

BIBLIOGRAPHY

New Books on Acoustics and Related Subjects Published in 2007 in Russian

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The bibliographic index covers 180 books. The material is divided into sections identical to those used for the books published in 2006 (see *Acoustical Physics* No. 5, 2008).

1. CLASSICAL PROBLEMS OF LINEAR ACOUSTICS AND WAVE THEORY (six books)

A. V. Avrinskii, *Elementary Sources of Sound* (S.-Peterb. Gos. Morsk. Tekh. Univ., St. Petersburg, 2007). ISBN 5-88303-385-7

L. M. Brekhovskikh and O. A. Godin, *Acoustics of Inhomogeneous Media. Vol. 1: Foundations of the Theory of Reflection and Propagation of Sound* (Nauka, Moscow, 2007). ISBN 978-5-02-035347-3; 978-5-02-035353-4

The book describes the theory of propagation and diffraction of elastic waves in inhomogeneous liquids and solids. Various forms of the wave equation are derived, and its exact solutions are presented. Universal properties of wave fields in one-dimensionally inhomogeneous media are studied. The effect of the motion of a medium on the sound field in it is considered. Methods of constructing asymptotic expansions of wave fields on the basis of reference equations and reference integrals are described together with the parabolic approximation and the theory of mode coupling.

D. A. Indeĭtsev, N. G. Kuznetsov, O. V. Motygin, and Yu. A. Mochalova, *Localization of Linear Waves* (S.-Peterb. Univ., St. Petersburg, 2007). ISBN 978-5-288-04384-0

Principles of wave localization in media with obstacles and inclusions possessing their own dynamics are described. Problems of the theory of surface waves, hydroelasticity, and mechanics of deformed solids are presented. Their common feature is the presence of point eigenvalues for the operators of boundary-value problems. Contents: Part I. Localization of waves in elastic bodies; Chapter 1. Waves in one-dimensional elastic structures with concentrated inclusions; Chapter 2. Wave localization in one-dimensional structures with distributed inclusions; Chapter 3. Wave localization in two-dimensional structures with distributed inclusions; Chapter 4. High-frequency localized modes of oscillation in elastic structures; Part II. Wave localization in a fluid. Chapter 5. Basic concepts of the theory of surface waves; Chapter 6. Waves propagating

along the shoreline; Chapter 7. Wave localization by submerged obstacles; Chapter 8. Wave localization by partially immersed bodies; Chapter 9. Waves on a bounded free surface.

V. V. Kopeĭkin, *Refraction of Waves in Linear Media with Frequency Dispersion* (Nauka, Moscow, 2007). ISBN 978-5-02-036038-9

The theory of wave propagation still contains unsolved problems, even for refraction related to the dispersion properties of the medium. The author considers the solutions to the problems of wave propagation with allowance for the dispersion-related refraction. He proposes new interpretation of wave processes in dispersive media. The solutions find application in describing the propagation of superbroadband (noise-like) signals, for which representation on the basis of the space–time geometrical optics fails. Effects of dispersion-related refraction are considered from different points of view.

I. B. Crandall, *Theory of Vibrating Systems and Sound* (KomKniga, Moscow, 2007) [Russian translation]. ISBN 5-484-00798-4, 978-5-484-00798-1

This is a classical work in acoustics, which describes the generation and propagation of sound waves and their interaction with matter. Oscillatory systems, resonators, and filters are considered; problems of radiation and propagation of waves are studied. A special chapter is devoted to acoustic phenomena in closed rooms. The theoretical material is complemented with problems to be solved. Contents: Chapter I. Simple oscillatory systems; Chapter II. General theory of oscillatory systems, resonators and filters; Chapter III. Propagation of sound; Chapter IV. Problems of radiation and propagation; Chapter V. Acoustics of closed rooms; absorption, reflection, and reverberation; Appendix A. Resistance coefficients of cylindrical sound channels; Appendix B. Latest discoveries in applied acoustics.

M. V. Kuzelev and A. A. Rukhadze, *Methods of Wave Theory in Dispersive Media* (Fizmatlit, Moscow, 2007). ISBN 978-5-9221-0767-9

General problems of the theory of linear waves in systems and media with dispersion, including nonequilibrium ones, are described. As applications, the authors consider physical systems that are conventionally studied in mechanics of continua, electrodynamics, plasma physics, electronics, and physical kinetics. Spe-

cial attention is given to theoretical problems of electromagnetic linear waves in plasma and plasmalike media. A set of original results previously reported in scientific journals only is included. Several sections are devoted to ionic sound waves in nonisothermal plasma and to acoustic waves in crystals.

1.1. Dynamics of Continuous Media (five books)

D. G. Akhmetov, *Vortex Rings* (Geo, Novosibirsk, 2007). ISBN 978-5-9747-0081-1

The main attention is given to experimental studies of the structure, laws of formation, and motion of vortex rings. A model of vortex ring formation is presented, and formulas for calculating the parameters of a family of rings caused by submerged jet efflux are derived. A theoretical model of turbulent ring motion in an unbounded medium is described. A method of using the vortex rings for fire control in flowing gas-oil wells is described.

É. N. Potetyunko, L. V. Cherkesov, D. S. Shubin, and E. N. Shcherbak, *Free Vibrations and Inverse Spectral Problems: Wave Motions of an Inhomogeneous Liquid* (Vuz. Kniga, Moscow, 2007). ISBN 5-9502-0255-4

General information on the sea medium and on hydromechanical modeling of internal wave propagation in the ocean are presented. Problems of constructing the dispersion law for internal waves are solved together with the inverse problem consisting in the determination of stratification of the liquid according to the spectral characteristics of internal waves.

V. Selivanov, *Mechanics of Fracture of a Deformed Body*: Vol. 2 of *Applied Mechanics of Continuous Media* (Mosk. Gos. Tekh. Univ. im. Bauman, Moscow, 2006). ISBN 5-7038-2345-5

The processes of fracture of a deformed solid under static, dynamic, and shock-wave loads are described. Models of fracture are systematized, and brittle and viscous fractures are described in terms of micro- and macrofracture. Formation and growth of cracks in brittle and plastic materials are considered. Foundations of the mechanics of scattered distortions and linear mechanics of fracture are presented. Processes of shock wave and rarefaction wave propagation in solids are considered, and the mechanics and morphology of high-speed deformation and fracture of materials under shock-wave loads are described.

I. P. Trubkin, *Wind Waves (Interrelations and Calculation of Probability Characteristics)* (Nauchnyi Mir, Moscow, 2007). ISBN 978-589-176-481-1

The goal of this book is to extend the existing notion of interrelations between various probabilistic and spectral characteristics of wind waves. A parametric probabilistic model is proposed. The model is used as the basis to describe the practically important characteristics of interaction between wind and waves, orbital wave motions, spatial and temporal derivatives of a

wavy water surface, rotational characteristics of vector processes, and frequency-angular spectra of the field of waves and infragravity waves. The probabilistic relations revealed by the author are used to propose and justify analytical approximations of probability distributions and spectral characteristics. The known method of calculating the field of gravity waves and the method of modeling the drift transport and the dynamics of the bottom relief are refined. The interrelations and the analytical expressions obtained by the author are verified by experimental data. Some computational schemes and theoretical models suitable for practical application are proposed.

I. G. Filippov and S. I. Filippov, *Oscillatory and Wave Processes in Continuous Compressible Media* (no publisher, Moscow, 2007).

This book presents the results of research into the theory of oscillations and wave propagation in continuous compressible media. In the first four chapters, on the basis of considering continuous media in three dimensions with allowance for various physical characteristics (anisotropy, rheology, temperature, etc.), general and approximate equations describing the oscillations of bounded continuous media (plates, bar-type systems, circular cylindrical shells, etc.) are derived within the framework of well-posed boundary-value problems. The next three chapters describe the generalized Volterra method for studying wave processes and diffraction in ideal and elastic media.

1.2. Oscillations of Concentrated and Distributed Systems (twenty seven books)

A. F. An and A. V. Samokhin, *General Course of Physics: Physical Foundations of Oscillatory and Wave Processes* (IPTs MI VIGU, Murom, 2007). ISBN 978-5-8439-0132-5

The authors briefly represent the material on five different fields of the physics of oscillations and waves. Specifically, they describe mechanical and electric oscillations, elastic and electromagnetic waves, and foundations of wave optics. In addition, they consider some practical applications of the theory of oscillations and waves. Each of the chapters contains basic theoretical material, brief conclusions, test questions for the reader, examples of solving relevant problems, and exercises for students.

Zh. N. Andreeva, O. G. Agoshkov, and N. A. Evstigneev, *Vibrations of Gun Barrels in Artillery* (Balt. Gos. Tekh. Univ. Voenmekh, St. Petersburg, 2007). ISBN 5-85546-286-2

A. P. Afanas'ev and S. M. Dzyuba, *Stability According to Poisson in Dynamic and Continuous Periodic Systems* (URSS, Moscow, 2007). ISBN 978-5-382-00261-3

It is well known that a two-dimensional system of ordinary differential equations (an autonomous system or a system with a periodic part) has a periodic solution

(the Massera theorem). This result does not apply to systems of arbitrary order. Still, there is a class of solutions that generalizes the periodic ones corresponding to an arbitrary autonomous system or a system with a periodic right-hand side. This book is devoted to such solutions and related problems of the qualitative theory of differential equations.

A. I. Gleizer, *Theory of Oscillations of Mechanical Systems* (Tol'yatti State Univ., Tol'yatti, 2007). ISBN 5-7266-0299-4

This is a textbook for students specializing in automotive and tractor industry.

G. S. Gorelik, *Oscillations and Waves: Introduction to Acoustics, Radio Physics, and Optics* (Fizmatlit, Moscow, 2007). ISBN 5-9221-0776-1

This book is the third edition of the textbook in oscillatory and wave processes in mechanics, acoustics, optics, radio physics, and electrodynamics. The book contains original interpretations given in terms of the theory of oscillations to a variety of physical phenomena and persuasive examples of the identity of laws governing oscillations and waves of different physical natures. The book is necessary to students of physical, engineering, and radio-engineering departments of technical universities, to theoretical and experimental physicists working in the fields of radio physics, acoustics, and optics, as well as to university students specializing in chemistry, biology, medicine, environmental science, economy, and sociology.

I. V. Grigor'ev, V. I. Prokop'ev, and Yu. V. Tverdyĭ, *Deformation, Stability, and Vibrations of Shell Structures* (ASV, Moscow, 2007). ISBN 978-5-93093-476-2

The book describes the relationships of the theory of structure elements, the stiffness method with its numerical realization, and the standard algorithms for calculating the strength of shell structures with multiply-connected junctions.

T. V. Grishanina and F. N. Shklyarchuk, *Dynamics of Controlled Elastic Structures* (MAI, Moscow, 2007). ISBN 978-5-7035-1869-4

Yu. V. Gruzdev, *Oscillations and Waves* (MATI, Moscow, 2007). ISBN 5-93271-312-7, 5-93271-352-6

I. D. Grudev, *Vibrations of Curvilinear Bars* (MIK, Moscow, 2007). ISBN 978-5-87902-131-8

É. R. Danielov, N. A. Kostenko, E. M. Rusanova, and D. Yu. Kondrashechkin, *Calculation of Flat Frames from the Viewpoint of Their Stability and Behavior under a Vibratory Load* (MGOU, Moscow, 2007). ISBN 978-5-7045-0752-9

This is a multimedia textbook. It presents elements of the theory of stability and vibrations of elastic bar systems and considers the dynamics of structures with concentrated masses in the state of free oscillations and under vibration. Contents: Part 1. Calculation of the stability of frames by the displacement method; Chapter 1.1. A brief theoretical description; Chapter 1.2.

Examples of calculations; Chapter 1.3. The software; Part 2. Calculation of the behavior of frames with concentrated masses under a vibratory load; Chapter 2.1. A brief theoretical description; Chapter 2.2. Examples of calculations; Chapter 2.3. The software; Chapter 2.4. Examples of computer calculations.

