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FOR THE 100TH ANNIVERSARY OF THE S. P. TIMOSHENKO INSTITUTE OF MECHANICS OF THE NASU: BOOKS (MONOGRAPHS AND TEXTBOOKS) PUBLISHED BY THE INSTITUTE

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This article is a continuation of the authors' previous publication on the occasion of the 100th anniversary of the National Academy of Sciences of Ukraine and the S. P. Timoshenko Institute of Mechanics (1918–2018) and is meant as some addendum to the articles devoted to this anniversary. The most important books published by the S. P. Timoshenko Institute of Mechanics over the almost 100-year period are listed. The list includes preliminary information, generalized collective multi-volume monographs, classical monographs, textbooks, tutorials, and some other publications. In total, 468 books are listed, of which 247 are available in the Library of Congress.

Keywords: centenary, S. P. Timoshenko Institute of Mechanics, generalized collective multivolume monographs, scientific monographs, university textbooks, tutorials

This paper is a continuation in its first part and an addendum in its second part to the paper [1] published on the occasion of the 100th anniversary of the S. P. Timoshenko Institute of Mechanics of the National Academy of Sciences of Ukraine (NASU).

The first part titled 7. Basic Results was not fully included in the paper [1] due to technical difficulties.

PART I.

7. Basic Results. The National Academy of Sciences of Ukraine is currently preparing the book *National Academy of Sciences of Ukraine 1918–2018: 100th Anniversary*. The institutes of the NASU are preparing proposals on their scientific achievements to include them in this book, information (number of lines) to be included being, of course, limited.

Here we present the information for this book prepared by the S. P. Timoshenko Institute of Mechanics.

7.1. Basic Achievements. According to the requirements, the basic achievements of the S. P. Timoshenko Institute of Mechanics are referred to two periods. Note that the results listed below were obtained by scientists while they were working at the institute.

Results obtained in 1918–1990

– Academicians M. M. Bogolyubov and M. M. Krylov developed nonlinear mechanics as a new research area and founded the world-wide recognized Kiev school of nonlinear mechanics in which prominent scientists such as academician Yu. A. Mitropolsky studied.

– Academicians G. M. Savin and A. D. Kovalenko, and their followers, developed methods for designing some structural elements for rockets that were applied by the Yuzhnoe State Design Office.

– Academician Ya. M. Grigorenko developed a numerical method for studying shells of revolution of complex geometry.

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– Academician Yu. M. Shevchenko developed the theory of thermoplasticity of materials with nonisothermal strains and methods for designing structural members.

– Academician A. N. Guz developed the three-dimensional theory of stability of deformable bodies and used it to analyze the stability of composite structural members and mine workings, developed the three-dimensional theory of propagation of elastic waves in bodies with initial (residual) stresses and used it to develop, together with experts of the Paton Institute of Electric Welding, a method for nondestructive ultrasonic determination of biaxial and triaxial stresses.

– Academician V. D. Kubenko developed analytical and numerical methods of nonstationary hydroelasticity of shells.

– Academician A. A. Martynyuk developed the method of matrix-valued Lyapunov functions in the theory of stability of the motion of mechanical systems.

– Corresponding Member L. P. Khoroshun developed methods for predicting the physical and mechanical properties of composites of various structure and the theory of multiphase media.

– Special Design and Engineering Office of the institute developed technologies of production of radio transparent fiberglass-reinforced plastic structural elements that were used by the Antonov Design Office in designing An-124 Ruslan, the world's largest airlift jet aircraft.

Results obtained since 1991

– Academician A. N. Guz developed the foundations of the mechanics of quasibrittle fracture of materials with initial (residual) stresses and the mechanics of fracture of composites in compression; developed dynamics of compressible viscous fluid for wave processes at arbitrary frequencies.

– Academician Ya. M. Grigorenko developed numerous methods for studying anisotropic shells of variable stiffness, flexible shells and shells of various geometry and structure under mechanical and thermal loads.

– Academician Yu. M. Shevchenko developed the theory of thermoviscoplasticity of materials under combined loading at high temperatures and methods for designing structural members.

– Academician V. D. Kubenko developed the theory of shock interaction of rigid and deformable bodies with fluid and elastic material and the theory of stationary wave processes in elastic bodies with flat boundaries.

