



UDC 539.3

Dynamical Simple Edge Effect in the Cylindrical Shell with the Edge of Arbitrary Form

V. A. Khalova, Y. V. Shevtsova

Saratov State University, Russia, 410012, Saratov, Astrahanskaya st., 83, HalovaVA@info.sgu.ru, yv-shevtsova@mail.ru

The purpose of the article is to generalize the results derived in the cases of a circular shell and of a shell with a cut edge. Non-stationary wave process in a cylindrical shell with an arbitrary edge is considered. Half-geodesic frame is introduced on the middle surface of the shell and dynamical simple edge effect is studied. To find the solution Laplace transform is used while the inverse transform is realized via saddle-point method.

Key words: cylindrical shell, wave process, Laplace transform.

References

1. Kossovich L. Iu. *Nestatsionarnye zadachi teorii uprugikh tonkikh obolochek* [Nonstationary problems of the theory of elastic thin shells]. Saratov, Izd-vo Sarat. Univ., 1986, 176 p. (in Russian).
2. Kaplunov J. D., Kossovich L. Yu., Nolde E. V. *Dynamics of thin walled elastic bodies*. Academic Press, 1998.
3. Kaplunov J. D. Rasprostranenie nestatsionarnykh uprugikh voln v obolochke obshchego ochertaniia. *Prikladnaia matematika i mekhanika*, 1993, vol. 57, iss. 1, pp. 83–91 (in Russian).
4. Shevtsova Yu. V. Dinamicheskii prostoi kraevoi effekt v skoshennoi krugovoi tsilindrisheskoi obolochke [Dynamic simple edge effect in the beveled circular cylindrical shell]. *Mekhanika deformiruemyykh sred : sb. tr.* [Mechanics of deformable media], Saratov, 1997, iss. 13, pp. 83–87 (in Russian).
5. Shevtsova Yu. V., Parfenova Ya. A. Geometric aspects of the problem of the propagation of nonstationary waves in plates and cylindrical shells with edge of an arbitrary. *Vestn. Nizhegorod. Univ. im. N. I. Lobachevskogo*, 2011, no. 4, pt. 5, pp. 2612–2615 (in Russian).