L. V. Efremov, *Theory and Practice of Studying Torsional Vibrations of Power Plants with the Use of Computer Technologies* (Nauka, St. Petersburg, 2007). ISBN 5-02-025134-8

The author investigates the torsional vibrations in power plants of ships. He describes new methods of studying this dangerous phenomenon with the use computer technologies and the MATHCAD software. The book contains algorithms and computer programs for monitoring torsional vibrations and presents the results of studying the allowable stresses due to shaft torsions. Special attention is paid to the efficiency and reliability of clutches, dampers, and other protecting means used in plants. Contents: Chapter 1. General part; Chapter 2. Calculations; Chapter 3. Measurements; Chapter 4. Standards; Chapter 5. Dampers; Chapter 6. Specific features; Chapter 7. Research.

I. E. Irodov, *Wave Processes: The Basic Laws* (Binom.Laboratoriya Znanii, Moscow, 2007). ISBN 5-94774-519-4, 978-5-94774-692-1

The book contains theoretical material and some examples and problems with analyses and solutions. The problems are related to the main contents and serve to develop and complement the material. The book is free of intricate mathematics, and the main attention is focused at the physics of the phenomena.

V. P. Kandidov and A. Yu. Chikishev, *Practical Studies in Physics for Mathematical Students: Part 4. Physics of Wave Processes* (Moscow State Univ., Moscow, 2007). ISBN 978-5-89407-301-9, 978-5-317-01985-3

A. Ya. Kogan, D. A. Nikitin, and I. V. Poleshchuk, *Vibrations of a Trackway under High Speeds of Carriage Motion and Shock-type Interaction of Wheel and Rail* (Intekst: VNIIZhT, Moscow, 2007). ISBN 5-89277-075-3

N. M. Kolacheva, M. Ya. Izrailovich, and L. V. Solomatina, *Oscillations in Mechanical and Electric Systems* (Mosk. Gos. Inst. Radiotekhniki, Elektroniki i Avtomatiki, Moscow, 2007). ISBN 5-7339-0600-3

This textbook contains the fundamentals of the theory of oscillations. Theoretical material is complemented with illustrations and examples, in which oscillatory processes that occur in different physical systems are analyzed. Contents: 1. Oscillatory motion, its characteristics and equation; 2. Method of vector diagrams and the complex notation; 3. Mechanical harmonic oscillations; 4. Harmonic oscillator. Physical and mathematical pendulums. Energy of an oscillatory system; 5. Free undamped oscillations in electric systems; 6. Summation of harmonic oscillations; 7. Free damped oscillations of a mechanical oscillator; 8. Damped

oscillations in an electric circuit; 9. Forced oscillations of mechanical systems. Resonance; 10. Forced electromagnetic oscillations.

L. D. Landau and E. M. Lifshits, *Theoretical Physics: Vol. 1. Mechanics*, Ed. by L. P. Pitaevskii, 5th ed. (Fizmatlit, Moscow, 2007). ISBN 978-5-9221-0819-5

This volume begins the new edition of the well-known course of theoretical physics. The first volume describes the mechanics as part of theoretical physics. It considers Lagrangean and Hamiltonian formulations of the equations of mechanics, conservation laws in mechanics, theory of particle collisions, theory of oscillations, and motion of solids.

A. A. Loktev, *Dynamic Contact Between Hammer and Plate with Allowance for Wave Processes* (Kompaniya Sputnik+, Moscow, 2007). ISBN 978-5-364-00458-1

L. K. Martinson and E. V. Smirnov, *Collection of the Basic Formulas for the Courses in Oscillations and Waves and in Optics* (AST, Moscow, 2007). ISBN 978-5-17-043527-2

This is a handbook for students, which contains the basic formulas that appear in the lecture courses in oscillations and waves and in optics.

R. P. Moiseenko, *Optimization of Finned Thin Plates at a Preset First Eigenfrequency* (Tomsk Gos. Arkhitekt.-Stroit. Univ., Tomsk, 2007). ISBN 978-5-93057-211-7

The theory of optimization of finned rectangular plates at a preset first eigenfrequency is presented. The first eigenfrequency limitation is considered in two versions: in the first case, the preset frequency value is substituted into the equation of the energy conservation law; in the second case, the frequency value is substituted into the equation for eigenfrequencies. Both versions of the problem are used to formulate the properties of the optimal system. Optimization algorithms are constructed. Both algorithms give the same optimal plate design.

N. Ya. Molotkov and O. V. Lomakina, *Mechanical Oscillations* (Tambov Gos. Tekh. Univ., Tambov, 2007). ISBN 978-5-8265-0622-6

The main problems of the theory of mechanical oscillations are described within the framework of the university education programs in theoretical mechanics. Much attention is paid to the physical nature of mechanical oscillatory phenomena and their applications: self-oscillations, relaxation ones, parametric and coupled oscillations, etc. Natural and forced oscillations in a system with many degrees of freedom are considered. Contents: 1. The notion of oscillatory motion; 2. Natural oscillations of a spring pendulum; 3. Energy of natural harmonic oscillations; 4. Natural oscillations of a physical pendulum and other oscillatory systems; 5. Anharmonic periodic oscillations; 6. Free oscillations in the presence of viscous friction;

7. The notion of the vector diagram method; 8. Summation of two harmonic oscillations that occur along a single straight line; 9. Summation of two mutually perpendicular oscillations; 10. Forced oscillations; 11. Mechanical self-oscillations; 12. Relaxation oscillations; 13. Parametric oscillations; 14. Coupled oscillations; 15. Natural oscillations in a system with a great number of degrees of freedom; 16. Forced oscillations in a mechanical periodic discrete structure; 17. Electromechanical analogies.

N. S. Stepanov, N. F. Uslugin, and P. V. Kazarin, *Experimental Methods of Studying Oscillation-Wave Processes with the Use of Computer Technologies* (Nizhni Novgorod State Univ., Nizhni Novgorod, 2007).

This is a training aid to the professional skills improvement program "Novel Approaches to the Problems of Generation, Processing, Transfer, Storage, and Protection of Information and Their Applications". The book is devoted to the description of the developments of the Center of Physical Demonstrations, Nizhni Novgorod State University, that are intended for performing experiments in physics of oscillations and waves with the use of computer technologies. In particular, the proposed methods allow a visual demonstration of the dynamics of oscillatory processes occurring in linear and nonlinear circuits, the laws of light reflection from various materials, as well as the Doppler effect and nonlinear transformation of waves by the example of surface waves in shallow water. In the experiments described in the book, a computer was used both for on-line measurement data processing in real time (which is especially important when giving lectures) and as a "virtual" instrument replacing the corresponding oscillators, analyzers, electronic oscilloscopes, etc. Contents: Chapter 1. Selective properties of a linear oscillatory circuit; Chapter 2. Dynamic damping as an example of the behavior of a mechanical oscillatory system with two degrees of freedom; Chapter 3. Oscillations in an electric circuit with a nonlinear inductance; Chapter 4. Study of polarization effects at electromagnetic wave reflection from dielectric and metallic surfaces; Chapter 5. Demonstration of the Doppler effect for surface waves; Chapter 6. Demonstration of nonlinear manifestations of surface waves.

N. A. Taranukha and G. S. Leizerovich, *New Solutions in the Dynamics of "Irregular" Shells* (Dal'nauka, Vladivostok, 2007). ISBN 978-5-8044-0772-9

O. V. Trifonov, *Oscillations of Systems with Finite Numbers of Degrees of Freedom* (Izd. Dom MEI, Moscow, 2007). ISBN 978-5-383-00008-3

This is a textbook in analytical dynamics and theory of oscillations for students specializing in applied mechanics.

S. É. Frish and A. V. Timoreva, *Course of General Physics: Vol. 1. Physical Foundations of Mechanics; Molecular Physics; Oscillations and Waves* (Lan', St. Petersburg, 2007). ISBN 5-8114-0663-0, 5-8114-0662-2, 978-5-8114-0663-0

The three-volume *Course of General Physics* has been one of the most popular university textbooks for years and survived many editions, including those in foreign languages. It is characterized by clarity of descriptions and simplicity in representation of the material. The first volume is devoted to physical foundations of mechanics, molecular physics, theory of oscillations, and wave physics.

V. Yu. Chizhov and S. A. Shlyapochnikov, *Strain Waves in Artificial Elastomeric Media* (TsNII im. A.N. Krylova, St. Petersburg, 2007). ISBN 5-903002-05-6

V. F. Shilov, *Oscillations and Waves: Laboratory Work at School and at Home* (Prosveshchenie, Moscow, 2007). ISBN 978-5-09-016000-1

The book describes the laboratory works on oscillations and waves that can be performed using training (at school) or domestic (at home) equipment.

A. A. Yablonskii and S. S. Noreiko, *Course of the Theory of Oscillations*, 5th ed. (BKhV-Peterburg, St. Petersburg, 2007). ISBN 978-5-94157-989-1

The authors demonstrate the application of matrices to the study of natural and forced oscillations of systems. The book contains a chapter devoted to electromechanical analogs and their application to oscillation studies. This chapter considers the construction of electric models serving as analogs of mechanical systems. Principles of electric modeling of mechanical systems are considered. Examples with detailed solutions and test questions are presented.

2. NONLINEAR ACOUSTICS (three books)

I. B. Abbasov, *Scattering of Nonlinearly Interacting Acoustic Waves: A Sphere, a Cylinder, and a Spheroid* (Fizmatlit, Moscow, 2007). ISBN 978-5-9221-0863-8

The problems of diagnosing inhomogeneities of the water medium (a sphere, a cylinder, and a spheroid) by a parametric hydroacoustic array are considered. Scattering of nonlinearly interacting plane acoustic waves by such bodies is studied. By the method of successive approximations, solutions to the inhomogeneous wave equation are obtained in the first and second approximations. Scattering diagrams are constructed. The book is intended for researchers in nonlinear and ocean acoustics, as well as for postgraduate and graduate students.

V. E. Nazarov and A. V. Radostin, *Nonlinear Wave Processes in Elastic Microinhomogeneous Media* (IPF RAN, Nizhni Novgorod, 2007). ISBN 978-5-8048-0063-6

The book is devoted to the interaction of longitudinal waves in microinhomogeneous solid media possessing strong acoustic nonlinearity (elastic, hysteretic, or inelastic one). Such media include various types of rock, soil, granular media, polycrystalline metals, and structural materials. The description of nonlinear waves is based on approximate and exact analytical methods and numerical simulation. Contents: Chapter 1. Physical models and mechanisms of acoustic nonlinearity; Chapter 2. Wave processes in microinhomogeneous media with inertialess hysteretic nonlinearity; Chapter 3. Wave processes in nonlinear microinhomogeneous media with relaxation; Chapter 4. Wave processes in polycrystalline solids with dislocation dissipative and reactive nonlinearity; Chapter 5. Experimental studies of nonlinear acoustic effects in polycrystalline rocks and metals; Chapter 6. Experimental studies of nonlinear acoustic effects in granular media; Chapter 7. Experimental studies of nonlinear seismoacoustic effects under field conditions.

O. V. Rudenko, S. N. Gurbatov, and K. M. Hedberg, *Nonlinear Acoustics in Problems and Examples* (Fizmatlit, Moscow, 2007). ISBN 5-9221-0761-5

Foundations of nonlinear acoustics are described. The material is represented in the form of problems with solutions, comments, and answers. Unlike other books, this one allows a reader not only to become acquainted with nonlinear wave processes and methods of their description, but also to master the technique of calculation and to obtain numerical estimates of the main parameters. In this way, one can learn how to carry out research in the given area. The book should be useful for postgraduate and graduate students and researchers specializing in physics of nonlinear waves and acoustics. Contents: Chapter 1. Simple waves; Chapter 2. Plane nonlinear waves with discontinuities; Chapter 3. Nonlinear waves in dissipative media. The Burgers equation; Chapter 4. Spherical and Cylindrical waves. Nonlinear beams; Chapter 5. Acoustic noise of high intensity; Chapter 6. Model problems of nonlinear diagnostics; Chapter 7. Focused nonlinear beams and nonlinear geometric acoustics; Chapter 8. Nonlinear problems of different types. This book is recommended by the department of university education of the Ministry of Education of Russian Federation as a textbook for university students specializing in physics, physics of open nonlinear systems, and fundamental radio physics and physical electronics.

