

GENERALIZED BAIRE SPACES AND CLOSED MAXIMALITY PRINCIPLES

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ABSTRACT. Given an uncountable regular cardinal κ , the generalized Baire space of κ is set ${}^\kappa\kappa$ of all functions from κ to κ equipped with the topology whose basic open sets consist of all extensions of partial functions of cardinality less than κ . A subset of this space is Σ_1^1 (i.e. a projection of a closed subset of ${}^\kappa\kappa \times {}^\kappa\kappa$) if and only if it is definable over $H(\kappa^+)$ by a Σ_1 -formula with parameters. This shows that the class of Σ_1^1 -subsets contains a great variety of set-theoretically interesting objects. Moreover, it is known that many basic and interesting questions about sets in this class are not decided by the axioms of ZFC plus large cardinal axioms.

In my talk, I want to present examples of extensions of ZFC that settle many of these questions by providing a nice structure theory for the class of Σ_1^1 -subsets of ${}^\kappa\kappa$. These forcing axioms appear in the work of Fuchs, Leibman, Stavi and Väänänen. They are variations of the *maximality principle* introduced by Stavi and Väänänen and later rediscovered by Hamkins.

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