

**Ball, John M.**

**Some open problems in elasticity.** (English) [Zbl 1054.74008](#)

Newton, Paul (ed.) et al., Geometry, mechanics, and dynamics. Volume in honor of the 60th birthday of J. E. Marsden. New York, NY: Springer (ISBN 0-387-95518-6/hbk). 3-59 (2002).

Summary: Some outstanding open problems of nonlinear elasticity are described. The problems range from questions of existence, uniqueness, regularity and stability of solutions in statics and dynamics to issues such as the modelling of fracture and self-contact, the status of elasticity with respect to atomistic models, the understanding of microstructure induced by phase transformations, and the passage from three-dimensional elasticity to models of rods and shells. Refinements are presented of the author's earlier work [in Trends and applications of pure mathematics to mechanics, Symp., Palaiseau/France, 1983, Lect. Notes Phys. 195, 1–4 (1984; [Zbl 0547.73013](#))] on showing that local minimizers of the elastic energy satisfy certain weak forms of the equilibrium equations.

For the entire collection see [\[Zbl 0993.00007\]](#).

**MSC:**

[74B20](#) Nonlinear elasticity

[74-02](#) Research exposition (monographs, survey articles) pertaining to mechanics of deformable solids

Cited in **149** Documents

**Keywords:**

[existence](#); [uniqueness](#); [regularity](#); [stability](#); [local minimizers](#)

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