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Degrees:

D. Sc. in mechanics of deformable solid body (Moscow State Technical University, 1982)

Ph. D. in mechanics of deformable solid body (Dnepropetrovsk National University, 1969).

Curriculum Vitae:

1939 June 9, born in Dnepropetrovsk
1956-1961 studies of civil engineering at Dnepropetrovsk Constructional University
1961-1967 mechanical engineer at “Yuzhnoe” Space Vehicles Design Office
1967-1969 postgraduate study at Dnepropetrovsk National University
1970-1982 senior researcher at Scientific Laboratory of Reliability and Sustainability of Structures (Dnepropetrovsk National University)
1982-1991 head of Scientific Laboratory of Reliability and Sustainability of Structures (Dnepropetrovsk National University)
1991-2013 full professor at Computational Mathematics and Mathematical Cybernetics Department (Dnepropetrovsk National University)

Honours:

1988-1993 Member of Structures Reliability Scientific Council of USSR Academy of Science
2007 Professor Emeritus of Dnepropetrovsk National University
2010-2013 Member of Theoretical and Applied Mechanics National Committee of Ukraine
1976-2013 supervisor of 18 Ph. D. theses and 1 D. Sc. theses

Selected book publications:

1. Obodan N., Lebedeyev O., and Gromov V. (2013) *Nonlinear Behaviour and Stability of Thin-walled Shells*, Springer, 180 p.
(<http://www.springer.com/materials/mechanics/book/978-94-007-6364-7>)
2. . . . (2012)
 , LAP LAMBERT Academic Publishing, 240 p.
3. . . . (1989)
 , Nauka, 208 p.

Selected papers:

1. Obodan N., Gromov V. (2013) Nonlinear behavior and buckling of cylindrical shells subjected to localized external pressure \ J. of Engng Mathematics, Vol. 78, 1, pp 239-248
2. Obodan N., Gromov V. (2006) Numerical analysis of the branching of the solutions for the non-linear cylindrical shell theory \ International applied mechanics, 1, pp 103– 112.
3. Obodan N., Gromov V. (2010) Catastrophe theory methods and nonlinear boundary problem of shallow shells theory \ Theoretical foundations of Civil Engineering: Polish-Ukrainian-Lithuanian Transactions, Vol. 17 (in Russian)

4. Obodan N., Makarenko N. (2006) Diagnostics of residual stresses in the circular plates \ Journal of Mechanical Engineering, 1, pp 21–27. (in Russian).
5. Obodan N., Adlytsky V., Patzuk A., Sherstyuk G. (2006) Influence of the curvature of the thin-walled elements with cracks on the parameters of destruction \ Strength of Materials, 3, pp 37– 43.
6. Obodan N. (2005) Artificial intelligence for the parameter identification and damage diagnostics in deformable systems \ Mechanical Engineering, 6. – pp 11–16. (in Russian).
7. Obodan N., Gromov V. (2005) The solution branching of the non-linear boundary problem for the axially compressed cylindrical shell \ Mechanical Engineering, 7, pp 3–9. (in Ukrainian).
8. Obodan N., Shulga A. (2005) Identification of defects in the deformable solids \ Journal of Mechanical Engineering, 1, pp 33–37. (in Russian).
9. Obodan, N. I., Guk, N. A., Patsuk, A.G. (2011) Thermophysical properties identification for solid bodies subjected to irregular heating with employment of experimental data // Problems of atomic science and technology, 1, pp 81-89. (in Russian)
10. Obodan, N. I., Gromov, V. A. (2010) Non-linear boundary problem for loaded multi-layer thin-walled cylindrical shell. Numerical investigation of post-critical solution branches // Proceedings of Advanced Problems in Mechanics of Heterogeneous Media and Thin-Walled Structures Ed.: V.I. Bolshakov, D. Weichert. Dnepropetrovsk, Ukraine, pp 298–305.
11. Obodan, N. I., Guk, N. A., Patsuk, A.G. (2010) Theoretical and experimental analysis of materials thermophysical properties subjected to irregular heating // Problems of atomic science and technology, 4, pp 87-96. (in Russian)
12. Obodan, N. I., Guk, N. A. (2010) Identification of inverse problems of deformation of thin-walled shells by the decomposition method // J. of Math. Sc, Vol. 180, 2, pp 107 – 121.
13. Obodan, N. I., Gavelya, G. M. (2009) Postcritical behaviour and local stability of cylindrical shells with undersurface cracks // Theoretical Foundations of Civil Engineering. Polish-Ukrainian-Lithuanian Transaction, Warsaw, Vol. 17, pp 311 – 316.
14. Obodan, N. I., Gromov, V. A. (2007) An approach to identify inverse problems of mechanics of deformed solid body // Theoretical Foundations of Civil Engineering. Polish-Ukraine-Lithuanian Transaction, Warsaw, Vol. 15 (in Russian).
15. Obodan, N. I., Gromov, V. A. (2006) Numerical analysis of the branching of solutions to nonlinear equations for cylindrical shells // Int. Appl. Mech, Vol. 42, 1, pp 90-97
16. Obodan, N. I., Guk, N. ., Patsyuk, A. G. (2005) Semitheoretical analysis of thermophysical properties of materials at inhomogeneous heating // Problems of atomic science and technology, 4 (in Russian)
17. Obodan, N. I., Makarenko N. B., Guk, N. ., Kiselev, E. M. (2003) Behavior of a cylinder casing in the temperature field under partial destruction of the heat

