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Title: On s-maximal asymptotic nonbases of density zero

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Let A and G be sets of nonnegative integers. The set A is called an asymptotic basis of order 2 if every sufficiently large integer can be written as the sum of two elements of A. However, A is called an asymptotic nonbasis of order 2 if there are infinitely many positive integers that cannot be written as the sum of two elements of A. Let s be a positive integer. An asymptotic nonbasis A of order 2 is s-maximal if $A \cup G$ is an asymptotic nonbasis of order 2 whenever $|G \setminus A| < s$, but $A \cup G$ is an asymptotic basis of order 2 if $|G \setminus A| \geq s$. We denote by $A(x)$ the number of positive elements of A not exceeding x. In 1977, Nathanson constructed an s-maximal asymptotic nonbasis A of order 2 such that $A(x) = O(\sqrt{x})$. In this paper, we construct an s-maximal asymptotic nonbasis A of order 2 such that $A(x) < 7.887\sqrt{x}$, for all $x \geq 1$.

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