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On inverses of δ -convex mappings. (English) Zbl 1053.47522
Commentat. Math. Univ. Carol. 42, No. 2, 281-297 (2001).

Summary: In the first part of this paper, we prove that in a sense the class of bi-Lipschitz δ -convex mappings, whose inverses are locally δ -convex, is stable under finite-dimensional δ -convex perturbations. In the second part, we construct two δ -convex mappings from ℓ_1 onto ℓ_1 , which are both bi-Lipschitz and their inverses are nowhere locally δ -convex. The second mapping, whose construction is more complicated, has an invertible strict derivative at 0. These mappings show that for (locally) δ -convex mappings an infinite-dimensional analogue of the finite-dimensional theorem about δ -convexity of inverse mappings cannot hold in general (the case of ℓ_2 is still open).

MSC:

[47H99](#) Nonlinear operators and their properties

[46G99](#) Measures, integration, derivative, holomorphy (all involving infinite-dimensional spaces)

[58C20](#) Differentiation theory (Gateaux, Fréchet, etc.) on manifolds

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Keywords:

[delta-convex mappings](#); [normed linear spaces](#); [strict differentiability](#)

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