2.1. Nonlinear Dynamics (eight books)

A. I. Grigor'ev, A. V. Klimov, S. V. Chernikov, and A. V. Prisyazhnyuk, *Parametric and Nonlinear Waves on a Charged Surface of a Fluid* (Yar. Gos. Univ., Yaroslavl', 2007). ISBN 978-5-8397-0572-2

V. T. Grinchenko, V. T. Matsypura, and A. A. Snarskii, *Introduction to Nonlinear Dynamics: Chaos and Fractals*, 2nd ed. (LKI, Moscow, 2007). ISBN 978-5-382-00063-3

The phenomenon of dynamic chaos in nonlinear systems is described. The discovery of chaotic regimes in nonlinear systems that are modeled by deterministic relations is one of the most important scientific achievements of the second half of the twentieth century. The authors present the data on fractal structures, which can be encountered in many natural phenomena and which are used to describe chaotic processes in nonlinear systems.

V. A. Demin, *Shock Waves* (Perm Gos. Univ., Perm, 2007). ISBN 5-7944-0955-X

Yu. L. Klimontovich, *Turbulent Motion and Structure of Chaos: A New Approach to Statistical Theory of Open Systems*, 2nd ed. (KomKniga, Moscow, 2007). ISBN 978-5-484-00899-9

The author describes the ideas and methods of statistical theory of open systems. He considers the following problems: criteria of relative degree of ordering for complex motions; relation between the dynamic and statistical descriptions, role of the dynamic instability of motion in the statistical theory; the Gibbs ensemble for nonequilibrium processes, transition from reversible equations of dynamics to irreversible equations, fluctuation–dissipation relations; molecular and turbulent sources of fluctuations in open systems; turbulent motion and dissipative structures.

Nonlinear Waves 2006, Ed. by A. V. Gaponov-Grekhov and V. I. Nekorkin (Inst. Prikl. Fiziki RAN, Nizhni Novgorod, 2007). ISBN 978-5-8048-0061-2

This is a collection of survey lectures and original papers presented at the 13th Workshop on nonlinear waves. The subjects of lectures and papers include space–time chaos; structure formation; wave dynamics; nonlinear phenomena in optics, in plasma, and at the interaction of ultrastrong fields with matter; mathematical problems of nonlinear dynamics; and other problems of nonlinear wave dynamics. As for the papers immediately related to acoustics, they include a review devoted to topical problems of nonlinear acoustics and a review of nonlinear mathematical models, exact solutions, and methods of analysis.

A. Scott, *Nonlinear Science: Emergence and Dynamics of Coherent Structures*, 2nd ed. (Fizmatlit, Moscow, 2007) [Russian translation]. ISBN 5-9221-0784-6

The basic models of nonlinear science, their properties and methods of investigation are described. Almost all of the well-known equations of nonlinear wave processes are considered. In addition to the basic notions of the theory of wave processes, modern methods based on the theory of scattering and theory of perturbations are presented. The problems of the dynamics of nonlinear quantum-mechanical lattices are considered. Contents: Chapter 1. Emergence of a paradigm; Chapter 2.

Linear wave theory; Chapter 3. Equations of a classical soliton; Chapter 4. Systems with reaction and diffusion; Chapter 5. Nonlinear lattices; Chapter 6. Methods of the inverse scattering problem; Chapter 7. Theory of perturbations; Chapter 8. Solitons in quantum lattices; Chapter 9. Prospects of nonlinear science. This book should be useful to all of those who intend to learn in detail the foundations of nonlinear science and to familiarize with its latest achievements.

A. V. Khoherstkov, *Computer Simulation of Nonlinear Waves* (Volgogr. Nauch. Izd., Volgograd, 2007). ISBN 978-5-98461-361-3

L. V. Yakushevich, *Nonlinear Physics of DNA* (Reg. i Chaotich. Dinamika, Izhevsk, 2007). ISBN 978-5-93972-638-2

A DNA molecule is considered as an object of nonlinear physics. The book contains a set of experimental and theoretical data on nonlinear properties of this molecule. Beginning from the chapters devoted to structure and dynamics of DNA, the book introduces nonlinear models to the reader. Linear and nonlinear approaches are compared, the statistics of nonlinear excitations of DNA is considered, and examples of interpreting experimental data in terms of the nonlinear theory are presented. The book survived two editions in English. Contents: Chapter 1. The structure of DNA; Chapter 2. The dynamics of DNA (torsional and flexural motions); Chapter 3. Functioning of DNA; Chapter 4. The linear theory of DNA (the elastic bar model, phonons, and velocity of sound); Chapter 5. The nonlinear theory of DNA: ideal dynamic models (elastic bar models); Chapter 6. The nonlinear theory of DNA: nonideal models; Chapter 7. The nonlinear theory of DNA: statistics of nonlinear perturbations; Chapter 8. Experimental studies of the nonlinear properties of DNA; Chapter 9. Nonlinearity and functioning of DNA; Appendix A. Mathematical description of torsional and flexural motions; Appendix B. Structural and dynamic parameters of DNA.

3. PHYSICAL ACOUSTICS (nine books)

K. S. Aleksandrov, B. P. Sorokin, and S. I. Burkov, *Effective Piezoelectric Crystals for Acoustoelectronics, Piezoelectric Engineering, and Sensors* (Sib. Otdel. RAN, Novosibirsk, 2007), Vol. 1. ISBN 978-5-7692-0914-7, 978-5-7692-0913-0

Physical properties of piezoelectric crystals are considered, including crystals used in practice and crystals that are promising as materials for piezoelectric engineering and acoustoelectronics. The thermodynamic approach to determination of linear and nonlinear electromechanical properties is described. Properties of elastic waves, their existence, propagation, reflection, refraction, and transformation are considered. Data on the linear and nonlinear physical properties of a number of most effective piezoelectric materials are presented, including the data on crystals isomorphic to langasite,

which are promising substitutes for quartz. Applications of piezoelectric materials in resonators and SAW devices, as well as in sensors made on the basis of resonators and SAW devices, are analyzed. Contents: Chapter 1. Thermodynamic description of electromechanical properties and the equations of state of acentric crystals; Chapter 2. Elastic waves in piezoelectric crystals; Chapter 3. Physical properties of crystals isomorphic to α -quartz; Chapter 4. Physical properties of crystals isomorphic to langasite; Chapter 5. Physical properties of crystals isomorphic to lithium metaniobate; Chapter 6. Physical properties of crystals isomorphic to germanium sillenite; Chapter 7. Areas of application of piezoelectric crystals.

A. A. Blistanov, *Crystals of Quantum and Nonlinear Optics* (Mosk. Inst. Stali i Splavov, Moscow, 2007). ISBN 978-5-87623-182-6

Fabrication, structure, defects, and properties of crystals used in laser optics, nonlinear optics, and acoustooptics are considered. The physics of the phenomena underlying the application of crystals is described, which makes it possible to justify the quality criterion for them. The problems of fabricating thin crystalline layers are topical in connection with the development of integral optics.

N. B. Brandt and V. A. Kul'bachinckii, *Quasiparticles in Condensed State Physics* (Fizmatlit, Moscow, 2007). ISBN 978-5-9221-0813-3

The quasiparticle concept that allows one to estimate excitations of ensembles of strongly interacting particles as a weakly nonideal gas of elementary excitations is considered, and various applications of this concept are described. In addition to phonons, excitons, and plasmons, the authors consider quasiparticles of the new generation: holons, spinons, vortexons, quasiparticles with fractional statistics and fractional and variable charge, as well as hybrid and compound quasiparticles.

I. S. Kol'tsova, *Propagation of Ultrasonic Waves in Heterogeneous Media* (S.-Peterb. Univ., St. Petersburg, 2007). ISBN 978-5-288-04264-5

The book generalizes experimental studies of ultrasonic wave propagation in a number of heterogeneous systems: suspensions; emulsions; liquids with gas bubbles; and porous, composite, and multiphase heterogeneous systems. The experimental results are explained with the use of the theories proposed by well-known specialists in physics of inhomogeneous media. The purpose of the book is the development of the physics of ultrasound in heterogeneous systems.

A. I. Morozov, *Physics of Solid State. Crystal Structure. Phonons* (Mosk. Gos. Inst. Radiotekh., Electron. i Avtomatiki, Moscow, 2007). ISBN 5-7339-0602-2

V. I. Novozhilov, *Diffraction of Electromagnetic Waves by Standing Acoustic Waves. Polarization of Electromagnetic Waves* (Mosk. Avtodor. Inst., Moscow, 2007) [Laboratory training works in physics].

R. E. Newnham, *Properties of Materials: Anisotropy, Symmetry, Structure* (Reg. Khaotich. Dinamika, Izhevsk, 2007). ISBN 978-5-93972-634-4

This book is an introductory course in physical properties of materials. Contents: Chapter 1. Introduction; Chapter 2. Transformations; Chapter 3. Symmetry; Chapter 4. Conversion operators for symmetry elements; Chapter 5. Tensors and physical properties; Chapter 6. Thermodynamic relations; Chapter 7. Specific heat and entropy; Chapter 8. Pyroelectricity; Chapter 9. Dielectric constant; Chapter 10. Stress and strain; Chapter 11. Thermal expansion; Chapter 12. Piezoelectricity; Chapter 13. Elasticity (coefficients, polycrystals, temperature coefficients, and quartz resonators); Chapter 14. Magnetic phenomena (piezomagnetism); Chapter 15. Nonlinear phenomena (nonlinear elastic properties, electrostriction, magnetostriction, electromagnetostriction, and pseudopiezoelectricity); Chapter 16. Iron crystals (ferroelasticity, ferrobielasticity, ferroelastoelectricity, and ferromagnetoelasticity); Chapter 17. Resistivity; Chapter 18. Thermal conductivity; Chapter 19. Diffusion and ionic conduction; Chapter 20. Galvanomagnetic and thermomagnetic phenomena; Chapter 21. Thermoelectricity; Chapter 22. Piezoelectric resistance; Chapters 23 and 24. Acoustic waves (the Christoffel equation, hexagonal crystals, pure modes, surface acoustic waves, piezoelectric media, and nonlinear acoustics); Chapter 25. Crystal optics; Chapter 26. Dispersion and absorption; Chapter 27. Photoelasticity and acoustooptics; Chapter 28. Electrooptic phenomena. Chapter 29. Nonlinear optics. Chapter 30. Optical activity and enantiomorphism; Chapter 31. Magneto-optics; Chapter 32. Chemical anisotropy.

V. N. Rudenko, *Search for Gravity Waves* (Vek 2, Fryazino, 2007). ISBN 978-5-85099-171-5

This book is devoted to the efforts to construct gravity-wave detectors. For this purpose, solid ingot antennas possessing a high Q factor are manufactured. They can experience resonance oscillations under the action of a gravity wave of a suitable frequency. To avoid noise due to thermal vibrations of atoms in the antenna, the ingot, whose mass reaches several tons, is cooled to a temperature of 0.01 K. Several supercryogenic detectors wait for the arrival of gravity pulses, but still without success. One may hope that space-time waves will arrive from giant natural generators: binary neutron stars, supernova explosions, and similar space disasters. The extremely high sensitivity of modern gravity antennas is achieved with great intellectual and technical efforts. Contents: Space-time waves; What do we expect? Can this be detected? Natural detectors; New generation of antennas; The blind search algorithms; Relict gravity-wave background; Cosmic detectors; Search for astrogravity correlations.

O. A. Sinkevich, *Acoustic Waves in Plasma and in Solids* (Izd. Dom MEI, Moscow, 2007). ISBN 978-5-383-00005-2

This is a textbook for students in solid state physics, plasma physics, and waves and instabilities in continuous media.

