On Extreme Points of the Dual Ball of a Polyhedral Space

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Abstract: We prove that every separable polyhedral Banach space \( X \) is isomorphic to a polyhedral Banach space \( Y \) such that, the set \( \text{ext} B_{Y^*} \) cannot be covered by a sequence of balls \( B(y_i, \epsilon_i) \) with \( 0 < \epsilon_i < 1 \) and \( \epsilon_i \to 0 \). In particular \( \text{ext} B_{Y^*} \) cannot be covered by a sequence of norm compact sets. This generalizes a result from [7] where an equivalent polyhedral norm \( |||\cdot||| \) on \( c_0 \) was constructed such that \( \text{ext} B_{(c_0,|||\cdot|||)^*} \) is uncountable but can be covered by a sequence of norm compact sets.

Key words: Polyhedral Banach space, boundary, extreme points.


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