

New books on physics and related sciences

DOI: 10.1070/PU2003v046n03ABEH001623

The USSR Atomic Project: Documents and Materials. In three volumes (Under the general editorship of L D Ryabev) Vol. 1. **1938–1945** In two parts. Pt. 2 (Exec. compiler L I Kudinov, compiler Yu V Frolov) (Moscow: Izd. MFTI, 2002) 800 pp. ISBN 5-89155-095-4.

The first part of the collection's first volume was published in 1998. The second part continues the first and completes Vol. 1 in covering the period 1938–1945. It reviews atomic weapons research in the Soviet Union in 1944–1945 and contains more than 200 documents pertaining to the activities of government bodies, organizations and institutions of various kinds, USSR intelligence, etc. A minor bulk of the new material augments the first part of the volume and includes the documents relating to the topic being discussed from the period 1940–1943 as well as manuscripts of leading Soviet scientists dating to 1943. Also included is an apparatus criticus to all the documents from Vol. 1. The second part was prepared in the RF GNTs A I Leipunskii Institute of Physics and Power Engineering (Obninsk). For all those interested in the history of the development of science and technology in Russia. (Moscow Institute of Physics and Technology Publ.: 141700, Moscow region, Dolgoprudnyi, Institutskii per. 6a; orders should be sent to the following address: 249035 Kaluga region, Obninsk, P.O. box 5056; e-mail: frolov@ippe.obninsk.ru)

Dirac P A M Collected Works Vol. 1. **Quantum Theory** (monographs, and lectures) ('Classics of Science' series, Ed.-in-Chief and compiler A D Sukhanov) (Moscow: Fizmatlit, 2002) 704 pp. ISBN 5-9221-0201-X. RFBR project 02-02-30045.

This is the first time the collected scientific works of Paul Adrien Maurice Dirac, Nobel laureate and one of the founders of quantum mechanics and quantum field theory (including its gauge version) have been published. The publication was conceived by theoretical physicists Professors B V Medvedev and Ya A Smorodinskii, both also historians of physics. The first volume contains Dirac's generalizing works on quantum theory. These include the monographs *Quantum Mechanics* and *Spinors in Hilbert Space*, a series of lectures on quantum mechanics and quantum field theory, the Nobel Prize lecture "Theory of electrons and positrons", and an E Fermi International School of Physics lecture "Reflections on a fascinating epoch". The Appendix comprises a biographical sketch of P Dirac written by Ya A Smorodinskii, and a paper

"P A M Dirac and the development of the basic concepts of quantum field theory" by B V Medvedev and D V Shirkov. The book is intended for researchers, teachers, and post-graduate and undergraduate students in the fields of physics, mathematics, and the history of science. (Fizmatlit Publ.: 117864 Moscow, ul. Profsoyuznaya 90; tel./fax: (7-095) 334-7421, 334-7620; e-mail: fmlsale@maik.ru; URL: <http://www.fizmatlit.ru/>)

Kamilov I K, Kallaev S N Phase Transitions in Ferroelectrics with Incommensurate Structures (Makhachkala: Izd. DNTs RAN, 2002) ISBN 5-94434-004-5.

This monograph covers the fundamentals of the thermodynamic theory of ferroelectrics and examines the physical properties of ferroelectrics in the domain of incommensurate phase transitions. The book marks the first time the results of investigation into nonlinear electromechanical properties of structurally modulated ferroelectrics, which are systematized and summarized with account for all the components of the mechanical stress tensor. Special attention is given to the measurement of electromechanical effects as a new method for the study of long-period crystal superstructures. The suppression of ferroelectricity by uniaxial pressure, due to the crystalline state being close to the critical point on the stress–temperature phase diagram, is discussed in detail. The book is intended for senior undergraduate students, post-graduate students, and scientific workers experiencing in solid state physics and in the physics of ferroelectricity and phase transitions. (RAS Dagestan Scientific Center: 367025 Makhachkala, ul. M. Gadzhieva 45)

Kamilov I K Phase Transitions and Critical Phenomena in Condensed Media. A series of studies (Makhachkala: Izd. DNTs RAN, 2002) 672 pp. ISBN 5-94434-008-8. RFBR project 02-02-30054.

This book presents a series of publications of the Corresponding Member of the Russian Academy of Sciences Ibragimkhan Kamilovich Kamilov in the physics of phase transitions and critical phenomena in condensed media, in particular, in magnetic and ferroelectric substances, in semiconductors and in liquids. The exposition of the material relies on the most up-to-date views of the subject. For researchers, senior undergraduates and post-graduates in physics. (RAS Dagestan Scientific Center: 367025 Makhachkala, ul. M. Gadzhieva 45)

Stefan V, Zharikov E V (Eds) Crystal and Epitaxial Growth Vols 1, 2 (The Stefan University Press Series on 'Frontiers in Science and Technology') 2nd ed. (La Jolla, CA: Stefan Univ. Press, 2002) Vol. 1 — 265 pp. ISBN 1-889545-38-4; Vol. 2 — 252 pp. ISBN 1-889545-39-2.

