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Extending Lebesgue measure by infinitely many sets. (English) [Zbl 0582.28004](#)
Pac. J. Math. 115, 33-45 (1984).

Consider the following question: under what conditions on a collection of subsets of the unit interval can the existence of an extension of Lebesgue measure defined on each element of the collection be guaranteed? The main purpose of this paper is to find conditions on the cardinality of the collection whose sufficiency can be shown consistent without the use of large cardinals. For example, if ZFC is consistent so is ZFC + "Lebesgue measure can be extended to any countable collection of sets". - The results of this paper complement work of earlier researchers. Banach and Kuratowski showed that assuming the continuum hypothesis there is a countable collection of sets of reals for which no extension exists. Solovay proved that an extension of Lebesgue measure to all sets is equiconsistent with the existence of a measurable cardinal.

MSC:

[28A12](#) Contents, measures, outer measures, capacities
[03E35](#) Consistency and independence results

Cited in **2** Reviews
Cited in **8** Documents

Keywords:

extension of Lebesgue measure; countable collection of sets of reals

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