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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 $\operatorname{ext} B_{Y^*}$ 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 $\operatorname{ext} B_{Y^*}$ 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 $\operatorname{ext} B_{(c_0, |||\cdot|||)^*}$ 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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