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Lipschitz-quotients and the Kunen-Martin Theorem

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Abstract: We show that there is a universal control on the Szlenk index of a Lipschitz-quotient of a Banach space with countable Szlenk index. It is in particular the case when two Banach spaces are Lipschitz-homeomorphic. This provides information on the Cantor index of scattered compact sets K and L such that $C(L)$ is a Lipschitz-quotient of $C(K)$ (that is the case in particular when these two spaces are Lipschitz-homeomorphic). The proof requires tools of descriptive set theory.

Keywords: Lipschitz equivalences, Szlenk index

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