

Einladung zur öffentlichen Defensio von Herrn

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Thema der Dissertation:

**Combinatorics and Definability on the Real Line and the
Higher Continuum**

Abstract: Is there an explicit description of a Hamel basis of the \mathbb{Q} -vector space of real numbers? The answer to this question depends on the context in which it is asked and what is allowed as an "explicit description". For example, it is possible that a Hamel basis is the complement of the projection of a Borel subset of \mathbb{R}^2 . On the other hand, it can never be simply the projection of a Borel set. As another example, Vitali sets have to be even more complicated, since they are not Lebesgue-measurable. The Borel sets (familiar from real analysis) and their successive closure under projection and complementation, are sets that have simple definitions (in a precise logical sense). We explore similar questions for other types of sets of reals and give positive and negative results of the kind.

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