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**Hyperelastic plate under large deformations associated with uniaxial stress.** (Italian. English summary) [Zbl 0736.73024](#)

Atti Accad. Naz. Lincei, Cl. Sci. Fis. Mat. Nat., IX. Ser., Mem Lincee, Mat. Appl. 1, No. 4, 95-122 (1990).

Summary: For a neo-hookean body, the plane problem of large deformations in a rectangular field, with opposite sides kept parallel by frictionless constraints, general matrix expressions are given for the infinite system of ordinary differential equations. By numerical integration of the 8th order system and an effective shooting method, stresses and deflections due to a simple loading on the free sides are calculated. The initial phase of loading shows known instabilities for under-critical compression; then resilient stiffness appears, due to contact of the free sides with lateral constraints. Stable configurations of the deflected body under thrust are found.

**MSC:**

[74B20](#) Nonlinear elasticity

**Keywords:**

rectangular field; frictionless constraints; general matrix expressions; infinite system of ordinary differential equations; numerical integration; 8th order system; shooting method; stresses; deflections; contact of the free sides; lateral constraints