4. OCEAN ACOUSTICS AND UNDERWATER SOUND (ten books)

L. M. Brekhovskikh and Yu. P. Lysanov, *Theoretical Foundations of Ocean Acoustics* (Nauka, Moscow, 2007). ISBN 978-5-02035811-9

This book is based on the third English edition of the monograph *Fundamentals of Ocean Acoustics* by Brekhovskikh and Lysanov. It is complemented with new materials, as compared to the Russian book published in 1982 under the title *Theoretical Foundations of Ocean Acoustics*. The new book represents an up-to-day introduction to the theory of sound propagation in the ocean. The ray approximation and the wave propagation of sound are described. Statistical problems and scattering of sound by rough surfaces and random inhomogeneities are considered. Special attention is paid to the following problems: intrathermocline lenses and their influence on sound fields; weakly divergent beams; acoustic tomography of the ocean; coupled modes; sound scattering by anisotropic inhomogeneities with fractal spectra; and small-slope approximation in the theory of sound scattering by a rough sea surface. The list of references is complemented with latest works including experimental and theoretical data. Contents: L.M. Brekhovskikh and his scientific school; Chapter 1. Ocean as an acoustic medium; Chapter 2. Ray theory of the sound field in the ocean; Chapter 3. Surface and bottom reflections of sound in the ocean: Plane waves; Chapter 4. Surface and bottom reflections of sound in the ocean: A point source; Chapter 5. Propagation of sound in shallow water; Chapter 6. The underwater sound channel; Chapter 7. A range-dependent waveguide; Chapter 8. Antiwaveguide propagation of sound; Chapter 9. Scattering of sound by rough surfaces; Chapter 10. Sound propagation in the ocean as in a randomly inhomogeneous medium; Chapter 11. Scattering and absorption of sound by gas bubbles in water; The main dates in the life and career of Academician L.M. Brekhovskikh; The main scientific works by Academician L.M. Brekhovskikh.

V. A. Gordienko, *Vector-Phase Methods in Acoustics* (Fizmatlit, Moscow, 2007). ISBN 978-5-9221-0864-5

The author describes the approach used for acoustic field measurements that is known in Russia as “vector-phase methods”. The book is an extended version of the course of lectures given by the author at the Faculty of Physics of the Moscow State University. Contents: Chapter 1. General information on scalar and vector characteristics of acoustic fields; Chapter 2. Vector-

phase structure of the field of a signal from a deterministic source in the ocean; Chapter 3. Vector-phase structure of the field of a signal from a deterministic source in a randomly inhomogeneous ocean: Superlow-frequency fluctuations; Chapter 4. Vector-phase structure of noise fields in the ocean; Chapter 5. Noise immunity of combined receiving systems; Chapter 6. A vector receiver as the basis of measuring systems; Chapter 7. Metrological support of vector-phase measurements; Chapter 8. Some aspects of practical application of vector-phase methods; Chapter 9. Specific features of using vector-phase methods in the infrasonic range and some environmental aspects. The book is intended for graduate and postgraduate students and specialists interested in the potential of vector-phase methods in solving various acoustic problems: detection of weak sound sources against noise, bioacoustic and environmental problems, and earthquake forecasting.

V. A. Gordienko and V. N. Nekrasov, *Vector-Phase Measurements in Underwater Acoustics: Certain Aspects of Using Acoustic Power Flux for Providing Unified Hydroacoustic Measurements under Sea Test Site Conditions* (VNIIFTRI, Moscow, 2007). ISBN 978-5-903232-01-9

The purpose of this book is to describe the basis of the concept of vector-phase measurements in acoustics in sufficient detail for analyzing the characteristics of acoustic systems. A considerable part of the book is devoted to the problems of metrological support for acoustic field measurements by receiving systems made on the basis of vector receivers, their calibration and testing. The material is based on the experimental data and theoretical works by a group of researchers from the Department of Acoustics of the Moscow State University and the data of full-scale experiments carried out in the White Sea and in the Finnish Bay of the Baltic Sea by researchers from VNIIFTRI. Contents: Chapter 1. Foundations of the concept of vector-phase methods for describing acoustic fields; Chapter 2. Vector-phase structure of the field of a signal in the ocean; Chapter 3. Vector-phase structure of noise fields in the ocean; Chapter 4. Noise immunity of the acoustic power flux: Analysis of the problem; Chapter 5. Problems of metrological support of vector-phase measurements; Chapter 6. Results of studying the vector-phase structure of fields under full-scale conditions.

Far-Eastern Seas of Russia: Vol. 4. Physical Methods of Investigation, Ed. by V. A. Akulichev (Nauka, Moscow, 2007). ISBN 978-5-02-036181-2

Experimental and theoretical-modeling data for various processes and phenomena in the Far-Eastern seas of Russia are presented. The data are obtained with the use of the new physical methods (laser-interference and geoaoustic ones) that were developed in the last few years at the Il'ichev Pacific Oceanological Institute, Far-East Division, Russian Academy of Sciences. The book is for specialists in earth sciences, graduate and postgraduate students and professors.

A. V. Kistovich and K. V. Pokazeev, *Foundations of Ocean Acoustics* (MAKS Press, Moscow, 2007). ISBN 5-317-01683-5, 978-5-317-02189-4

V. I. Klyachkin, *Probabilistic Problems of Statistical Hydroacoustics: Part 1. Boundary-Contact Problems* (Nauka, St. Petersburg, 2007). ISBN 978-5-02-025126-7, 978-5-02-025127-4

Yu. A. Kuznetsov and M. Yu. Kuznetsov, *Substantiation and Development of Methods and Means for Fishing Bioacoustics* (Dal'rybvtuz, Vladivostok, 2007). ISBN 5-91162-008-1

G. V. Loskutova and K. I. Polkanov, *Spatial-Frequency and Frequency-Wave-Number Methods for Describing and Processing Hydroacoustic Fields* (Nauka, St. Petersburg, 2007). ISBN 5-02-025034-1

The authors describe the theory and methods of digital implementation of processing algorithms based on multidimensional (in time and space) Fourier transformations of hydroacoustic fields. For specific problems of signal detection and evaluation of signal parameters and for the problem of determining the speed of a vessel, the authors present a mathematical description and show the relation between the digital processing algorithms in the spatial-frequency and frequency-wave-number domains. Practical problems of designing digital systems for spatiotemporal processing of hydroacoustic data are considered.

I. B. Starchenko, *Dynamic Chaos in Hydroacoustics* (LKI, Moscow, 2007). ISBN 978-5-382-00057-2

The theory of dynamic chaos is described in application to hydroacoustic problems. Classical and nonlinear dynamics of oscillatory systems is considered, and notions of stability of motion, phase plane, and phase portrait are introduced. The difference between the classical types of motion and a chaotic motion is demonstrated. Characteristics of chaos and methods of experimental processing and representation of chaotic data are described. Examples taken from hydroacoustics and demonstrating an acoustic chaos (bubble oscillations in a liquid, cavitation, ray chaos, and nonlinear propagation of sound) are given. A software for data processing by the methods of nonlinear dynamics is described. Contents: Chapter 1. Classical dynamics of linear and nonlinear systems; Chapter 2. Nonlinear dynamics and a deterministic chaos; Chapter 3. Examples of an acoustic chaos; Chapter 4. Propagation of acoustic waves in nonlinear media and a dynamic chaos.

I. B. Starchenko and V. I. Timoshenko, *Stochastic and Dynamic Models in Acoustics and Biomedicine* (Rost. Gos. Univ., Rostov-on-Don, 2007). ISBN 5-7509-1234-5

The authors systematize the material on modeling hydroacoustic and biological systems and processes. The first part of the book describes imitating operator models of parametric arrays. Characteristic features of the models are studied by the decomposition method. Mathematical models of parametric array operation in

media with deterministic and statistical inhomogeneities are considered. Results of laboratory-scale modeling are presented. Dynamic models of nonlinear interaction between acoustic waves in water are considered. The second part of the book studies the models of the human speech system and speech signals; mathematical, acoustic, and mechanical models are considered. Speech signals are analyzed by the methods of nonlinear dynamics. The book partially consists of original studies.

5. ATMOSPHERIC AND AIR-BORNE ACOUSTICS (three books)

E. B. Kudashev and L. R. Yablonik, *Turbulent Wall Pressure Fluctuations in Connection with Aerohydrodynamic Noise Control Problems* (Nauchnyi Mir, Moscow, 2007). ISBN 978-589-176-463-7

This monograph is devoted to the problem of non-stationary action of turbulent flows on the elements of structures around which the flows move (ship hulls, airplane fuselages, etc.) and the accompanying aerodynamic noise generation. Much attention is paid to experimental studies of the field of turbulent pressure fluctuations. The first part of the book is devoted to statistical properties of the fields of pressure fluctuations in a turbulent boundary layer. Chapters 1–4 describe the studies of statistical characteristics, models, and methods of analysis of turbulent pressures. The second part considers practical problems and examples of experimental studies of wall pressure fluctuations (Chapters 5–7). The third part (Chapters 8–11) investigates turbulent pressure fluctuations in connection with the problems of aerohydrodynamic noise generation in various types of technical systems.

A. F. Kurbatskiĭ, *Introduction to Modeling of Momentum and Scalar Transfer in Turbulence* (Geo, Novosibirsk, 2007). ISBN 978-5-9747-0077-4

The physical foundations of the mechanics of turbulence are described to an extent sufficient for turbulent flow modeling. The author concentrates on constructing the models of momentum, heat, and mass transfer in turbulence with the use of the RANS (Reynolds Average Navier–Stokes) approximation. The efficiency of both RANS approximation and two- and three-parametric turbulence models obtained on its basis is illustrated by the results of computer simulation of thermally stratified flows in the atmospheric boundary layer and turbulent flows with imposed vorticity.

V. G. Pimshtein, *The Structure of the Near Acoustic Field of a Supersonic Jet: An Atlas* (TsAGI, Moscow, 2007).

The author presents the results of a systematic experimental study of the near field structure for supersonic jets. The study was performed using cold air jets issuing from supersonic nozzles, which had the diameters of outlet cross sections $D = 10\text{--}40$ mm and the rated Mach numbers at the nozzle outlet $M = 1, 1.5, 2, 2.5, 3$,

and 3.5 with the total pressure varying from 3.9 to 76.3 atm. The results of the studies are presented in the form of lines of equal rms sound pressure levels in octave frequency bands in the near field of a jet (the field size up to $50D \times 30D$), narrowband noise spectra at two characteristic points of the near field, and shadow patterns of jets under the given outflow conditions.

6. ACOUSTICS OF STRUCTURALLY INHOMOGENEOUS MEDIA. GEOLOGICAL ACOUSTICS (seventeen books)

V. V. Adushkin and A. A. Spivak, *Underground Explosions* (Nauka, Moscow, 2007). ISBN 978-5-02-034263-7

A new approach to describing the consequences of large-scale underground explosions is proposed. It is based on comprehensive consideration of an explosion, beginning from the mechanics of formation of the expanded cavity and zones of irreversible behavior of the medium to the determination of the time of ejection of explosion products to atmosphere. The authors consider the mechanical effects and the influence of the tectonic structure of the medium on the process of its fracture and on the formation of compression waves. The book is intended for researchers and specialists in geomechanics involved in mining engineering and underground construction.

T. S. Blinova, *Geodynamics and Seismicity* (Perm Gos. Univ., Perm, 2007). ISBN 5-7944-0889-8

V. I. Bondarev, *Seismic Prospecting* (Ural Gos. Gorn. Univ., Yekaterinburg, 2007).

A. O. Vatul'yan, *Inverse Problems in Mechanics of a Deformed Solid* (Fizmatlit, Moscow, 2007). ISBN 978-5-9221-0835-5

Inverse problems of the mechanics of a deformed solid are considered: retrospective, boundary-value, coefficient-type, and geometric problems, in which, from additional experimental data on the solution, one determines the coefficients of differential operators, the initial conditions, the boundary conditions, and the geometry of internal defects (cavities and cracks). The foundations of general approaches used in the theory of inverse problems are described; specific features of iteration schemes and regularization methods that allow one to solve inverse problems of acoustics, viscoelasticity, electroelasticity, and thermal conduction are considered. Methods of constructing approximate solutions are proposed, and numerical results are presented.

G. A. Gamburtsev, *Scientific Heritage: Recondite Works and Materials from Archive* (Nauka, Moscow, 2007). ISBN 5-02-032919-3

This book contains the works by Academician G.A. Gamburtsev that were not included in the two-volume collection published in 2003. Part of the works included in the present book were published in journals

and books (mainly before 1941), and the other part was taken from the archive of Academician Gamburtsev. The works date back to 1930–1950s and are concerned with the development of gravimetry, experimental seismology, deep seismic sounding, and earthquake prediction. The latter problem attracts the main attention, because it is the subject of many unpublished materials containing ideas and theoretical developments that are still topical but remain unfinished because of the early death of the author. In addition, the previously unknown part of Gamburtsev's activity is revealed: his participation in the work on the detection of nuclear explosions by seismic methods. The book sheds light upon the style of scientific and organizational activities by Academician Gamburtsev and upon the development of geophysics in the Soviet Union.

