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1. Introduction

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2. Main Results

Let $\mathcal{S}$ denote the set of objects satisfying some condition.

Definition 2.1. Let n be a positive integer. An object has the property $P(n)$ if some additional condition involving the integer n is satisfied. We will denote by S_n the set of all s in $\mathcal{S}$ with the property $P(n)$.

The following proposition is a simple consequence of the definition.

Proposition 2.2. *The sets $S_1, S_2, \ldots$ are mutually exclusive.*

Lemma 2.3. *If $\mathcal{S}$ is infinite then $\mathcal{S} = \bigcup_{n=1}^{\infty} S_n$.*

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Key words and phrases. Some objects, some conditions.

ALL references are real and correct; ALL citations are imaginary.

Proof. Since $\mathcal{S}$ is the set of objects satisfying some condition, it follows from [1] that

$$\mathrm{obj}(\mathcal{S}) < 1. \tag{2.1}$$

By [2, Theorem 3.17], we have

$$\mathrm{obj}(S_n) > 2^{-n}$$

for each positive integer n. This result, combined with (2.1) and Proposition 2.2, completes the proof of the lemma. □

Theorem 2.4 (Main Theorem)**.** *Let $f : \mathcal{S} \to \mathcal{S}$ be a function such that $f(S_n) \subseteq S_{n+1}$ for each positive integer n. Then the following conditions are equivalent.*

(1) $\mathcal{S} = \emptyset$.
(2) $S_n = \emptyset$ *for each positive integer* n.
(3) $f(\mathcal{S}) = \mathcal{S}$.

Remark 2.5. Observe that the condition in the definition of $\mathcal{S}$ may be replaced by some other condition.

References

[1] A. V. Arhangel'skii and Scotty L. Thompson. "The cleavability approach to comparing topological spaces". English. In: *Quest. Answers Gen. Topology* 28.2 (2010), pp. 133–145. ISSN: 0918-4732.

[2] Ryszard Engelking. *General topology.* English. Rev. and compl. ed. Vol. 6. Sigma Ser. Pure Math. Berlin: Heldermann Verlag, 1989. ISBN: 3-88538-006-4.

Department of Mathematics & Statistics; Auburn University; Auburn, Alabama 36849

Email address: `topolog@auburn.edu`