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Continuous Restrictions of Marczewski Measurable Functions

The proofs of the new results announced here will appear in [1]. We study theorems about functions from the unit interval I = [0,1] into the reals, R. c denotes the cardinality of the continuum, and CH refers to the Continuum Hypothesis.

The measurable functions we will be interested in are defined in terms of the following σ-algebras of subsets of a complete metric space X which has no isolate points:

B_w: Baire property in the wide sense [14],

B_r: Baire property in the restricted sense [14],

L: Lebesgue measurable sets (assuming X is the reals),

U: Universally measurable sets (a set M is universally measurable if it is measurable with respect to the completion of every Borel measure on X),

(s): Marczewski measurable sets (a set M is Marczewski measurable provided that for every perfect subset P of X, there exists a perfect subset Q of P which either misses M or is a subset of M), and

B: Borel measurable.

The Marczewski measurable sets are most easily visualized as follows. Let the statement that a set M is "Bernstein dense" in a set P mean that M intersects every perfect subset of P. Then, a set M is Marzcewski measurable or (s)-measurable provided there is no perfect set P in which both M and its complement are Bernstein dense (we would say that $M \cap P$ is one half of a