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Sensitivity phenomena for certain thin elastic shells with edges. (English) Zbl 0989.74047
Math. Methods Appl. Sci. 23, No. 4, 379-399 (2000).

Summary: We consider two kinds of shells which are sensitive, i.e. they are geometrically rigid and, as the thickness ε tends to zero, the limit problem is unstable in the sense that there are very smooth loadings (belonging to the space \mathcal{D} of test functions of distributions) such that the corresponding solutions go out of the energy space. The first situation occurs when there is an edge and the middle surface is elliptic on both sides of it. The second situation occurs when there is an edge Γ_0 , the surface is respectively elliptic and hyperbolic on both sides of it, and the ‘determination domain’ in the hyperbolic region issued from Γ_0 intersects another edge Γ_1 .

MSC:

74K25 Shells

74G10 Analytic approximation of solutions (perturbation methods, asymptotic methods, series, etc.) of equilibrium problems in solid mechanics

35B40 Asymptotic behavior of solutions to PDEs

35Q72 Other PDE from mechanics (MSC2000)

Cited in 5 Documents

Keywords:

sensitivity; thin elastic shells; edges; elliptic-hyperbolic shell; finite element approximation; distribution space; energy space

Full Text: [DOI](#)

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