– Academician A. A. Martynyuk developed the theory of stability of large-scale systems subject to structural perturbations, uncertain dynamic systems, and dynamic systems on time scale.

– Academicians V. L. Bogdanov and A. N. Guz and Corresponding Member V. M. Nazarenko developed the foundation of the fracture mechanics of materials compressed along interacting parallel cracks.

– Corresponding Member L. P. Khoroshun developed the theory of deformation and damage of homogeneous and composite materials of various structures.

– Corresponding Member N. A. Shul'ga developed a rigorous method for studying wave processes in composite laminates of periodic structure and determining wave transmission frequency ranges.

– Corresponding Member I. S. Chernyshenko developed numerical methods for designing shells with holes subject to physically and geometrically nonlinear strains.

– Doctor V. G. Karnaukhov developed the foundations of the nonlinear dynamics of viscoelastic materials taking into account the interaction of mechanical, thermal, and electromagnetic fields.

7.2. Additional Comments. Here we present some additional (to Sec. 7.1) information on the scientific results obtained by the S.P.Timoshenko Institute of Mechanics since 1918.

It should be noted the information on scientific results of the institute outlined in Sec. 7.1 and submitted to the Presidium of the NASU somewhat exceeds the requirement (number of lines). This is partially because the S. P. Timoshenko Institute of Mechanics celebrates the 100th anniversary in 2018.

Despite this, the basic results listed in Sec. 7.1 do not include some well-known results, including those published in English-language monographs. This situation was apparently predetermined by the relatively long history of the institute.

Considering the aforesaid and having no chance to include all wll-known scientific results of the institute in the present paper (because of space limitations), we will discuss, as an example, only the scientific results of the institute, including those published in English-language monographs, that could be included in the anniversary book.

Results obtained in 1918–1990

– Academician A. N. Guz and doctor V. T. Golovchan developed the theory of diffraction of elastic waves by multiply connected bodies bounded by cylindrical and spherical surfaces.

Results obtained since 1991

– Academician A. N. Guz and doctor V. V. Zozulya developed the foundations of the nonlinear fracture mechanics of materials under dynamic loads taking into account the interaction of the crack faces.

– Academician A. N. Guz, doctor A. N. Bagno, and doctor A. P. Zhuk developed the dynamics of solid particles, fluid drops, and elastic bodies in compressible viscous fluid.

– Academician A. N. Guz and doctor V. A. Dekret developed a model of finite fibers in the three-dimensional theory of stability of composites.

– Academician A. N. Guz, doctor I. A. Guz, and doctor J. J. Rushchitsky developed an approach to the development of the mechanics of nanocomposites with polymer matrix.All the above results include descriptions of new mechanical effects.

Moreover, these results were included in monographs published in Ukraine, the USA, England, and Germany.

Some of the English-language monographs are listed below as an illustration.

1. A. N. Guz and V. T. Golovchan, *Diffraction of Elastic Waves in Multiply Connected Bodies*, Foreign Technology Division/Wright Patterson AFB, Ohio (1973).
2. A. N. Guz, *Dynamics of Compressible Viscous Fluid*, Cambridge Scientific Publishers (2009).
3. A. N. Guz and J. J. Rushchitsky, *Short Introduction to Mechanics of Nanocomposites*, Scientific & Academic Publishing, USA (2013).

The first of the monographs is a translation into English of a monograph published by the Naukova Dumka publishing house in 1972.

The above examples suggest that the S.P.Timoshenko Institute of Mechanics obtained results (in addition to those listed in Sec. 7.2) that could be included in the book *National Academy of Sciences of Ukraine 1918–2018: 100th Anniversary*.

PART II.

In the second part, we will discuss the publications of the Institute of Mechanics in the period from 1918 to 2017 because over the century, researchers of the institute published many hundreds of books including collective and classical monographs, textbooks, manuals, reference and information books, dictionaries on mechanics.

This information supplements the information presented in [1] and related to the centenary activity of the S. P. Timoshenko Institute of Mechanics.

Historical Facts on the Academy and Institute. In the end of November, 2018, the S. P. Timoshenko Institute of Mechanics will celebrate its 100th anniversary. The Ukrainian Academy of Sciences (UAS) (currently the National Academy of Sciences of Ukraine) was founded hundred years ago, in the period from November, 1918 to January, 1919.

