

Decomposing complete graphs into cubes

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Abstract

This talk concerns when the complete graph on n vertices can be decomposed into d -dimensional cubes, where d is odd and n is even. (All other cases have been settled.) Necessary conditions are that $n \equiv 1 \pmod{d}$ and $n \equiv 0 \pmod{2^d}$. These are known to be sufficient for d equal to 3 or 5, but for larger values of d a decomposition has been proven to exist for only sparse sets of n . We prove that for each odd d there is an infinite arithmetic progression of even integers n for which a decomposition exists