E. Yu. Goshko, S. M. Zerkal', and E. A. Khogoev, *Computational Tomography and Dynamic Analysis in Seismic Studies* (Novosib. Gos. Univ., Novosibirsk, 2007). ISBN 978-5-94356-543-4

R. A. Dyagilev and D. A. Malovichko, *Microseismic Regionalization* (Perm, 2007). ISBN 5-7944-0948-7

M. S. Zhdanov, *Theory of Inverse Problems and Regularization in Geophysics* (Nauchnyi Mir, Moscow, 2007) [Russian translation]. ISBN 978-589-176-445-3

Direct and inverse problems are considered for potential, electromagnetic, and seismic geophysical methods. A full description of the theory of inversion is presented, and a close relation between the methods of interpreting different geophysical data is demonstrated.

K. K. Zapol'skiĭ, *Frequency–Time Studies of Seismic Vibrations* (IFZ RAN, Moscow, 2007), Part 2.

Yu. M. Zaslavskii, *Emission of Seismic Waves by Vibration Sources* (IPF RAN, Nizhni Novgorod, 2007).

The characteristics of wave fields of acoustic sources simulating the operation of seismic vibrators under simplest near-surface geostructure conditions are described. Contents: Chapter 1. Introduction; Chapter 2. The problem of elastic wave excitation in a semi-bounded elastic medium and the Lamb problem; Chapter 3. Wave perturbations generated in a homogeneous elastic half-space by variable force actions on the boundary; Chapter 4. Characteristics of elastic radiation in the case of the excitation of a layer–half-space system by oscillating force and moment; Chapter 5. Seismic characteristics of a small-size vibration source. Practical application of small-size seismic and hydroacoustic sources; Chapter 6. Analysis of the spatial structure and power of elastic waves generated by deep-seated sources; Chapter 7. Numerical simulation of seismic fields used in seafloor profiling; Chapter 8. Analysis of the efficiency of Biot wave generation in a two-component porous fluid-saturated medium by elementary sources; Chapter 9. Simulation of a seismic response of transportation means.

N. K. Kapustyan and F. N. Yudakhin, *Seismic Studies of Technogenous Effects upon the Earth Crust and Their Consequences* (UrO RAN, Yekaterinburg, 2007). ISBN 5-7691-1828-8

D. N. Krylov, *Detailed Prediction of the Geological Section in Seismic Prospecting* (Nedra, Moscow, 2007). ISBN 978-5-8365-0286-7

Problems related to interpretation of seismic data are considered. Special attention is paid to the application of the optimization method and to the methods of seismic modeling.

R. A. Movsesyan, *Seismic Geodesy: A New Branch of Geodynamics and Geodesy* (Tsentr Geokart, Yerevan, 2007). ISBN 978-99941-2-079-6

A. A. Pevzner, *Broadband Seismic Sources* (YaGPU, Yaroslavl', 2007). ISBN 978-5-87555-272-4

B. A. Spasskiĭ and I. Yu. Gerasimova, *Seismostratigraphy* (Perm Gos. Univ., Perm, 2007). ISBN 5-7944-0780-8

E. G. Fonbershteĭn and S. P. Ėkomasov, *Processes of Seismic Wave Generation by a Pulsed Ground-based Source* (MT2, Moscow, 2007).

E. I. Shemyakin, *Dynamic Problems of the Theory of Elasticity and Plasticity*, 2nd ed. (NNTsGP-IGD im. A.A. Skochinskogo, Moscow, 2007).

The problems of the mechanics of rock and geophysical applications are considered. The first part is devoted to perfectly elastic media. The second part presents the results for the waves caused by an underground explosion. Experimental results obtained in the near zone of an explosion are compared, and the seismic effect is demonstrated.

7. ENVIRONMENTAL ACOUSTICS. NOISE AND VIBRATION (ten books)

S. V. Antonenko, *Vibration of Ships* (DVG TU, Vladivostok, 2007). ISBN 978-5-7596-0690-5

Safety of Life, Ed. by A. I. Sidorov (KNORUS, Moscow, 2007). ISBN 978-5-85971-442-1

Data on the negative effects produced on a human organism by the main factors of industrial medium are presented. Methods and means used for ensuring the safety of industrial activities are described. Information on the legislation regulating the safety measures in industry is given. Contents: Chapter 1. Theoretical foundations of the safety of life; Chapter 2. Classification of the negative factors of industrial medium and conditions of work; Chapter 3. Air in the zone of work; Chapter 4. Light at workplaces; Chapter 5. Vibration; Chapter 6. Noise, infrasound, and ultrasound as adverse acoustic factors in industry; Chapter 7. Electromagnetic fields and radiations; Chapter 8. Ionizing radiations; Chapter 9. Foundations of electric safety; Chapter 10. Static electricity; Chapter 11. Fire safety; Chapter 12. Certification of workplaces according to working conditions. Certification of measures taken to

provide the safety of work; Chapter 13. Organizational and juridical problems of ensuring the safety of life.

E. K. Borisov et al., *Experimental Dynamics of Structures. Monitoring of Transport Vibration* (KamchatGTU, Petropavlovsk-Kamchatskii, 2007). ISBN 978-5-328-00160-1

A. V. Vasil'ev, *Acoustic Ecology of a City* (TGU, Tol'yatti, 2007). ISBN 5-8259-0334-8

V. D. Volkov, *Vibration Processes and Automation Objects in Construction* (Voronezh. Gos. Arkhit.-Stroit. Univ., Voronezh, 2007).

This is a textbook for students specializing in automation of technological processes and productions (construction).

M. S. Gabdrakhimov and N. M. Gabdrakhimov, *Vibration Equipment and Technology for Work in Wells* (Nedra, St. Petersburg, 2007). ISBN 5-94089-095-4

Application of vibrators in wells is considered. Structures of different vibrators are presented. Theoretical foundations for calculating the dynamics of low-frequency vibrators are given. The effect of wave action on various technological processes is studied.

B. L. Gerike, I. L. Abramov, and P. B. Gerike, *Vibrodiagnostics of Mining Machines and Equipment* (GU KuzGTU, Kemerovo, 2007). ISBN 978-5-89070-581-5

This is a textbook for students specializing in mining machines and equipment.

N.A. Evstigneeva and S.V. Karev, *Protection Against Noise* (MADI (GTU), Moscow, 2007).

This is a manual for student's laboratory studies. The book contains information on sound, noise sources of natural and technogenous origins, biological effects of noise on human organism, allowed noise levels, and methods and means of noise protection. A method of testing the efficiency of acoustic means of collective noise protection is described.

N. V. Korneev, *Methods of Prediction and Control of Vibration in Flexible Systems of Turbine Plants* (Kompaniya Sputnik, Moscow, 2007). ISBN 978-5-364-00785-8

N. V. Pinchuk, *Psychoacoustics and Effect of Noise* (Rech', St. Petersburg, 2007). ISBN 978-5-92680-557-1

Foundations of psychological acoustics as interdisciplinary area of knowledge in psychology, physics, and physiology are described. The basic approaches to studying many-sided noise actions on human organism are presented, specifically: how noise is perceived by a human and how noise affects the self-regulation, sleeping, and cognitive processes? The problem of noise at schools and kindergartens is considered from the viewpoint of its effect on children, who also represent a noise source, as well as on kindergarteners and teachers.

8. ROOM ACOUSTICS. MUSICAL ACOUSTICS (eight books)

S. V. Belyaev, *Room Acoustics*, 2nd ed. (LKI, Moscow, 2007). ISBN 978-5-382-00187-6

Practical data on room acoustics are presented. These data are sufficient for the design, arrangement, and exploitation of rooms without violating the principles of acoustic comfort. The book is separated into three parts according to the contents. The first part describes the technical characteristics of sound and the conditions of its propagation in rooms. The second part describes the means of making rooms acoustically comfortable from the viewpoint of intensity, clarity, and richness of sound. The third part describes the methods of sound insulation with justification and examples.

G. N. Bratilov, *Bells of World's Nations* (PROBEL-2000, Moscow, 2007) [An encyclopedia in 2 volumes]. ISBN 978-5-98604-096-7

A. N. Dolzhanskiĭ, *A Concise Musical Dictionary*, 7th ed. (Lan', St. Petersburg; Planeta Muzyki, St. Petersburg, 2007). ISBN 978-5-8114-0231-1

The dictionary contains more than 3000 articles.

V. O. Knudsen, *Architectural Acoustics*, 4th ed. (KomKniga/LKI, Moscow, 2007) [Russian translation]. ISBN 978-5-484-00939-8/5-484-00939-1/978-5-382-00272-9

In this book, the material is presented in the simplest form, so that the basic principles can be understood by both specialists and atechnic readers. The book is separated into three parts: the first part contains the foundations of physical and physiological acoustics, the second part contains the methods of acoustic measurements and calculations, and the third part is devoted to the problems of acoustic design of buildings. At the end of the third part, several appendices are given, including the list of acoustic terms accepted in United States and a collection of problems and exercises.

I. M. Krasil'nikov, *Electromusical Instruments* (OOO MTs Iskustvo i Obrazovanie, Moscow, 2007).

The author gives a review of electromusical instruments. He proposes an hierarchy for them on the basis of the passage from fundamental features determined by their structure to the features governing their artistic application. This approach allows characterization of the entire class of such instruments.

J. Lyford, *Reason 3 for Windows and Mac* (NT Press, Moscow, 2007). ISBN 5-477-00196-8

A. V. Sevashko, *Sound Direction and Phonogram Recording: A Professional Manual* (Dodéka, Moscow, 2007). ISBN 978-5-94120-158-7

The book describes the acoustics of rooms and musical instruments, psychoacoustics, creation of a three-dimensional sound pattern with the help of two-channel stereophony, application of multichannel systems of Dolby Stereo type, and the use of analog and digital sound-recording technologies. Contents: Chap-

ter 1. Sound: from generation to perception; Chapter 2. Volume and dynamics of sound; Chapter 3. Foundations of the theory of pitch; Chapter 4. Psychoacoustic evaluation of the timbre and pitch of sound; Chapter 5. Musical standards of pitch, or an excursus for technical specialists who forgot the theory of music; Chapter 6. Architectural acoustics; Chapter 7. Protection against acoustic noise; Chapter 8. Modeling of acoustics; Chapter 9. The boominess radius and the acoustic ratio; Chapter 10. The phonogram quality criteria; Chapter 11. Theoretical foundations of stereophony, or three-dimensional sound: paradoxes without mysticism; Chapter 12. Methods of mounting the columns for listening to stereophonic phonograms; Chapter 13. Practical experience in stereophonic recording; Chapter 14. Variant of photographic technology of polymicrophone recording; Chapter 15. Three- and more-than-three-channel stereophony; Chapter 16. Acoustics of instruments generating music; Chapter 17. Percussion instruments; Chapter 18. Celeste; Chapter 19. Clavecin; Chapter 20. Piano; Chapter 21. Wind instruments; Chapter 22. Organ; Chapter 23. Button accordion, accordion, and mouth organ; Chapter 25. Contrabass; Chapter 26. Acoustic guitar; Chapter 27. Electric guitar; Chapter 28. Bass guitar; Chapter 29. Harp; Chapter 30. Teams of musicians with limited sets of instruments; Chapter 31. Orchestra; Chapter 32. Lamp or semiconductor: is it worth the expenses? Chapter 33. Microphones; Chapter 34. Control acoustic systems and stereo headphones; Chapter 35. Analog tape recorders; Chapter 36. Attention, digitization is applied! Chapter 37. Sound director and level indicators: who is right? Chapter 38. Is it possible to teach sound direction? Chapter 39. Sound recording under the law; Chapter 40. Professional risks.

