

SUMMARY

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A PROBLEM ON MINIMAL ASYMPTOTIC BASES

Many classical problems in additive number theory center on the investigation of sum sets for specific sets.

Let $k \geq 3$ be a fixed integer. Let A be a set of non-negative integers. Represent the set of integers that can be written as the sum of k elements of A , with repetitions allowed. This *sumset* is denoted by kA . If kA is the set of all non-negative integers, then A is called a *basis of order k* . If kA contains all sufficiently large integers, then A is called an *asymptotic basis of order k* .

In the present thesis work, several concepts concerning basis were reviewed.

Famous unsolved problems about basis were also presented.

Finally, it was proved that for all $k \geq 3$ and for every $\epsilon > 0$ there exists an $A \subseteq \mathbb{N}$ asymptotic basis of order k such that A is not minimal and $A(n) \sim n^{\frac{1}{k} + \epsilon}$ using probabilistic methods.