The National Academy of Sciences of Ukraine was established on November 27, 1918 (known as the Ukrainian Academy of Science from 1918 to 1921, as the All-Ukrainian Academy of Science from 1921 until 1936, as the Academy of Science of the Ukrainian SSR from 1936 to 1991, as the Academy of Science of Ukraine from 1991 to 1993, and the National Academy of Science of Ukraine since 1994).

Academician V. I. Vernadsky was the first president of the National Academy of Sciences of Ukraine in 1918–1921.

Academician B. E. Paton has been the president of the National Academy of Sciences of Ukraine since 1962.

The physics and mathematics division of the UAS consisted of 14 general departments and 16 departments of applied natural sciences and included four full members of the UAS:

– V. I. Vernadskii (Imperial Russian Academy),

– N. F. Kashchenko (Kiev Polytechnic Institute),

– S. P. Timoshenko (Kiev Politechnic Institute),

– P. A. Tutkovskii (Kiev University).

One of the departments of the physics and mathematics division was the applied mechanics department headed by S. P. Timoshenko.

At that time, the Institute of Technical Mechanics as the first engineering institute in the Ukrainian Academy of Sciences was founded (minutes No. 2 of general meeting of the UAS of November 30, 1918).

Its first director was S. P. Timoshenko, a famous mechanician, one of the founders and full member of the UAS, a member of academies of sciences of some countries, honoris causa of many universities and higher educational institutions. In the USA, Timoshenko is recognized as the founder of American engineering mechanics.

On Importance of Writing Monographs and Their Availability to Readers. Science of the 20th century is characterized by large-scale studies of fundamental and applied problems at various centers of science. The results of such studies are usually published in numerous scientific and science-and-technology journals and in monographs. Of particular interest are monographs published after analysis, interpretation, and generalization of scientific results originally published as articles and reports.

The overwhelming majority of monographs are scientific knowledge of the second order owing to the interpretation and generalization of scientific results. Monographs have been published in various national languages, mainly in English. They are available in a number of libraries in different countries.

Remark. At present, different books may be called scientific monographs (from the Greek words μονοσ meaning "one" or "single" and γραπγο meaning "write"). All books cannot be regarded, in the authors' opinion, as scientific monographs, considering the essential condition γραπγο (write) that the authors write the book and assigning the condition μονοσ (one, single) either to the author or to the problem addressed in the book.

A monograph of the first type is a book written by one author and devoted to a separate scientific problem. The level of generality of the problem may be different.

A monograph of the second type is a book written by one author and devoted to a number of related problems. A typical example of such a monograph is selected works of noted scientists.

A monograph of the third type is a book written by several authors and devoted to a major scientific problem.

A monograph of the fourth type is a review book written as a monograph of the first, second, or third type and intended to summarize advances made in a major research area and to analyze the associated scientific results. Such monographs are fairly popular nowadays and often appear in multivolume issues.

Thus, according to the above classification, the following cannot be classed as scientific monographs:

– books written by several authors and devoted to a number of problems;

– collections and transactions of institutes and universities;

– proceedings of different scientific and research-and-technology conferences, etc.

Science generally, and mechanics specifically, is international by its very nature. After publication, any new scientific result is not only a property of its authors, but also is naturally the subject of a specific research area—it becomes a fragment of this subject in its development. Therefore, scientific activity was always organized so as to make new results available to all of the scientific community. In so doing, many objectives were pursued, of which three are noteworthy:

– detailed presentation of new results in view of their possible influence on the further development of science;

– validation of new results, and

– prevention of duplicate research.

Monographic issues may be thought of as adequately presented to the world's scientific community and as readily available if scientists in any country can obtain information on these monographs and familiarize themselves with their content with the help of modern information systems. Only when monographs are accessible in this sense, we may say that the findings presented therein are the province of the world's science. In this situation, in particular, submissions of or no references to scientific results that have already been published can no longer be justified by the so-called "inaccessibility" of source materials and can only be considered unethical behavior by representatives of the scientific community.

Considering this situation, we have to recognize that presenting main monographs to the scientific community is an urgent task not only for relatively new centers of science, which strive to popularize their findings, but also for the oldest centers of science, which have issued a great many monographs over all the years of their existance.

