

**Duda, Jakub**

**On inverses of  $\delta$ -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  $\delta$ -convex mappings, whose inverses are locally  $\delta$ -convex, is stable under finite-dimensional  $\delta$ -convex perturbations. In the second part, we construct two  $\delta$ -convex mappings from  $\ell_1$  onto  $\ell_1$ , which are both bi-Lipschitz and their inverses are nowhere locally  $\delta$ -convex. The second mapping, whose construction is more complicated, has an invertible strict derivative at 0. These mappings show that for (locally)  $\delta$ -convex mappings an infinite-dimensional analogue of the finite-dimensional theorem about  $\delta$ -convexity of inverse mappings cannot hold in general (the case of  $\ell_2$  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](#)

**Full Text:** [EuDML](#)