- protection layer followed by local cooling // Problems of atomic science and technology, 3, pp 71-80. (in Russian)
18. Obodan, N. I., Makarenko, N. B., Polishko, A. N. (2002) The influence of special design features of cylinders on their vibration in liquid // Strength of Materials, Vol. 34, 2, pp 181-186.
 19. Obodan, N. I., Gelezko, I. P. (1998) Secondary branching and the post-critical behaviour of thin-walled shells during non-uniform deformation // J. Appl. Math. and Mechs, Vol. 61, 2.
 20. Obodan, N. I., Makarenko, N. B., Guk, N. A. (1997) Thin-walled structures loss of stability due to cooling after heat impact // Proceedings of Ukrainian National Academy of Sciences, 3. (in Russian)
 21. Obodan, N. I., Zhelezko, I. P., Gavelya, G. M. (1997) Behavior of cylindrical shells in a rigid ring under external pressure // Int. Appl. Mech, Vol. 33, 4, pp 300-304
 22. Obodan, N. I., Patsyuk, A. G., Lopatenko, A. P., Kulebyakin, A. M. (1995) Raising the fatigue strength of a construction by local laser heating // Strength of Materials, Vol. 27, 4, pp 179-184.
 23. Obodan, N. I., Makarenko, N. B., Guk, N. A. (1995) Plates stability at non-stationary heating // Problems of atomic science and technology, 3 (in Russian)
 24. Obodan, N. I., Zhelezko, I. P., Prokopalo, E. F. (1992) Effect of a non-uniform stress state on the failure process // Strength of Materials, Vol. 24, 2, pp 195-201.
 25. Obodan, N. I., Zhelezko, I. P., Sherstyuk, G. G. (1990) Influence of nonlinear effects on the fracture of thin-walled structures with separations // Int. Appl. Mech, Vol. 26, 7, pp 677-680.
 26. Obodan N. I., Sherstyuk, G. G. (1989) Experimental investigation of life of damaged shells // Strength of Materials, Vol. 21, 11, pp 1558-1562.
 27. Obodan, N. I., Zhelezko, I. P. (1986) Delaminations and bearing capability of shells // Mechanics of Solids. Journal of Russian Academy of Sciences, 6, pp 153 – 158. (in Russian)
 28. Obodan, N. I., Andreev, L.V., Zhelezko, I. P. (1986) Bifurcation of equilibrium of spherical shells with delaminations // Strength of Materials, Vol. 18, 2, pp 183-188.
 29. Mossakovskii, V. I., Obodan, N. I., Zhelezko, I. P. (1985) Non-linear model of deformation of shells with delaminations // Doklady Physics (Proceedings of Academy of Sciences of USSR), Vol. 282, 5.
 30. Obodan, N. I., Andreev, L.V., Zhelezko, I. P. (1984) About forms of loss of stability // Proceedings of Soviet Higher School, 4. (in Russian)
 31. Obodan, N. I. (1982) Variational theorem for boundary values of non-linear shell theory // Proceedings of Ukrainian National Academy of Sciences. A, 4. P. 31-36. (in Russian)
 32. Obodan, N. I. (1982) About principal solutions in non-linear shell theory // Proceedings of Ukrainian National Academy of Sciences. A, 2, pp 40-43. (in Russian)

33. Obodan, N. I., Andreev, L. V., Lebedev, A. G. (1981) About approximate numerical models for non-homogeneous shells stability problems // Proceedings of Soviet Higher Schools, 9. (in Russian)
34. Obodan, N. I., Lebedev, A. G. (1980) Secondary branching and localized post-critical shell forms // Proceedings of Ukrainian National Academy of Sciences, 12. (in Russian)
35. Obodan, N. I., Andreev, L. V., Lebedev, A. G., Andrianov, I. V., Kucherenko V. M. (1979) Non-linear deformation of cylindrical shells with elliptical cross-sections subjected to uniform external pressure // Mechanics of Solids. Journal of Russian Academy of Sciences, 2, pp 117 – 122. (in Russian)
36. Mossakovskii, V. I., Obodan, N. I., Andreev, L. V., Zamkovoy, L. Ya. (1977) Equilibrium states of cylindrical shells subjected to localized perturbations // Doklady Physics (Proceedings of Academy of Sciences of USSR), Vol. 236, 5, pp 1035-1036.
37. Mossakovskii, V. I., Obodan, N. I., Lebedev, A. G. (1976) Maximum principle for optimal design of reinforced shells subjected to non-uniform loading // J. Appl. Math. and Mechs, Vol. 40, 3.
38. Mossakovskii, V. I., Obodan, N. I., Andreev, L. V., Patsyuk, A. G. (1975) About local stability of cylindrical shells loaded by a lumped force // Doklady Physics (Proceedings of Academy of Sciences of USSR), Vol. 225, 3, pp 517-519.
39. Mossakovskii, V. I., Obodan, N. I., Andreev, L. V., Zamkovoy, L. Ya. (1977) Initiation of finite perturbation with employment of a laser beam // Doklady Physics (Proceedings of Academy of Sciences of USSR), Vol. 237, 4, pp 796-797.
40. Mossakovskii, V. I., Obodan, N. I., Andreev, L. V. (1972) About optimal thickness of cylindrical shell subjected to uniform external pressure // J. Appl. Math. and Mechs, Vol. 36, 4.
41. Obodan, N. I., Andreev, L. V. (1968) Stability problems for cylindrical shell with variable rigidity subjected to external pressure // Int. Appl. Mech., Vol. 4, 12.

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