Thus, the said task is also urgent for the S. P. Timoshenko Institute of Mechanics, the oldest institute of the National Academy of Sciences of Ukraine.

Over the years of its existence, scientists of the institute have written about 400 monographs, handbooks, textbooks, and manuals. These books were published in Ukrainian, German, French, English, and mostly in Russian.

This can hardly be an obstacle for nonRussian-speaking researchers to familiarize themselves with the achievements of the institute. The point is that the traditional writing style of mechanics-related monographs assumes the presence of a reasonable number of formulas, tables, and graphs, which somewhat facilitate the understanding of the content by non-Russian speakers.

On the Library of Congress and the Books Published by the S. P. Timoshenko Institute of Mechanics and Available in This Library. The world's leading libraries have online information systems using which experts of centers of science all over the world can access information on monographs available in these libraries. In addition to general data on the book of interest (authors, etc.), it is also possible to get, after certain efforts, a copy of the book.

One of the world's largest libraries is the Library of Congress, USA. Its information system is the Library of Congress Online Catalog (http://catalog.loc.gov/).

In what follows, we will present information on 247 books published by the S. P. Timoshenko Institute of Mechanics over all the years of its existence (1918–2017) and available in the Library of the Congress and on the ways of acquaintance accessing them (reading rooms and catalog numbers), including the Library of Congress Online Catalog.

Thus, in the near future, both our academy and our institute will celebrate the 100th anniversary. Any anniversary is usually accompanied by summing up achievements. As mentioned above, we will discuss the publications of the Institute of Mechanics in the period from 1918 to 2017 because over the century, researchers of the institute published many hundreds of books including collective and classical monographs, textbooks, manuals, reference and information books, dictionaries on mechanics.

Note that the paper [1] is devoted to the results of the 100-years activity of the Institute of Mechanics. In particular, it addresses aspects of publishing and points out the following.

1. After obtaining results, it was natural to want to present the new knowledge to the world's scientific community. Thus, scientific results became to be published, first as separate articles or separate reports of conferences or abstracts. Results in a certain research area are published as a series of articles or reports at conferences. After publishing a series of papers, it is natural to want to analyze and generalize the results reported in these papers, which is done in monographs. Thus, monographs provide detailed information on scientific results after analysis and generalization for the world's scientific community.

2. Monographs may be considered the top level of presenting qualitative and balanced information on scientific achievements in separate research areas to the world's scientific community.

Monographs may be divided into the following three groups according to their goals: educational monographs, review monographs, scientific monographs.

Educational monographs include not only new scientific results, but also well-known results needed for educational purposes, which makes such monographs highly popular.

Review monographs tend to include almost all results obtained worldwide in a certain research area and are considered to be quite objective reviews. Such monographs are also quite popular as containing extensive information. Scientific monographs mainly include scientific results obtained by the authors and their followers in a certain research area. The high popularity of such monographs is due to the clear-cut exposition of new results.

Next, following the tradition [2–5], we will list (using continuous numbering) books of the following three categories published by the Institute of Mechanics from 1918 to 2017:

(i) collective multivolume books;

(ii) classical scientific monographs, reference and information books, dictionaries on mechanics;

(iii) textbooks and manuals.

Currently, about 247 monographs published by the S. P. Timoshenko Institute of Mechanics are available in the Library of Congress.

Considering that it is important that a book be available in the Library of Congress, we will use an asterisk * to indicate such books.

Collective multivolume books hold a special place in this list, which corresponds to the new tendency of publishing collective multivolume monographs in research areas of the institute [1].

Monographs with numbers 1–6 are fundamental, based on achievements of the Institute of Mechanics and other centers of science which cooperate with the institute, and, apparently, have no match in the world's scientific literature [1].

Number 7 includes the reviews published in Prikladnaya Mekhanika (International Applied Mechanics) in 2000–2009 on the occasion of the beginning of the third millennium.

This book includes about 170 reviews written by authors from 26 countries over 10 years (2000–2009) and has nothing comparable in the world's literature on mechanics and, probably, in science in general.

