

Lev Bukovský

Existence of non measurable sets

In: Zdeněk Frolík (ed.): Abstracta. 6th Winter School on Abstract Analysis. Czechoslovak Academy of Sciences, Praha, 1978. pp. 17.

Persistent URL: <http://dml.cz/dmlcz/701114>

Terms of use:

© Institute of Mathematics of the Academy of Sciences of the Czech Republic, 1978

Institute of Mathematics of the Academy of Sciences of the Czech Republic provides access to digitized documents strictly for personal use. Each copy of any part of this document must contain these *Terms of use*.



This paper has been digitized, optimized for electronic delivery and stamped with digital signature within the project *DML-CZ: The Czech Digital Mathematics Library* <http://project.dml.cz>

EXISTENCE OF NON MEASURABLE SETS

Lev Bukovský, Košice

K.Kuratowski asked the following question:

- (Q) Given a partition $\{A_\xi; \xi \in S\}$ of the unit interval into pairwise disjoint sets of Lebesgue measure zero, does there exist a set $S_0 \subseteq S$ such that the union $\bigcup_{\xi \in S_0} A_\xi$ is not Lebesgue measurable.

Assuming the continuum hypothesis, K.Kuratowski answered affirmatively this question.

Using models of set theory, namely generic extensions and ultrapower construction, I can prove the positive answer of (Q). The definability of the Lebesgue measure by a simple formula is essentially used in the proof.

Let us remark that existence of a real-valued measurable cardinal implies existence of an extension of the Lebesgue measure for which the answer is negative.

Similar result holds true for partitions into meager sets and the Baire property.

As far as I am informed, no elementary proofs of presented results are known.