

COMBINATORIAL APPROACH OF SOME ERGODIC AND TOPOLOGICAL
PROOF

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In the present talk I discuss some results in combinatorial number theory having ergodic or topological proof; we sketch the proof of a result of Bergelson, and we give a generalization of a theorem of Raimi which originally sounds as follows: There exists $E \subseteq \mathbb{N}$ such that, whenever $r \in \mathbb{N}$ and $\mathbb{N} = \bigcup_{i=1}^r D_i$ there exist $i \in \{1, 2, \dots, r\}$ and $k \in \mathbb{N}$ such that $(D_i + k) \cap E$ is infinite and $(D_i + k) \setminus E$ is infinite.

The original proof of Raimi based on a topological tool; or generalization is purely combinatorial.