Modifications of Lusin's example $\mathbf{\Sigma}^1_1$-complete set

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The base for the talk was an example of $\mathbf{\Sigma}^1_1$-complete set created by Lusin (which can be found in [1, exercise 27.2]):

$$L = \{y \in (\mathbb{N}\backslash\{0\})^{\mathbb{N}} : (\exists k_0 < k_1 < \ldots)(\forall i \in \mathbb{N})(y(k_i) \mid y(k_{i+1}))\}.$$

In the example partial order $(\mathbb{N}\backslash\{0\}, |)$ is used. We want to replace this order and analyze whether the result set is Borel or not. The main point of the talk will be characterization of linear orders in this context.

This is joint work with Szymon Żeberski.

References

[1] Alexander Kechris *Classical Descriptive Set Theory*, Springer-Verlag New York 1995