

Abstract

Within the framework of generalized descriptive set theory, we conduct a systematic analysis of several hierarchies of classes of sets and functions. At the level of sets, we study the Borel hierarchy, the difference hierarchy, and the Wadge hierarchy; at the level of functions, we examine the Baire class hierarchy as well as the class of Borel-measurable functions.

We aim for maximal generality in two directions. First, we adopt a cardinal-independent approach, working with uncountable cardinals κ under the sole assumption that $2^{<\kappa} = \kappa$, thereby encompassing both regular and singular cardinals. Second, whenever feasible, we move beyond the generalized Cantor and Baire spaces, carrying out the analysis in broader classes of topological spaces.