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Inversion of deformations.

The class of mappings of finite distortion may serve as the space of possible deformations in continuum mechanics. The question of invertibility of such mappings is discussed here. The main result says that the inversion of a homeomorphism of finite distortion with gradient in the Lorentz space $L_{n-1,1}$ is a mapping of finite distortion (in particular, the gradient in the sense of distributions is a function). (Received August 29, 2005)