

44th Summer Symposium in Real Analysis

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Title of the talk

Differential monsters and bounded variation

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Abstract

A function is called a differential monster provided it maps a nontrivial interval $J \subseteq \mathbb{R}$ into \mathbb{R} , it is differentiable, and monotone on no subinterval of J . The first such example was constructed in late 1880s by Alfred Köpcke. Since then, multiple different constructions has been described. One of the simplest constructions is taking the difference of two strictly increasing Pompeiu functions. In this talk, we will characterize those differentiable monsters that admit such a decomposition. On the other hand, we will show that there are differentiable monsters of bounded variation that do not admit such a decomposition.

References

- [1] Pan, Cheng-Han, *Nowhere-monotone differentiable functions and bounded variation*, *J. Math. Anal. Appl.*, Vol. 494, No. 2, pp. Paper No. 124618, 14, 2021.