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Strong subdifferentiability of norms and geometry of Banach spaces

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Abstract: The strong subdifferentiability of norms (i.e. one-sided differentiability uniform in directions) is studied in connection with some structural properties of Banach spaces. It is shown that every separable Banach space with nonseparable dual admits a norm that is nowhere strongly subdifferentiable except at the origin. On the other hand, every Banach space with a strongly subdifferentiable norm is Asplund.

Keywords: strong subdifferentiability of norms, Asplund spaces, renormings, weak compact generating

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