

ON STRONG ALGEBRABILITY OF FAMILIES OF NON-MEASURABLE FUNCTIONS OF TWO VARIABLES

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Let \mathcal{L} be a commutative algebra, $A \subseteq \mathcal{L}$ and let κ be a cardinal number. We say that A is *strongly κ -algebrable* if $A \cup \{0\}$ contains a κ -generated subalgebra B that is isomorphic to a free algebra.

In our work we present improvements of the results presented in the article by Tomasz Natkaniec [1] in the direction of strong algebrability. We deal with the algebra $F(\mathbb{R}^2, \mathbb{R})$ of all real functions defined on the real plane \mathbb{R}^2 . Among other we prove that

- Assuming CH, the family of all sup-measurable functions that are not measurable is strongly 2^c -algebrable.
- Assuming CH, the family of all weakly sup-measurable functions that are neither sup-measurable nor measurable is strongly 2^c -algebrable.
- The family of all non-measurable separately measurable functions is strongly 2^c -algebrable.

Since the cardinality of $F(\mathbb{R}^2, \mathbb{R})$ is 2^c , our results are optimal.

REFERENCES

- [1] T. Natkaniec, *On lineability of families of non-measurable functions of two variable*. Rev. R. Acad. Cienc. Exactas Fis. Nat. Ser. A Mat. RACSAM 115 (2021), no. 1, Paper No. 33, 10 pp.

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