L. Euler, *Experience of a New Musical Theory Clearly Described According to the Principles of Harmony* (Nestor-Istoriya, St. Petersburg, 2007) [Russian translation]. ISBN 978-598187-202-0

The book is published in connection with the 300th jubilee of Leonard Euler. His name is related to a great number of mathematical and mechanical notions included in textbooks. Many of his works were of practical significance, for example, in optics, theory of ships, theory of turbines, determination of longitude, theory of gears in machines and mechanisms, and map-making for the Russian Empire. Among the works by Euler, a special place is occupied by his tractate written in Latin and entitled "Experience of the New Theory of Music" ("Tentamen novae theoriae musicae ex certissimis harmoniae principiis dilucide expositae" (St. Petersburg, 1739)). The foreword contains two papers on Euler and his theory of music. Contents: Chapter I. Sound and auditory perception; Chapter II. Agreeability and principles of harmony; Chapter III. Music itself; Chapter IV. Consonances; Chapter V. Sequence of consonances; Chapter VI. Series of consonances; Chapter VII. Conventional names of various intervals; Chapter VIII. Musical types; Chapter IX. The diatonic-chro-

matic type; Chapter X. Other more complex musical types; Chapter XI. Consonances in the diatonic-chromatic type. Chapter XII. Modes and systems in the diatonic-chromatic type; Chapter XIII. Method of composition in a given mode and a given system; Chapter XIV. Change of modes and systems.

9. ACOUSTIC SIGNAL PROCESSING AND COMPUTER SIMULATION (ten books)

I. A. Aldoshina, É. I. Vologdin, A. P. Efimov, and Yu. A. Kovalgin, *Electroacoustics and Broadcasting* (Goryachaya liniya-Telekom, Moscow, 2007). ISBN 5-93517334-4

The authors consider the principles of constructing a broadcasting system; signal characteristics; microphones, loudspeakers, and telephones; sound amplification, insonification, and radio service; systems of radio and wire broadcasting; methods and devices for signal transformation at the stages of their formation, recording, transmission through communication channels, and reproduction; sound equipment of radio studios and TV centers; channels of primary and secondary distribution of broadcasting programs; measurement and control in broadcasting. Special attention is concentrated on digital transformation and broadcast signal transmission, channel-forming equipment of intercity broadcasting channels, stereophonic broadcasting and sound channels of TV, and analog and digital systems of satellite-based broadcasting.

S. R. Garrigus, *Sound Forge 8: Power! The Official Guide* (Triumf, Moscow, 2007). ISBN 5-89392-204-2

This book explains how to work with the sound editing program Sound Forge 8. This is the official manual by Sony, which is intended to facilitate mastering the program by the users. All problems of audio data preparation are considered. Beginning from being introduced to the interface of the program, the reader masters step-by-step the methods of sound editing. Addition of special effects, work with MIDI, sampling, package processing of sound, preparation of multimedia for Web, and collective work with the ACID program—this is the list of the main subjects considered in the book.

G. S. Gendin, *Design and Calculation of Radio-Ham Acoustic Systems* (RadioSoft, Moscow, 2007). ISBN 5-93037-163-6, 978-5-93037-163-5

A systematic approach to the design of optimal acoustic systems for specific conditions is proposed. The physical meaning and the operation conditions of each individual element of a system is explained with the aim to determine the influence of each of the factors on the result of operation of the entire system. The book can be useful for radio hams and students specializing in radio engineering.

V. D. Dobykin, A. I. Kupriyanov, V. G. Ponomarev, and L. N. Shustov, *Radioelectronic Struggle: Force Defeat of Radioelectronic Systems* (Vuzovskaya Kniga, Moscow, 2007). ISBN 978-5-9502-0244-5

Foundations of the force methods of radioelectronic struggle are considered under the conditions of a strong conflict in information space. Principles of constructing devices of a force defeat of information systems operating in electromagnetic and acoustic fields are described. Versions of devices and systems of radioelectronic struggle are presented.

P. Kirn, *Real World Digital Audio* (Vil'yams, Moscow, 2007) [Russian translation]. ISBN 978-5-8459-1324-1, 0-321-30460-8

This is a practical manual of using computer technologies in sound recording. Contents: Chapter 1. Foundations of the theory of digital sound; Chapter 2. Choice of tools; Chapter 3. Mounting of studio equipment; Chapter 4. Preparation of a computer for work with sound; Chapter 5. Prompt outlines of composition with the use of midi- and audiosamples; Chapter 6. Recording of instruments and sounds; Chapter 7. Processing and effects; Chapter 8. Midi: notes, rhythms, and performance technique; Chapter 9. Methods of sound synthesis and the software tools; Chapter 10. Assemblage of a phonogram: arrangement and mixing; Chapter 11. Creation of a computer note score; Chapter 12. Music and sound for video; Chapter 13. Computer audio technologies on the stage.

Yu. A. Kovalgin, É. I. Vologdin, and L. N. Katsnel'son, *Stereophonic Broadcasting and Sound Recording* (Goryachaya liniya-Telekom, Moscow, 2007). ISBN 978-5-9912-0006-5

Stereophonic broadcasting and TV sound-track systems used in digital systems of broadcasting and TV are considered. Problems of noise-resistant coding, protection from digital errors, and compression of digital audio data are analyzed. Special attention is paid to characteristics of sound signals, sound systems of broadcasting and TV, equipment of broadcasting studios, Software for preparation of programs, and other monitoring means for radio stations. Physical foundations of magnetic tape recording are described. Data on wave losses and interference distortions typical of digital records are presented. Specific features of A/D and D/A converters based on PCM and delta-sigma modulation, problems of noise shaper design, and methods of channel and noise-resistant coding are considered. In addition, DAT, DASH, ADAT, DRTS, and hard-disk recorders and CD, Super Audio CD, and DVD-Audio optical systems are described.

I. Kvint, *Computer Assistance to a Guitarist: from Tuning to Making a Home Studio* (Piter, St. Petersburg, 2007). ISBN 978-5-469-01650-2

The book allows guitar and computer to become “friends. Emphasis is placed on specific features of using a computer by a guitarist so as to supply a “live” sound to audience with the help of digital technologies.

Programs facilitating and accelerating the study of guitar playing are described. They include tuners of guitar, generators of accords, and applications for translating a note record to tabulators. The book teaches one to produce guitar effects, to work with MIDI sound, to write and edit compositions, to use a computer in a "live" performance, and to arrange a home studio at small cost. The book is supplied with a CD containing the aforementioned programs.

M. Nelson, *Getting Started in Computer Music* (Éksmo, Moscow, 2007) [Russian translation]. ISBN 978-5-699-20939

Personal computers have produced a revolution in sound recording by allowing one to compose, play, make records, and publish musical compositions without leaving home. A computer can be the key to the world of musical industry, which recently seemed to be unavailable. The book is no technical manual and no guide to software application. It is written in a simple manner and demonstrates the possibilities offered by the use of computer in creation, performance, and recording of music.

O. B. Popov and S. G. Richter, *Digital Processing of Signals in Broadcasting Channels* (Goryachaya liniya-Telekom, Moscow, 2007). ISBN 5-93517-296-8

The authors analyze the characteristics of signals and channels of broadcasting. They consider mathematical procedures used in digital processing of signals; the ways of representation and the main processing algorithms for the signals in a broadcasting channel; and the signal distortions at all of the stages of its transmission. They also study the problems of objective evaluation of the broadcasting signal quality in systems not normalized by modern metrological systems.

A. A. Kharkevich, *Spectra and Analysis*, 4th ed. (LKI, Moscow, 2007). ISBN 978-5-382-00072-5

The author discusses the methods of spectral analysis used in the theory of oscillations, in acoustics, and in radio engineering. Contents: Chapter 1. Spectra; Chapter 2. Analysis; Chapter 3. Spectra of random processes.

10. ACOUSTICS OF ANIMATE SYSTEMS.

BIOLOGICAL ACOUSTICS (forty nine books)

N. A. Altyinnik, A. Yu. Blinov, N. N. Bondarenko, M. N. Bulanov, S. O. Kusovs, A. A. Morozova, N. V. Potapova, M. A. Ésetov, and E. V. Yudina, *Ultrasonic Fetometry: Tables and Nomograms*, Ed. by M. V. Medvedev, 7th ed. (Real Taim, Moscow, 2007). ISBN 5-900070-10-9, 5-900080-15-3

Specification indices elaborated by Russian and foreign authors for various fetometric parameters at different stages of pregnancy are presented together with specifications for evaluating the placenta, the amniotic fluid, and the uterus-placenta and fetal blood flows. The book contains schematic diagrams of the methods

used for determining various fetometric parameters. The book is intended for doctors specializing in prenatal ultrasonic examinations.

D. M. Aronov and V. P. Lupanov, *Functional Tests in Cardiology* (MEDpress, Moscow, 2007). ISBN 5-98322-268-6

The authors present functional tests and corresponding technologies used for examination of patients with cardiovascular disorders. Methodical and technical features of functional tests and criteria of their evaluation are considered. Diagnostic and prognostic potential of ultrasonic, radionuclide, tomographic, and other methods in application to ischemia, coronary atherosclerosis, hypertonia, and other heart and vessel disorders are analyzed. One of the purposes of this monograph is to assist practical doctors in diagnosing cardiovascular diseases.

R. A. L. Bisset and A. N. Kahn, *Differential Diagnosis in Abdominal Ultrasound* (Meditsinskaya Literatura, Moscow, 2007) [Russian translation]. ISBN 978-5-89677-097-8

This is the second edition of the popular handbook and it contains some new data, as compared to the first edition. Specifically, the list of states at which it is necessary to solve differential diagnostic problems arising in the course of abdominal ultrasonic examination is extended.

B. Block, *Ultrasonic Examination of Internal Organs* (MEDpress, Moscow, 2007) [Russian translation]. ISBN 5-98322-279-1

This is the third edition of the manual for doctors performing ultrasonic examinations. It contains clear recommendations for step-by-step mastering of ultrasonic diagnosis, an ultrasonic anatomic atlas (in the form of series of images), and staged anatomic patterns corresponding to ultrasonic sections (anatomic sections). The tables given in the appendix should assist a doctor specializing in ultrasonic diagnosis to evaluate the data of ultrasonic testing.

A. V. Borsukov, *Little-Invasive Operations under Ultrasonic Control in the Cases of Gall and Pancreas Disorders* (Medpraktika-M, Moscow, 2007), ISBN 978-5-98803-067-6-708

The book implements the program of teaching little-invasive technologies in the framework of postgraduate professional education of doctors with elements of remote education. The methods are shown in diagrams and photographs and, in addition, in video records. The book is recommended to surgeons, gastroenterologists, oncologists, specialists in radiation diagnostics, interns, and clinical trainees.

A. Yu. Vasil'ev and E. B. Ol'khova, *Ultrasonic Diagnosis in Infant Medical Practice* (GÉOTAR-Media, Moscow, 2007). ISBN 978-5-9704-0404-1

Ultrasonic diagnostics of infant diseases is described. Particular attention is given to the neonatal period and emergency surgical cases. The book contains sections devoted to neurosonography and ultrasonic diagnosis of disorders in neck organs (glands, salivary glands, and larynx), in lungs and pleural cavities. Foundations of diagnostics of hepatopancreatobiliary system, appendicitis, mesadenite, and enteric disorders are described. Age-related features of kidney structure are revealed, and various renal pathologies of infants are described. The potential of ultrasonic diagnostics of acute kidney diseases and traumas of internal organs is stressed.

A. Yu. Vasil'ev, N. A. Postnova, M. D. Dibirov, and A. I. Shimanko, *Manual of Ultrasonic Flebology* (Meditsinskoe Informatsionnoe Aгенstvo, Moscow, 2007). ISBN 5-89481-520-7

The basic principles of ultrasonic examination of vein system are presented. Specific features of ultrasonic angioscanning, imaging, and image analysis are described. Significant semiotic signs of disorders in the veins of legs are indicated.

A. E. Volkov, *Ultrasonic Diagnostics in Midwifery and Gynecology*, 2nd ed. (Feniks, Rostov-on-Don, 2007). ISBN 978-5-222-12185-6

This is a manual for accoucheurs-gynecologists, perinatologists, and specialists in ultrasonic diagnostics. The first and second parts of the book are devoted to the problems of ultrasonic diagnostics of fetal disorders. Data on prenatal ultrasonic indicators of chromosome anomalies are presented, and specific features of ultrasonography in the cases of polycarpic pregnancy and rhesus conflict are described. The third part is devoted to ultrasonic diagnostics of disorders in uterus and ovaries. Data on the application of three-dimensional ultrasonography and magnetic resonance tomography in midwifery and gynecology are presented.

