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Laminates meet Condition (N)

Let $\Omega \subset \mathbb{R}^n$ be a domain, and $\alpha \in (0, 1)$. We will show that there exists a convex function u such that ∇u is a homeomorphism, equals the identity on the border of Ω, and belongs to $C^\alpha(\Omega) \cap W^{1,p}(\Omega)$ for all $p < n$, however $\det(D\nabla u) = 0$ a.e.

This improves previous results of a recent series of papers of Hencl and Cerny. Our approach is strictly different, and based on the theory of laminates.