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1. Logic

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Basis Problems in Combinatorial Set Theory

Basis problems in combinatorial set theory are questions that ask whether a given class of structures is in some sense determined by a finite (or countable) list of its "critical" elements. Problems of this sort have some value even in cases where a given class of structures does not have much of an intrinsic interest in itself (for example, the class of uncountable graphs or the class of uncountable linear orderings) because positive answers to this kind of questions tend to be highly applicable on a much wider scale.
This will be an overview of some of the best known Basis problems in this area, many of which have a strong Ramsey-theoretic flavour which is related to, and in some sense explains, the wide applicability. We shall also try to explain a place from which many of the "critical" structures come from, the concept of a special Aronszajn tress, that has been a constant source of inspiration in this area for more than 60 years.