

## GENERIC PROPERTIES OF EXTENSIONS

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Following the classical theory of Baire category results for sets of measure-preserving transformations, this work develops a theory for Baire category results for sets of measure-preserving extensions. Initially, a survey of the classical theory, in particular of Halmos' theorem on genericity of weakly mixing transformations, is given. Subsequently, the case is considered where a measure space and a sub-algebra are fixed, and extensions are considered to be any measure-preserving transformations which leave this sub-algebra invariant. In this context, it is shown that weakly mixing extensions on the unit square form a dense,  $G_\delta$  set (in the strong operator topology), while strongly mixing extensions form a first category set. Afterwards, extensions of a fixed measure-preserving transformation are considered. Here it is also shown that weakly mixing extensions form a dense,  $G_\delta$  set. However, strongly mixing extensions are only shown to be first category if extensions which themselves are rigid transformations on the entire unit square form a dense set. In closing, an attempt is made at defining rigid extensions. However, the definition given can only be shown to be  $G_\delta$ , not dense.