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On Multiplicative Sidon Sets

David R. Wood

(Submitted on 6 Jul 2011)

Fix integers $b>a\geq1$ with $g:=\gcd(a,b)$. A set $S\subseteq\mathbb{N}$ is \emph{$\{a,b\}$-multiplicative} if $ax\neq by$ for all $x,y\in S$. For all n, we determine an $\{a,b\}$-multiplicative set with maximum cardinality in $[n]$, and conclude that the maximum density of an $\{a,b\}$-multiplicative set is $\frac{b}{b+g}$.

Subjects: **Number Theory (math.NT)**; Combinatorics (math.CO)

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