

**Tomarelli, Franco**

**Unilateral problems in continuum mechanics.** (English) Zbl 0645.73045

Material instabilities in continuum mechanics, Proc. Symp. Edinburgh/Scotl. 1985/86, 495-503 (1988).

[For the entire collection see [Zbl 0627.00023](#).]

The aim of this paper is to extend and unify some well known results on noncoercive variational inequalities due to Fichera and to Lions and Stampacchia [e.g. *G. Stampacchia*, Actes Congr. Internat. Math. 1970, 2, 877-883 (1971; [Zbl 0241.35001](#))]. The well-known classical results by Fichera and Lions and Stampacchia for the minimization of quadratic functionals on convex subsets of Hilbert space are extended in the framework of nonlinear elasticity (the poly-convex elastic energy functionals, materials reacting elastically to compression but not to traction - the masonry-like materials).

Reviewer: [J.Lovíšek](#)

**MSC:**

- [74A55](#) Theories of friction (tribology)
- [74M15](#) Contact in solid mechanics
- [74S30](#) Other numerical methods in solid mechanics (MSC2010)
- [49J27](#) Existence theories for problems in abstract spaces
- [74B20](#) Nonlinear elasticity
- [49J40](#) Variational inequalities
- [58E25](#) Applications of variational problems to control theory

Cited in **2** Documents

**Keywords:**

energy minimizer; hyperelastic body; Signorini-type problem; linear continuous functional; bilinear continuous form; recession cone; noncoercive variational inequalities; minimization of quadratic functionals; convex subsets of Hilbert space; poly-convex elastic energy functionals; masonry-like materials