Number 8 includes reviews on some research areas by leading researchers of the S. P. Timoshenko Institute of Mechanics. The reviews were published in the journal *Prikladnaya Mekhanika* in Russian in 2011–2017. The first volume was published in 2016, the second volume in 2017, and the third volume in 2018.

The present paper supplements the paper [1] where all importane aspects of the 100-years activity of the S. P. Timoshenko Institute of Mechanics are detailed.

Generalizing collective multivolume books (36 books)

*1. Methods of Shell Design [in Russian], in 5 vols., Naukova Dumka, Kyiv (1980–1982).
   Vol. 1. A. N. Guz, I. S. Chernyshenko, Val. N. Chekhov, Vik. N. Chekhov, and K. I. Shnerenko, *Cylindrical Shells Weakened by Holes* [in Russian] (1980).
   Vol. 2. I. Ya. Amiro and V. A. Zarutskii, *Theory of Ribbed Shells* [in Russian] (1980).
   Vol. 3. Yu. N. Shevchenko and I. V. Prokhorenko, *Theory of Elastoplastic Shells under Nonisothermal Loading* [in Russian] (1981).
   Vol. 4. Ya. M. Grigorenko and A. T. Vasilenko, *Theory of Shells of Variable Stiffness* [in Russian] (1981).
   Vol. 5. I. A. N. Guz and V. D. Kubenko, *Theory of Nonstationary Aerohydroelasticity of Shells* [in Russian] (1982).

*2. A. N. Guz (ed.), *Mechanics of Composite Materials and Structural Members* [in Russian], in 3 vols., Naukova Dumka, Kyiv (1982–1983).
   Vol. 1. L. P. Khoroshun (ed.), *Mechanics of Materials* [in Russian] (1982).
   Vol. 2. Ya. M. Grigorenko (ed.), *Mechanics of Structural Elements* [in Russian] (1983).
   Vol. 3. *Applied Research* [in Russian] (1983).

*3. A. N. Guz (ed.), *Spatial Problems in the Theory of Elasticity and Plasticity* [in Russian], in 6 vols., Naukova Dumka, Kyiv (1984–1986).
   Vol. 1. Yu. N. Podil'chuk, *Boundary-Value Problems of Statics of Elastic Bodies* [in Russian] (1984).
   Vol. 2. A. N. Guz and Yu. N. Nemish, *Statics of Noncanonical Elastic Bodies* [in Russian] (1984).
   Vol. 3. V. T. Grinchenko and A. F. Ulitko, *Equilibrium of Canonical Elastic Bodies* [in Russian] (1985).
   Vol. 4. A. N. Guz and I. Yu. Babich, *Three-Dimensional Theory of Stability of Deformable Bodies* [in Russian] (1985).
   Vol. 5. V. T. Golovchan, V. D. Kubenko, N. A. Shul'ga, A. N. Guz, and V. T. Grinchenko, *Dynamics of Elastic Bodies* [in Russian] (1986).
   Vol. 6. Yu. N. Shevchenko, *Numerical Methods for Solving Applied Problems* [in Russian] (1986).

*4. A. N. Guz (ed.), *Mechanics of Coupled Fields in Structural Members* [in Russian], in 5 vols., Naukova Dumka, Kyiv (1987–1989).
   Vol. 1. I. A. Motovilovets and V. I. Kozlov, *Thermoelasticity* [in Russian] (1987).
   Vol. 2. Yu. N. Shevchenko and V. G. Savchenko, *Thermoviscoplasticity* [in Russian] (1987).
   Vol. 3. A. N. Guz and F. G. Makhort, *Acoustoelectromagnetoelasticity* [in Russian] (1988).
   Vol. 4. V. G. Karnaukhov and I. F. Kirichek, *Electrothermoviscoelasticity* [in Russian] (1988).
   Vol. 5. V. T. Grinchenko, A. F. Ulitko, and N. A. Shul'ga, *Electroelasticity* [in Russian] (1989).