These volumes of collected papers cover research in crystal and epitaxial growth worldwide. It is the outgrowth of the following three Frontier Science Research Conferences (FSRC): *Science and Technology of Laser Crystals*, July 12–14, 1999, La Jolla, CA, USA; *FSRC: Science and Technology of Crystal Growth and Epitaxy*, April 3–5, 2000, La Jolla, CA, USA, and *FSRC: Science and Technology of Crystal and Epitaxial Growth*, March 19–21, 2001, La Jolla, CA, USA. A wide range of topics is covered, including, in the first volume: growth of semiconductor crystals, crystal fibers, GaN-based substrates, frequency self-doubling effect, disordered garnet laser crystals, nanotube crystal growth, ZnSe-based compounds and heterostructures, KDP type crystals, crystals for blue SHG applications, etc., and in the second: bulk morphology of fat crystals, THM crystal growth applications, silicon carbide bulk crystal growth, interface structures in hard thin films, compound semiconductor crystals, instabilities on growing interfaces, CZ crystal growth, epilayers on GaAs, etc. The publication is of ultimate value to active researchers in the field. It can be used by post-graduate students, by faculty and research staff at universities and research institutions, by scientific workers in industry and national laboratories, and by the staffs of science-supporting agencies and science foundations. (Publisher ‘Stefan University Press’: 1010 Pearl Street, La Jolla, CA 92038-2946; e-mail: press@stefan-university.edu; URL: <http://www.Stefan-University.edu/STEFAN-UNIVERSITY-PRESS/>)¹

Kuznetsov S P *Dynamic Chaos*. Lecture course (‘Modern Theory of Vibrations and Waves’ series) (Moscow: Izd. Fiziko-Matematicheskoi Literatury, 2001) 296 pp. Bibliography: 208 refs. ISBN 5-94052-044-8.

This undergraduate level textbook on physics is based on the author’s lecture courses ‘Dynamic Chaos’ and ‘From Order to Chaos’ given to the four-year students in the Department of Nonlinear Processes at Saratov State University. The book presents the fundamentals of dynamic chaos, a phenomenon of intense current interest occurring in nonlinear systems of various kinds (mechanical, electrical, optical, chemical, and biological). Coverage includes both simple model systems in which the presence of chaos admits rigorous substantiation, and realistic physical systems with chaotic dynamics (the Lorentz model, nonlinear oscillators, and electronic schemes being discussed as examples). The book explains the basic concepts of dynamic chaos science, including the Smale horseshoe, homoclinic structure, Lyapunov exponents, the fractal nature of strange attractors, and fractal dimensionality, and discusses how chaos characteristics can be determined by processing observed realizations. Special attention is given to the cascade of period-doubling bifurcations, intermittence, and quasi-periodic regimes as chaos-generat-

ing scenarios, as well as to the renormalization group method representing a general theoretical approach to the study of dynamics at the threshold of chaos origin. The book is published within the ‘State Support for the Integration of Higher Education and Basic Science’ federal target-oriented program. The book can be used as a text for undergraduate physics students specializing in nonlinear dynamics, theory of vibrations, and radiophysics, for post-graduate and doctoral students in these disciplines, and for researchers involved in the study and application of nonlinear dynamics. (Fiziko-Matematicheskaya Literatura Publ.: 117071 Moscow, Leninskii prosp. 15; tel.: (7-095) 952-4925, 955-0330; fax: (7-095) 955-0314; e-mail: fizmatlit@narod.ru; URL: <http://fizmatlit.narod.ru/>)

Fistul’ V I *Fundamental Laws of Classic Physics* (‘The Beauty of Science’ series) (Moscow: Izd. Fiziko-Matematicheskoi Literatury, 2002) 132 pp. ISBN 5-94052-050-2.

Common features of the laws of classical physics are discussed in an accessible style. The book shows how physical laws are discovered, how they relate to each other, and what is common to and special about them. It focuses on the simplicity and complexity of the laws of physics, and the symmetry and asymmetry they show, and familiarizes the reader with the basics of the laws of conservation of mass, energy, momentum, charge, and other physical quantities. The author’s own research on when, where, and how physics came to life is included. For school students, university undergraduates, teachers, and a wide range of readers involved in science and engineering. (Fiziko-Matematicheskaya Literatura Publ.: 117071 Moscow, Leninskii prosp. 15; tel.: (7-095) 952-4925, 955-0330; fax: (7-095) 955-0314; e-mail: fizmatlit@narod.ru; URL: <http://fizmatlit.narod.ru/>)

Gol’dshtein R V, Gorodtsov V A *Mechanics of Continua Pt. 1 Fundamentals and Classical Models of Liquids* (‘Mechanics and Its Applications in Engineering and Technology’ series) (Moscow: Fizmatlit, 2000) 256 pp. ISBN 5-02-015555-1.

