SOME REMARKS ON MARCZEWSKI-MEASURABLE SETS AND FUNCTIONS

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I am going to include in my talk two results emphasizing similarity of Marczewski-measurable sets and functions to Lebesgue- and Baire-measurable ones. A set $X \subseteq \mathbb{R}$ is Marczewski-measurable if for every perfect set $P \subseteq \mathbb{R}$ there exists a perfect set $Q \subseteq P$ such that $Q \subseteq X$ or $Q \cap X = \emptyset$.

The first result ([2]) is that Marczewski-measurable functions have the same indicatrices as Lebesgue and Baire measurable functions. In particular, each Marczewski-measurable function is equivalent in to a Lebesgue-measurable function and to another Baire-measurable one (equivalent here means that one function can be obtained from another by a composition with a permutation of the domain). This results improves a theorem of Morayne and Ryll-Nardzewski and partially answers a problem stated in their paper [3].

The other result ([1]) states that if a set $A \subseteq \mathbb{R}$ has the property that $A + A$ is not Marczewski-null then there exists $X \subseteq A$ such that $X + X$ is not Marczewski-measurable. This is an analogue of some known facts for Lebesgue measure and Baire category.

In fact both results are more general and hold for wide classes of $\sigma$-algebras, not only for Marczewski measurable sets.

REFERENCES


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