*5. A. N. Guz (ed.), *Nonclassical Problems of Fracture Mechanics* [in Russian], in four vols., five books, Naukova Dumka, Kyiv (1990–1993).
   Vol. 1. A. A. Kaminsky, *Fracture of Viscoelastic Bodies with Cracks* [in Russian] (1990)
   Vol. 2. A. N. Guz, *Brittle Fracture of Prestressed Materials* [in Russian] (1991).
   Vol. 3. A. A. Kaminsky and D. A. Gavrilov, *Delayed Fracture of Polymeric and Composite Materials with Cracks* [in Russian] (1992).
   Vol. 4, book 1. A. N. Guz, M. Sh. Dyshel', and V. M. Nazarenko, *Fracture and Stability of Materials with Cracks* [in Russian] (1992).
   Vol. 4, book 2. A. N. Guz and V. V. Zozulya, *Brittle Fracture of Materials under Dynamic Loading* [in Russian] (1993).

*6. A. N. Guz (ed.), *Mechanics of Composite Materials* [in Russian], in 12 vols., Naukova Dumka (Vols. 1–4), A.S.K. (Vols. 5–12), Kyiv (1993–2003).
Vol. 1. V. T. Golovchan (ed.), *Statics of Materials* [in Russian] (1993).
Vol. 2. N. A. Shul'ga (ed.), *Dynamics and Stability of Materials* [in Russian] (1993).
Vol. 3. L. P. Khoroshun (ed.), *Statistical Mechanics and Effective Properties of Materials* [in Russian] (1993).
Vol. 4. A. N. Guz and S. D. Akbarov (eds.), *Mechanics of Materials with Curved Structure* [in Russian] (1995).
Vol. 5. A. A. Kaminsky (ed.), *Fracture Mechanics* [in Russian] (1996).
Vol. 6. N. A. Shul'ga and V. T. Tomashevskii (eds.), *Process-Induced Stresses and Strains in Materials* [in Russian] (1997).
Vol. 7. A. N. Guz, A. S. Kosmodamianskii, and V. P. Shevchenko (eds.), *Stress Concentration* [in Russian] (1998).
Vol. 8. Ya. M. Grigorenko (ed.), *Statics of Structural Elements* [in Russian] (1999).
Vol. 9. V. D. Kubenko (ed.), *Dynamics of Structural Elements* [in Russian] (1999).
Vol. 10. I. Yu. Babich (ed.), *Stability of Structural Elements* [in Russian] (2001).
Vol. 11. Ya. M. Grigorenko and Yu. N. Shevchenko (eds.), *Numerical Methods* [in Russian] (2002).
Vol. 12. A. N. Guz and L. P. Khoroshun (eds.), *Applied Research* [in Russian] (2003).
*7. A. N. Guz (ed.), *Advances in Mechanics* [in Russian], in six vols., seven books, A.S.K. (Vols. 1–3), Litera (Vols. 4–6), Kyiv (2005–2011).
*8. A. N. Guz (ed.), *Modern Problems of Mechanics: on the Occasion of the 100th Anniversary of the National Academy of Sciences of Ukraine and S. P. Timoshenko Institute of Mechanics* [in Russian], in 3 vols., Litera, Kyiv (2016–2018).

Monographs (403 books)

In the following part of the list, the names of the authors who then worked at the institute are underlined.

