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σ -POROSITY IS SEPARABLY DETERMINED

Abstract

In [2] we prove separable reduction theorems for σ -porosity of Suslin sets. In particular, if A is a Suslin subset in a Banach space X , then each separable subspace of X can be enlarged to a separable subspace V such that A is σ -porous in X if and only if $A \cap V$ is σ -porous in V . Such a result is proved for several types of σ -porosity and the proof is done using the set-theoretical method of elementary submodels, hence the results can be combined together or with other separable reduction theorems obtained by this method. The aforementioned theorem is an improvement of a result of J. Lindenstrauss, D.Preiss and J.Tišer [5, Corrolary 3.6.7]. The same method was previously used in functional analysis for example by W. Kubiś in [4]. More recently this method was used by M. Cúth in the article [1] which preceded [2].

As an application of our results about σ -porosity we extend to the nonseparable setting a theorem of L. Zajíček (see [6, Theorem 2]) concerning differentiability of Lipschitz functions on separable Asplund spaces.

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