (English) Zbl 1062.05035
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Summary: A Kirkman holey packing (resp. covering) design, denoted by $KHPD(g^u)$ (resp. $KHCD(g^u)$), is a resolvable $(gu, 3, 1)$ packing (resp. covering) design of pairs with u disjoint holes of size g , which has the maximum (resp. minimum) possible number of parallel classes. Each parallel class contains one block of size δ , while other blocks have size 3. Here δ is equal to 2, 3, and 4 when $gu \equiv 2, 3,$ and $4 \pmod{3}$ in turn. In this paper, the existence problem of a $KHPD(2^u)$ and a $KHCD(2^u)$ is solved with one possible exception of a $KHPD(2^8)$.

MSC:

05B40 Combinatorial aspects of packing and covering

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