*9. S. D. Akbarov and A. N. Guz, *Mechanics of Curved Composites*, Kluwer Academic Publishers, Dordrecht–New York (2000).
*10. F. A. Aliev, B. A. Bordyug, and V. B. Larin, *H2-Optimization and State-Space Method in the Synthesis of Optimal Controllers* [in Russian], Elm, Baku (1991).
*11. F. A. Aliev and V. B. Larin, *Optimization of Linear Control Systems: Analytical Methods and Computational Algorithms*, Vol. 8. of the series *Stability and Control: Theory*, *Methods and Applications*, Gordon and Breach Publishers, London (1998).
12. A. P. Alpatov, V. V. Beletsky, V. I. Dranovskii, A. E. Zakrzhevskii, A. V. Pirozhenko, H. Troger, and V. S. Khoroshilov, *Rotational Motion of Tethered Space Systems* [in Russian], Inst. Tekhn. Mekh. NAN i NKA Ukrainy, Dnepropetrovsk (2001).
13. A. P. Alpatov, V. V. Beletsky, V. I. Dranovskii, A. E. Zakrzhevskii, A. V. Pirozhenko, H. Troger, and V. S. Khoroshilov, *Dynamics of Space Systems with Tethered and Hinged Connections* [in Russian], NITs "Regularnaya i khaoticheskaya dinamika," Moscow–Izhevsk (2007).
*14. A. P. Alpatov, V. V. Beletsky, V. I. Dranovskii, V. S. Khoroshilov, A. V. Pirozhenko, H. Troger, and A. E. Zakrzhevskii, *Dynamics of Tethered Space Systems*, CRC Press (2010).
*15. I. Ya. Amiro, O. A. Grachev, V. A. Zarutskii, A. S. Pal'chevskii, and Ya. A. Sannikov, *Stability of Ribbed Shells of Revolution* [in Russian], Naukova Dumka, Kyiv (1987).
*16. I. Ya. Amiro, G. I. Diamant, V. A. Zarutskii, V. I. Matsner, V. G. Palamarchuk, N. A. Reshet'ko, and Yu. V. Skosarenko, *Method for Analysis of the Vibrations of Ribbed Shells on a Unified-System Computer* [in Russian], Naukova Dumka, Kyiv (1982).
*17. I. Ya. Amiro, V. A. Zarutskii, and V. G. Palamarchuk, *Dynamics of Ribbed Shells* [in Russian], Naukova Dumka, Kyiv (1983).
*18. I. Ya. Amiro, V. A. Zarutskii, and P. S. Polyakov, *Ribbed Cylindrical Shells* [in Russian], Naukova Dumka, Kyiv (1973).
*19. I. Ya. Amiro, V. A. Zarutskii, V. N. Revutskii, Yu. V. Skosarenko, A. I. Telalov, and S. Yu. Fialko, *Vibrations of Ribbed Shells of Revolution* [in Russian], Naukova Dumka, Kyiv (1988).
20. I. I. Anik'ev, E. I. Bespalova, M. I. Vorotnikova, V. O. Kononenko, and A. S. Strel'chenko, *Diffraction of a Shock Pulse by a Rigid Cylinder* [in Russian], Naukova Dumka, Kyiv (1976).

21. E. Ya. Antonyuk, *Dynamics of Mechanisms of Variable Structure* [in Russian], Naukova Dumka, Kyiv (1988).
22. E. Ya. Antonyuk, V. I. Bol'shakov, V. B. Larin, Yu. A. Khramov, and S. A. Khorosheva, *Science of Machines in Ukraine* [in Russian], Feniks, Kyiv (2006).
23. M. Afanas'ev, *Rationalization of Heat Treatment of Steel* [in Ukrainian], VUAN, Kyiv (1932).
24. M. M. Afanas'ev, *Research on Vibration Strength* [in Ukrainian], Vyd. AN URSR, Kyiv (1936).
25. M. M. Afanas'ev, *Influence of Shock Loading on the Fatigue Limit of Nitrated Specimens* [in Ukrainian], Vyd. AN URSR, Kyiv (1938).
26. M. M. Afanas'ev, *Causes of Cracks in Steam Boilers* [in Ukrainian], Vyd. AN URSR, Kyiv (1938).
27. N. N. Afanas'ev, *Statistical Theory of the Fatigue Strength of Metals* [in Russian], Izd. AN USSR, Kyiv (1953).
28. M. M. Afanas'ev and S. V. Malashenko, *Aging of Boiler Iron and Its Performance in Boilers* [in Ukrainian], Vyd. VUAN, Kyiv (1935).
29. A. E. Babaev, *Nonstationary Waves in Continua with Reflecting Surfaces* [in Russian], Naukova Dumka, Kyiv (1990).
30. V. N. Bastun, Ya. M. Grigorenko, and V. A. Shirokov, *Russian–Ukrainian–English Dictionary of Mechanics*, Naukova Dumka, Kyiv (2009).
31. V. Ya. Bash, *Thermoelectric Analysis of Stresses and Strains* [in Russian], Naukova Dumka, Kyiv (1984).
32. F. P. Belyankin, *Testing of Stones for Roads* [in Ukrainian], Vyd. VUAN, Kyiv (1934).
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In preparing this paper, we used resources of the Library of Congress of the USA and the library of the S. P. Timoshenko Institute of Mechanics and information from [1–5]. The number of books published by the S. P. Timoshenko Institute of Mechanics is 468, of which 247 are available in the Library of Congress.

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