

# MYCIELSKI AMONG TREES - NONSTANDARD PROOFS

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The 2-dimensional version of classical Mycielski Theorem says that every comeager or conull subset of  $[0, 1]^2$  contains a square of a form  $P \times P$ , where  $P$  is a perfect subset of  $[0, 1]$ . In this talk we present nonstandard proof by using Shoenfield absoluteness theorem the Mycielski Theorem for category case but replacing perfect set by the body of slalom perfect tree.

The Eggleston like Theorem says that if  $\mathcal{N}$  is  $\sigma$ -ideal of null sets on the interval  $[0, 1]$  and  $G \subseteq [0, 1]^2$  has measure equal to 1, then there are perfect sets  $P, Q \subseteq [0, 1]$  such that  $P \times Q \subseteq G$  and  $Q$  has measure 1. Analogously we can formulate Eggleston like theorem for category case. We present nostandard proof of Eggleston like theorem for the measure and category case.

These results were obtained together with Marcin Michalski and Szymon Żeberski, see [1].

## REFERENCES

- [1] M. Michalski, R. Rałowski, Sz. Żeberski, *Mycielski among trees*, arXiv:1905.09069 (2018).

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