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A LARGE SET NOT CONTAINING IMAGES OF A GIVEN SEQUENCE

The following theorems are proved:

1. There exists a subset H of positive measure in the unit interval and a zero-sequence $\{a_n\}$ such that H contains no homotetic copy of $\{a_n\}$.

2. If $\varepsilon>0$ and a zero-sequence $\{a_n\}$ are given, then there is a set A of measure less than ε such that $\bigcup_{n=1}^{\infty}(A+a_n)$ covers an interval.

3. For any sequence $\{a_n\}$ and $\varepsilon>0$ there is a set H of measure $1-\varepsilon$ such that for no N and c is $\{a_n+c\}_{n\geq N}$ contained in H.

The proofs will appear in <u>Canad</u>. <u>Math</u>. <u>Bull</u>.

ON THE LIMIT SUPERIOR OF ANALYTIC SETS

In [1] Laczkovich proved that if $A^j\subset\mathbb{R}$ are Borel sets $(j=0,1,\ldots)$ and $|\operatorname{Limsup}_{j\in H} A^j|\geq\aleph_1$ if H is infinite, then there is an infinite set H with $|\bigcap_{j\in H} A^j|\geq\aleph_1$. He also showed that this is not true for arbitrary sets if $2^{\aleph_0}=\aleph_1$.

The result of [1] holds for analytic sets as well and is true for any sequence of sets if Martin's axiom is assumed. From this latter result we give an alternate proof of the result for analytic sets. Some other independence results are also discussed.

The material here will appear in Analysis Mathematicae

[1] M. Laczkovich, On the limit superior of sets, Analysis Mathematicae 3 (1977) 199-206.