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A universal characterization of standard Borel spaces

Standard Borel spaces are widely used in descriptive set theory as a basic model of “definable set”, admitting many familiar “countable first-order” set operations such as countable products, countable disjoint unions, etc. We give a category-theoretic justification for the canonicity of the category of standard Borel spaces, by showing that it is the free category admitting some of the aforementioned operations subject to some simple compatibility conditions (e.g., products distribute over disjoint unions). In this talk, we will discuss the precise formulation of this result, its connection with the theory of κ -complete Boolean algebras, and its proof using methods from categorical logic.