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Nonlinear analysis of elastic round rods. (English) Zbl 0663.73032
Meccanica 22, 203-209 (1987).

The nonlinear theory of elastic round rods is split into a vector equation concerning the properties of finite inextensional flexural deflections and a scalar equation concerning torsional deformations. In particular, the related boundary conditions examined for the case of a Cardan joint. The buckling configurations of a rod under tension and torsion, constrained at both ends by Cardan joints, are determined by the linearized form of the above theory and compared with previous findings about the rod with cylindrical end hinges.

MSC:

74G60 Bifurcation and buckling
74K10 Rods (beams, columns, shafts, arches, rings, etc.)

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nonlinear theory; elastic round rods; vector equation; finite inextensional flexural deflections; scalar equation; torsional deformations; boundary conditions; Cardan joint; cylindrical end hinges

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