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Post-buckling behavior of a closed spherical shell. (English. Russian original) Zbl 0281.73055
J. Appl. Math. Mech. 35, 794-802 (1971); translation from *Prikl. Mat. Mekh.* 35, 840-847 (1971).

Als die erste Approximation der Lösung der Reißnerschen Differentialgleichungen der axial-symmetrischen elastischen Deformation einer geschlossenen und sphärischen, gleichmäßig gedrückten Schale wird der Membranspannungszustand betrachtet. Die Gleichungen der Verbesserungen werden bis zu den Gliedern zweiter Ordnung entwickelt. Die Anzahl und die Eigenschaften der Lösungen dieser Gleichungen in der Nähe des der Beulung entsprechenden Verzweigungspunktes werden untersucht und bestätigt.

Reviewer: P. Laasonen (Helsinki)

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MSC:

[74K25](#) Shells
[74G60](#) Bifurcation and buckling
[74K15](#) Membranes

Cited in **2** Documents

Keywords:

equilibrium modes of uniformly compressed closed elastic spherical shell; loading values close to critical one; membrane state of stress loses stability

Full Text: [DOI](#)

References:

- [1] Feodos'ev, V.I., Axisymmetric elastic properties of a spherical shell, *Pmm*, Vol. 33, N~~2~~, (1969) · [Zbl 0176.24901](#)
- [2] Reissner, E., On the equations for finite symmetrical deflections of thin shells of revolution, () · [Zbl 0183.53903](#)
- [3] Vainberg, M.M.; Trenogin, V.A., Theory of bifurcation of solutions of nonlinear equations, (1969), Nauka Moscow · [Zbl 0186.20805](#)
- [4] Vorovich, I.I., Post-buckling behavior of a circular slab, *Uchen. zapiski rostov univ.*, Vol. 32, N~~4~~, (1955)
- [5] Vorovich, I.I., On some direct methods in the nonlinear theory of shallow shells, *Pmm*, Vol. 20, N~~4~~, (1956) · [Zbl 0072.19802](#)
- [6] Reiss, E.L., Bifurcation buckling of spherical caps, *Commun. pure and appl. math.*, Vol. 18, N~~1~~/2, (1965) · [Zbl 0173.52503](#)
- [7] Bauer, L.; Reiss, E.L.; Keller, H.B., Axisymmetric buckling of hollow spheres and hemispheres, *Commun. pure and appl. math.*, Vol. 23, N~~4~~, (1970) · [Zbl 0194.26804](#)
- [8] Koiter, W.T., The nonlinear buckling problem of a complete spherical shell under uniform external pressure, *Univ., lab. of eng. mech. rep. N~~4~~412*, (1968), Delft · [Zbl 0197.22302](#)
- [9] Tikhonov, A.N.; Samarskii, A.A., Equations of mathematical physics, (), 670-672 · [Zbl 0044.09302](#)
- [10] Courant, R.; Hubert, D., Methods of mathematical physics, (1951), GOSTEKHIZDAT Moscow
- [11] Srubshchik, L.S.; Iudovich, V.I., Note on the stability of membrane solutions in the nonlinear theory of plates and shells, *Pmm*, Vol. 30, N~~1~~, (1966) · [Zbl 0163.19507](#)
- [12] Bateman, H.; Erdelyi, A., ()
- [13] Srubshchik, L.S.; Trenogin, V.A., On the buckling of flexible plates, *Pmm*, Vol. 32, N~~4~~, (1968) · [Zbl 0181.52604](#)

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