Voices of Birds in Russia: An Audio Handbook. Part 1. European part of Russia, Urals, and Western Siberia (Fonoteka Golosov Zhivotnykh im. Prof. B.N. Veprintseva, Moscow, 2007) [A CD-DA electronic edition].

A. I. Gromov and S. Yu. Kubova, *Ultrasonic Artifacts* (Vidar-M, Moscow, 2007). ISBN 5-88429-085-3

Data on artifacts observed in ultrasonic examinations are systematized. Effects arising in the grey-scale mode and in Doppler studies are considered separately. The authors present their own results of studying the Doppler "twinkling artifact" and the acoustic streaming. They give recommendations that allow a reduction of the adverse effect of artifacts on the quality of diagnostic images. The book is intended for specialists in ultrasonic diagnostics.

P. Dubile, *Atlas of Ultrasonic Diagnostics in Midwifery and Gynecology* (MEDpress, Moscow, 2007). ISBN 5-98322-286-4

The basic elements of ultrasonography are presented, including the dynamic aspect of testing in the real-time mode. By ultrasonography, it is possible to reveal various obstetric disorders, which allows appropriate treatment during pregnancy and labor. Ultrasonic examinations also reveal gynecological disorders and perform ultrasonically controlled treatment and surgery.

N. A. Ermakova, A. L. Sokolov, S. V. Lavrenko, and V. G. Gudymovich, *Ultrasonic Examination of Leg Vein Disorders* (Medpraktika-M, Moscow, 2007). ISBN 978-5-98803-058-4

This book is a manual for surgeons, angiologists, and specialists in functional diagnostics.

V. N. Zalesskiĭ and O. B. Dynnik, *Coronary Tomographic Diagnostics: New Methods of Visualization in Clinic* (VBO Ukrainskii Dopplerovskii Klub, Kiev, 2007). ISBN 978-966-96528-2-9

Results of research in coronary tomographic diagnostics are generalized. Technologies used for visualization of coronary vessels (electron-beam computer tomography, helical computer tomography, magnetic resonance tomography, and ultrasonic tomographic scanning) are analyzed. Protocols and results of computer tomographic examinations of stenosis and calcinosis of coronary arteries in patients with ischemia are presented. Potential of the methods of intravascular optical coherent tomography and molecular visualization of disorders in coronary arteries is outlined.

V. A. Ivanov, *Ultrasonic Diagnostics of Disorders in the Organs of the Bilipancreatoduodenal Zone* (Kameron, Moscow, 2007). ISBN 5-9594-0021-9

The author describes the current status of ultrasonic diagnostics of disorders in organs belonging to the bilipancreatoduodenal zone in the state complicated by mechanical jaundice. Methods of ultrasonic examination of these organs are presented, and ultrasonic semiotics of their stenosis and tumors is described. Method of differential diagnostics of the initial tumor localization at a blocked biliar tract is presented. Possibilities of determining the propagation of tumors beyond the limits of initial localization are indicated.

V. V. Ivanov, *Clinical Ultrasonic Examination of the Organs of the Abdomen and Chest of Dogs: An Atlas* (Akvarium, Moscow, 2007). ISBN 978-5-98435-820-0

This monograph describes clinical and ultrasonographic aspects of ultrasonic examination of small-size domestic animals. Various types of disorders are considered.

L. V. Ilyasov, *Biomedical Measuring Equipment* (Vysshaya Shkola, Moscow, 2007). ISBN 978-5-060055351

The author presents the data on measurements, describes the principles of operation and schemes of modern measurement means for electric, magnetic, acoustic, and mechanical quantities, pressure, temperature, discharge, volume, and electromagnetic radiations, which are used in medical practice and serve as parts of biomedical instruments, systems, and complexes.

T. K. Kalantarov, K. N. Movchan, A. G. Sergeeva, S. B. Travkin, and É. K. Kavalerskaya, *Potential of Ultrasonic Diagnostics in Examination and Treatment of Patients with Bubonocoele* (Triada, Tver', 2007). ISBN 978-5-94789-244-4

Data on 4548 observations of patients with bubonocoele are presented. Optimal algorithms for verification of primary and repeated bubonocoeles are proposed. Possibilities of ultrasonic diagnostics of primary bubonocoeles with allowance for changes in inguinal channels are investigated. Variants of repeated bubonocoele formation after operation are studied. Methods of ultrasonic diagnostics of most frequently encountered complications of inguinal hernioplastics are estimated.

A. Yu. Kinzerskiĭ, *Ultrasonic Diagnostics of Spinal Osteochondrosis* (Rekpol, Chelyabinsk, 2007). ISBN 978-5-87039-148-9

This is a complemented and revised edition of the book *Ultrasonography of Spine*. It includes the data on the neck and back parts of the spine. An algorithm of clinical application of the ultrasonic examination of spine is proposed.

A. Yu. Kinzerskiĭ, *Ultrasonic Diagnostics of Spinal Osteochondrosis* (VBO Ukrainskii Dopplerovskii Klub, Kiev, 2007). ISBN 978-966-96528-4-3

The author presents anatomic-physiological data on the structure of the human spine. Ultrasonographic criteria of normal and pathological states of spine are described. Principles of ultrasonic study of osteochondrosis and possibilities of referent radiological methods of examination are considered.

A. Yu. Kinzerskiĭ, V. A. Vdovichenko, O. A. Kuritsyna, G. V. Loseva, and A. L. Tsytovich, *Ultrasonic Diagnostics of Coxa Displasia and Congenital Femur Dislocation in Children below One-Year-Old* (GOU DPO Ural. Gos. Med. Akad. Dop. Obraz. Rosszdrava, Chelyabinsk, 2007).

The book describes the conventional method of ultrasonography of coxa in neonates. It contains illustrations and schemes of coxa evaluation and detection of disorders.

A. Yu. Kinzerskiĭ, Yu. M. Yugov, and V. A. Vdovichenko, *Methodical Aspects of Ultrasonic Exami-*

nation of Thyroid, 2nd ed. (Ural. Gos. Med. Akad. Dop. Obraz. Rosszdrava, Chelyabinsk, 2007).

The book describes the method of ultrasonic examination of thyroid, presents a set of ultrasonographic criteria characterizing the state of the gland, and gives measuring schemes and tables for evaluating hyper- and hypoplasia of thyroid. Recommendations on clinical interpretation of data are given.

A. Yu. Kinzerskiĭ, O. I. Samarin, and V. A. Vdovichenko, *Standardized Ultrasonic Examination of Urinary System in Infants* (Minzdrav RF, GOU DPO Ural. Gos. Med. Akad. Dop. Obraz. FA po Zdravookhran. RF, Chelyabinsk, 2007).

Methods of examining the kidneys and urinary channels in infants are described. Indications of the need in such an examination and advantages of the method are determined.

E. V. Lavrova, *Logopedics: Foundations of Phonopedics* (Akademiya, Moscow, 2007). ISBN 978-5-7695-3753

The author describes voice disorders and ways of their correction by pedagogical methods, which are called phonopedics. Acoustic characteristics of normal voice and voice with larynx disorders (both functional and organic ones) are described. Types of voice disorders, their origins and methods of elimination are considered. Different points of view on the methods of voice correction are presented. Contents: Chapter 1. History of studies of voice and its disorders and the current status of this problem; Chapter 2. Data from acoustics and physiology of voice formation; Chapter 3. Development and stabilization of voice; Chapter 4. Methods of examining the voice and revealing its disorders; Chapter 5. Characteristic and classification of voice disorders; Chapter 6. Organic voice disorders; Chapter 7. Functional voice disorders; Chapter 8. Professional voice disorders; Appendix 1. Test tasks; Appendix 2. Complex of physical exercises.

V. G. Lelyuk and S. É. Lelyuk, *Ultrasonic Angiology*, 3d ed. (Real Taim, Moscow, 2007). ISBN 978-5-903025-14-5

Ray Diagnostics of Mammary Gland Disorders, Ed. by G. E. Trufanov (Élbi-SPb, St. Petersburg, 2006). ISBN 5-93979-156-5

Anatomy of mammary glands is described for different age intervals according to the data of mammography, ultrasonic examinations, computer tomography, and magnetic resonance tomography. Radiation semiotics of benign and malignant tumors and tumors rarely encountered in practice is considered. Separate chapters are devoted to radiation diagnostics of benign changes, cysts, and inflammations. Possibilities of diagnosing post-trauma, post-surgery, and post-irradiation changes, as well as disorders in regional glands due to mammary gland tumors, are described.

E. McNally, *Practical Musculoskeletal Ultrasound* (Vidar-M, Moscow, 2007) [Russian translation]. ISBN 5-88429-097-7, ISBN13 978-5-88429-097-6

This book is a manual of disorders in musculoskeletal system. Ultrasonic indicators of disorders are considered from the viewpoint of pathomorphology of the process and are correlated with clinical indications and results of reference examinations (computer tomography, magnetic resonance tomography, and X-ray studies). Clinical symptoms of disorders in soft-tissue near-joint apparatus are described. The chapters that are devoted to disorders in the shoulder joint describe the semiotics of specific disorders in it. Diagnostics of disorders in the chord apparatus of the knee joint and meniscus and of nontraumatic disorders of the knee joint is considered. The book also describes the studies of congenital displasia of coxa, tunnel syndromes, diagnostics of rheumatic diseases, tumors and pseudotumors of soft tissues, and invasive operations under ultrasonic control.

M. V. Medvedev, *Foundations of Dopplerography in Midwifery* (Real Taim, Moscow, 2007).

Foundations of Doppler ultrasonic studies of the uterus-placenta blood flow and fetal blood flow at different stages of pregnancy are presented. Indications and methods of ultrasonic dopplerography in midwifery practice are considered. Attention is paid to application of dopplerography at placenta ineptitude. Data on the normal parameters of the blood flow in arteries of uterus and vessels of the fetus are presented, the classification of haemodynamic disorders in the mother-placenta-fetus system, perinatal prognosis, and midwifery tactics are presented.

M. V. Medvedev, *Three-dimensional Ultrasonography in Midwifery* (Real'noe Vremya, Moscow, 2007).

Modern aspects of application of three-dimensional ultrasonography in midwifery are presented. Diagnostic potential of three-dimensional fetal ultrasonocardiography in prenatal detection of congenital heart defects is described. Several sections are devoted to the use of three-dimensional ultrasonography in the case of polycarpic pregnancy and in placenta and funis examinations.

M. V. Medvedev and E. V. Yudina, *Differential Prenatal Ultrasonic Diagnostics*, 3d ed. (Real Taim, Moscow, 2007). ISBN 5-900080-22-6

The book is devoted to prenatal ultrasonic diagnostics of congenital and inherited fetal pathologies. A detailed description is presented for ultrasonographic indications of prenatal pathology, including birth defects.

V. V. Moroz, E. M. Shifman, E. G. Gumenyuk, et al., *Transcranial Dopplerography in Wifery* (IntelTek, Petrozavodsk, 2007). ISBN 978-5-91405-005-1

This is a manual describing the monitoring of cerebral haemodynamics with the use transcranial dopplerography in patients with pathological pregnancy, patients from the Mother-and-child clinical department and from reanimation and intensive therapy departments. Physical, anatomic, and physiological foundations of the method are presented. Special attention is paid to the technique and interpretation of measurement data.

A. N. Mumin and A. B. Volotovskaya, *Vibrotherapy* (BelMAPO, Minsk, 2007).

This textbook is devoted to the mechanisms of action and medical application of vibration therapy in medical practice. Problems of a combined application of vibrotherapy are considered.

E. M. Nifontov and O. G. Rudomanov, *Stress Ultrasonocardiography* (SPbGMU, St. Petersburg, 2007).

I. A. Ozerskaya, M. I. Pykov, and N. V. Zabolotskaya, *Ultrasonography of the Reproductive System in a Small Girl, Adolescent, and Teenager Girl* (Vidar-M, Moscow, 2007). ISBN 978-5-88429-105-1

Diagnostics of pathological states of the uterus and ovaries in girls from birth to young adult is described. Data on embryology and normal development of reproductive system of a girl are presented. Potential of ultrasonography in evaluation of anomalies in this development is considered. Methods of examination, transabdominal, transrectal, and transvaginal scanning are described. Evaluation of haemodynamics in vessels of uterus and ovaries and in veins of pelvis are analyzed. Problems of diagnosing inflammations and other disorders in the reproductive system of a girl are considered. A special chapter is devoted to ultrasonic examination of mammary gland.

