

**EXTREMAL SOLUTIONS OF AN INEQUALITY
CONCERNING SUPPORTS OF PERMUTATION
GROUPS AND PUNCTURED HADAMARD CODES**

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Abstract: If S is the degree of a permutation group and s is the maximum degree of its elements, then $S \leq 2s - 2$. We show that this inequality is sharp for some permutation group if and only if s is a power of 2, and then there is exactly one such permutation group up to isomorphism. The unique example is an elementary Abelian 2-group that arises from a punctured Hadamard code. Then we discuss the solutions of $S = 2s - 3$ and $S = 2s - 4$.

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