Applications of combinatorial families

Christina Brech*
Universidade de São Paulo, São Paulo, Brazil

Abstract

The Schreier family $\mathcal{S} = \{F \in [\mathbb{N}]^{<\omega} : |F| \leq \min F\}$ was introduced by J. Schreier in the 1930's with a motivation coming from Banach space theory. The reason why this family was good for his purposes is related to the combinatorial properties of the family. More specifically, Ramsey theoretic properties of the family $\mathcal{S}$ were usefull to build some peculiar sequence in the Banach space $X_{\mathcal{S}}$, now known as the Schreier space.

More recently, several sorts of combinatorial families (regular families, uniform families, barriers, etc), both in the countable and in the uncountable setting, were used in applications to topology or Banach spaces. In particular, in 2009 W. T. Gowers introduced in his weblog the notion of a combinatorial space. In this talk, we will give an overview of some of the applications in Banach space constructions contained in [1] and [2] and the combinatorial aspects involved therein.

References

[1] Brech, C.; Lopez-Abad, J.; Todorcevic, S. Homogeneous families on trees and subsymmetric basic sequences. *Adv. Math.* 334:322–388, 2018.

[2] Brech, C.; Piña, C. Banach-Stone-like results for combinatorial Banach spaces. *Ann. Pure Appl. Logic.* 172:1–13, 2021.

*brech@ime.usp.br