S. Perekhodov, O. Berlev, and A. Stolyarzh, *A Manual of Ultrasonic Combined Liposuction* (Nauka, Moscow, 2007). ISBN 978-5-02-036117-1

Topical methods of liposuction are presented. It is performed with the use of a Sonoca-Lipo ultrasonic dissector and is widely used in medical practice. Indications of application of this technology and contraindications are given.

P. E. Permyakov, V. L. Krasilov, and I. A. Chantpalov, *Complex Ultrasonic Diagnostics of Congenital Hydronephrosis in Infants* (Astrakhan. Gos. Med. Akad., Astrakhan', 2007).

M. I. Pykov, N. A. Koshechkina, A. I. Gurevich, A. V. Trufanova, and M. A. Shvetsova, *Infant Ultrasonic Diagnostics in Uronephrology* (Vidar-M, Moscow, 2007). ISBN 978-5-88429-096-9

The book is devoted to diagnosing disorders in the urinary system of infants. Data on congenital defects of urinary system are presented, as well as data on other diseases in this area. Ultrasonic evaluation of a trans-

planted kidney is considered, and diabetic nephropathy in infants is described.

A. N. Semizorov and S. V. Romanov, *X-ray and Ultrasonic Examinations of Disorders in Joints* (Vidar-M, Moscow, 2006). ISBN 5-88429-090-X

Foundations of X-ray and ultrasonic diagnostics of various disorders in joints are described. Specific features of diagnosing the cases that are most common in clinical practice are outlined. Schemes for describing the X-ray patterns and ultrasonograms of joints are presented.

G. T. Sinyukova, G. P. Korzhenkova, and T. Yu. Danzanova, *Ultrasonic Examination of Mammary Gland in Oncology* (Firma Strom, Moscow, 2007). ISBN 5-900094-30-8

The book describes the methods of inspecting the mammary gland and the zones of regional metastasis, the ultrasonic anatomy of mammary gland, and the ultrasonographic semiotics of benign disorders. Malignant tumors, metastasis in glands, and changes in the ultrasonic image in the course of chemotherapy are considered. Contents: Chapter 1. General information; Chapter 2. Methods of ultrasonic examination; Chapter 3. Ultrasonic tomography of unaffected mammary gland; Chapter 4. Ultrasonic examination of benign disorders in mammary gland; Chapter 5. Ultrasonic examination of malignant disorders in mammary gland; Chapter 6. Ultrasonic examination after surgical treatment of cancer of mammary gland; Chapter 7. Ultrasonic tomography in evaluation of the efficiency of medicinal treatment of mammary gland cancer.

A. V. Strutyanskiĭ, *Ultrasonogram: Analysis and Interpretation* (MEDpress, Moscow, 2007). ISBN 5-98322-256-2

This manual of ultrasonography contains information on ultrasonic examination of heart, including examination in one-dimensional and Doppler modes.

S. K. Ternovoĭ and A. B. Abduraimov, *Radiation Mammology* (GÉOTAR-Media, Moscow, 2007). ISBN 978-5-9704-0487-4

This book is devoted to diagnosing disorders in mammary gland. It describes the methods of examination with the use of X-ray mammology, ultrasonic examination, magnetic resonance tomography, and computer tomography. Radiation anatomy of mammary glands is presented for different age intervals. Special attention is paid to analyzing the place and role of various methods of the radiation diagnostics (X-ray mammography, ultrasonic study, magnetic resonance tomography, etc.) of mammary gland disorders.

G. E. Trufanov et al., *Radiation Diagnostics of Liver Disorders* (GÉOTAR-Media, Moscow, 2007). ISBN 978-5-9704-0463-8

Ultrasonic Diagnostics in Midwifery and Gynecology, 2nd ed. (Feniks, Rostov-on-Don, 2007). ISBN 978-5-222-12185-6

The first and second parts of this book are devoted to ultrasonic examination in midwifery, ultrasonic diagnostics of congenital defects of fetus and anomalies in structures surrounding the embryo. Data on prenatal ultrasonic indicators of chromosome anomalies are presented, and specific features of ultrasonography in the case of polycarpic pregnancy and rhesus conflict are described. The third part is devoted to ultrasonic diagnostics of disorders in uterus, ovaries, etc. Data on practical applications of three-dimensional ultrasonography and magnetic resonance tomography in midwifery and gynecology are presented.

Ultrasound in Surgical Practice: Basic Principles and Clinical Applications, Ed. by J. Harness and D. Wisher (Binom, Moscow, 2007) [Russian translation]. ISBN 978-5-94774-296-1

Ultrasonic examination is considered as one of the components of general surgery. The material is arranged according to anatomic regions. Each of the chapters is supplied with illustrations and schemes, which are useful from the practical point of view.

Ultrasonic Diagnostics of Vascular Diseases, Ed. by V. P. Kulikova (Firma Strom, Moscow, 2007). ISBN 5-900094-29-4

The book presents the data on the structure of the vessel system, the regional haemodynamics, ethiopathogenesis and classification of vascular disorders, methods of ultrasonic examination, ultrasonic criteria of normal and pathological states, types of surgical treatment, and ultrasonic evaluation of the efficiency of operations. Contents: Chapter 1. Clinical pathophysiology of vascular haemodynamics; Chapter 2. Ultrasonic diagnostic equipment; Chapter 3. Ultrasonic diagnosis of disorders in arteries of head and neck; Chapter 4. Ultrasonic diagnosis of disorders in veins of head and neck; Chapter 5. Ultrasonic diagnosis of disorders in arteries of legs; Chapter 6. Ultrasonic diagnosis of disorders in the lower hollow vein system; Chapter 7. Ultrasonic diagnosis of disorders in vessels of arms; Chapter 8. Ultrasonic diagnosis of disorders in abdominal aorta and its visceral branches; Appendix. Equipment produced by the leading companies for ultrasonic diagnostics of vascular diseases.

Emergency Ultrasound, Ed. by O. J. Ma and J. R. Mateer (BINOM Lab. Znaniĭ, Moscow, 2007) [Russian translation]. ISBN 978-5-94774-287-9

The book gives information on the technical and clinical aspects of ultrasonic examination. The basic information is presented before the description of technical aspects. The book contains many ultrasonic images, schemes of body positions, and examples dem-

onstrating the role of emergency ultrasound in taking clinical decisions.

V. P. Kharchenko, P. M. Kotlyarov, M. S. Mogutov, A. N. Sencha, Yu. N. Patrunov, and D. V. Belyaev, *Ultrasonic Diagnostics of Thyroid Disorders* (Vidar-M, Moscow, 2007). ISBN 5-88429-098-5

The book presents the methods of ultrasonic examination of thyroid. The aim of the book is to assist doctors in systematizing their knowledge in the complex primary and differential diagnostics of thyroid disorders and in the principles and technique of little-invasive manipulations performed under ultrasonic control.

M. Hofer, *Color Duplex Sonography* (Meditsinskaya Literatura, Moscow, 2007) [Russian translation]. ISBN 978-5-89677-096-1

This is a manual of color duplex sonography. Each of the chapters contains test tasks. The book is illustrated with color CDS-scanograms in combination with schemes showing their anatomic meaning and diagnostic potential.

L. N. Shpagina and V. V. Zakharenkov, *Methodology of Estimating the Risk of the Development of Vibratory Disease in Miners* (MOU DPO IPK, Novokuznetsk, 2007). ISBN 5-7291-0422-7.

M. V. Shumilina, *Comprehensive Ultrasonic Diagnostics of Disorders in Peripheral Vessels* (NTSSKh, Moscow, 2007). ISBN 978-5-7982-0183-9

The book describes the methodology of comprehensive ultrasonic diagnostics of disorders in extra- and intracranial vessels and vessels of arms and legs. Contents: Chapter 1. Characteristic features of the Doppler method; Chapter 2. Ultrasonic dopplerography and duplex scanning of arteries of legs; Chapter 3. Characteristic features of the physiology of vein system; Chapter 4. Ultrasonic diagnostics of disorders in the veins of legs; Chapter 5. Concept of the comprehensive examination of brachiocephalic vessels (arteries and veins); Chapter 6. Ultrasonic examination of brachiocephalic and cerebral arteries as one of the approaches to solving the problem of insult to the brain; Chapter 7. Comprehensive ultrasonic diagnostics of disorders in brachiocephalic arteries; Chapter 8. Ultrasonic examination of brachiocephalic veins; Chapter 9. Transcranial dopplerography; Chapter 10. Dysfunction of endothelium.

11. PHYSICAL FOUNDATIONS OF ENGINEERING ACOUSTICS (fifteen books)

R. G. Jackson, *Novel Sensors and Sensing* (Tekhnosfera, Moscow, 2007). ISBN 978-5-94836-111-6

This is a manual for the application of sensors on the basis of new physical principles and new technologies. New types of sensing, including measuring micromechanics, sensors based on surface acoustic waves (SAWs), optical and ionization sensors, chemical

microsensors, and fiber-optic and smart measuring systems, are described. Chapter 1 presents general information on measuring systems. Chapter 2 is devoted to resonator sensors based on elastic vibrations. Chapter 3 considers semiconductor sensors, including SAW sensors. Chapter 4 describes fiber-optic sensors, including displacement sensors. Chapters 5 and 6 discuss smart sensors and characteristics of information signals. Chapter 7 presents information on the latest designs of systems for flow measurements (ultrasonic systems, blood flow meters, etc.). At the end of each of the chapters, a set of exercises is presented.

A. V. Ivanaiskii, *High Technologies of Making Machine Parts with the Use of Cavitation* (MGOU, Moscow, 2007). ISBN 978-5-7045-0721-5

V. V. Ivanov, *Vibrational Mechanochemical Methods of Coating Application: Oxidation* (DGTU, Rostov-on-Don, 2007). ISBN 978-5-7890-0385-0

O. G. Latyshev, *Methods and Means of Studying Rapid Processes* (Ural. Gos. Gorn. Univ., Yekaterinburg, 2007). ISBN 5-8019-0130-2

This is a textbook for students specializing in explosion making.

V. Ya. Modorskii and Yu. V. Sokolkin, *Gas-Elastic Processes in Power Plants* (Fizmatlit, Moscow, 2007). ISBN 978-5-9221-0885-0

I. V. Petushko, *Equipment for Ultrasonic Welding* (Andreev. Izd. Dom, St. Petersburg, 2007). ISBN 5-902894-08-5

Problems of designing units of technological equipment intended for ultrasonic welding of thermoplastic materials and metals are considered: electroacoustic oscillatory systems, ultrasonic generators, matching devices, and systems of self-control and stabilization of the welding process parameters. Structures and schemes are described, and technical characteristics of new equipment developed by OOO Ultrazvukovaya Tekhnika and other companies are given. Examples of calculating the transducers and waveguides of oscillatory systems for ultrasonic welding machines are presented. Problems of ultrasonic welding technology are considered.

A. B. Rinkevich, Ya. G. Smorodinskii, and Yu. A. Gullo, *Physical Foundations and Methods of Acoustic Testing* (Inst. Fiz. Met. UrO RAN, Yekaterinburg, 2007). ISBN 5-7691-1868-7

A. I. Subbotin et al., *Rules of Organizing and Performing the Acoustic-Emission Testing of Ships, Technical Systems, Boilers, and Technological Pipelines* (Prom. Bezopasnost', Moscow, 2007). ISBN 978-5-93586-501-6

V. N. Ushakov, *Acoustooptic Processors of Correlation Type* (Radiotekhnika, Moscow, 2007). ISBN 5-88070-140-9

The author considers acoustooptic signal processors of correlation type, which represent a promising class of functional electronic devices that extend the capabil-

ities of signal processing means. He proposes structures of video- and radio-frequency acoustooptic correlators with temporal and spatial integration, justifies their operability, and determines the ultimate values of parameters for these devices.

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