

DEFINABLE PATHOLOGICAL SETS

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ABSTRACT. Set-theoretic objects whose construction requires the Axiom of Choice are often referred to as *pathological sets*. For many types of pathological sets of real numbers, results from descriptive set theory can be used to show that these objects cannot be defined by simple formulas in second-order arithmetic. In this talk, I want to present results dealing with the *set theoretic* definability of pathological objects of higher cardinalities, focussing on *long well-orderings* and *maximal almost disjoint families* of subsets of uncountable cardinals. I will present results dealing with the following aspects of this topic: (i) the existence of such objects at ω_1 in determinacy models, (ii) the Σ_1 -definability of these sets at ω_1 in the presence of large cardinals, and (iii) the Σ_1 -definability of such objects above a measurable cardinal.

This is joint work in progress with Sandra Müller (Vienna).

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