This book, which is the first part of a course in the mechanics of continua, presents the fundamentals of the subject and discusses its application to two classical models of liquid (ideal and viscous) using the traditional methods of theoretical physics. The exposition is modernized by introducing the current concepts of solitons, strange attractors, fractals, helicity, etc. With a large amount of material and numerous literature references, the scope of the book is broader than that of a real lecture course, allowing the teacher to vary exposition and the student to come closer to the independent research level. The text includes exercises and problems. The book is intended primarily for undergraduate students at and graduates of the universities and technical colleges, who specialize in the fields of mechanics and physics and deal with their application to engineering, biology, and medicine, and with the investigation of natural processes. (Fiziko-Matematicheskaya Literatura Publ.: 117071 Moscow, Leninskii prosp. 15; tel.: (7-095) 952-4925, 955-0330; fax: (7-095) 955-0314; e-mail: fizmatlit@narod.ru; URL: <http://fizmatlit.narod.ru/>)

Efimov A V, Karakulin A F, Kozhukhov I B, Pospelov A S, Prokof’ev A A *A Book of Problems in Mathematics for*

¹ Stefan University Press welcomes orders for publications in the ‘Russian Science and Technology’ book series (ISSN: 1543-446X). SUP publishes books by Russian authors in any field of science and technology. Monographs, collections of papers, selected thematic papers, proceedings of Russia-held conferences, and reviews and essays on Russian science and technology may be submitted. For further information: Stefan University Press, POBox 2946, La Jolla, CA 92038, USA; e-mail: Press@Stefan-University.edu.

Technical Institutes and Colleges In four parts. Pt. 1. Manual for technical institutes and colleges (Under the general editorship of A V Efimov and A S Pospelov) 4th ed. revised and enlarged (Moscow: Izd. Fiziko-Matematicheskoi Literatury, 2001) 288 pp. ISBN 5-94052-034-0.

Efimov A V, Karakulin A F, Kogan S M, Pospelov A S, Shostak R Ya *A Book of Problems in Mathematics for Technical Institutes and Colleges* In four parts. Pt. 2. Manual for technical institutes and colleges (Under the general editorship of A V Efimov and A S Pospelov) 4th ed. revised and enlarged (Moscow: Izd. Fiziko-Matematicheskoi Literatury, 2001) 432 pp. ISBN 5-94052-035-9.

Efimov A V, Karakulin A F, Pospelov A S, Frolov S V, Lesin V V *A Book of Problems in Mathematics for Technical Institutes and Colleges* In four parts. Pt. 3. Manual for technical institutes and colleges (Under the general editorship of A V Efimov and A S Pospelov) 4th ed. revised and enlarged (Moscow: Izd. Fiziko-Matematicheskoi Literatury, 2002) 576 pp. ISBN 5-94052-036-7.

The first part contains problems in linear algebra, analytical geometry, and general algebra. An outline of theoretical background is provided with a large number of examples worked out, making the book suitable for any kind of education. The problems in the second part illustrate basics of mathematical analysis as well as differential and integral calculus for functions of one or more variables, differential equations, and multiple integrals. The third part includes problems illustrating special branches of mathematical analysis — vector analysis, series and their application, elementary theory of functions of a complex variable, operational calculus, integral equations, partial differential equations, and optimization methods — that are studied in various combinations and to varying extent in technical institutes and colleges. An outline of theoretical background is provided with a large number of worked examples, thus making the book suitable for any kind of education. For undergraduate students in engineering disciplines. (Fiziko-Matematicheskaya Literatura Publ.: 117071 Moscow, Leninskii prosp. 15; tel.: (7-095) 952-4925, 955-0330; fax: (7-095) 955-0314; e-mail: fizmatlit@narod.ru; URL: <http://fizmatlit.narod.ru/>)

Golovanov N N *Geometrical Modeling* (with a compact disk) (Moscow: Izd. Fiziko-Matematicheskoi Literatury, 2002) 472 pp. ISBN 5-94052-048-0.

The methods aimed at computer-aided mathematical modeling of geometrical objects are presented. The basics of differential geometry, topology, calculus of variations, and numerical methods are covered, and the theory of B-splines is formulated. Methods for modeling various curves, surfaces, and bodies are considered in detail, as are algorithms for operations on them and those for calculating their geometric characteristics. Principles for establishing the variational dependences of the parameters of geometrical objects are outlined. Methods of computer graphics are also described. Included with the book is a compact disk with a demo-version of the COMPAS-3D 5.11 system in which the program realizations of the methods described in the book are used. For applied mathematicians and practising specialists in computer-assisted design and computer graphics. Students in related disciplines will also find this an authoritative guide.

(Fiziko-Matematicheskaya Literatura Publ.: 117071 Moscow, Leninskii prosp. 15; tel.: (7-095) 952-4925, 955-0330; fax: (7-095) 955-0314; e-mail: fizmatlit@narod.ru; URL: <http://fizmatlit.narod.ru/>)

Podchufarov Yu B *Physicomathematical Modeling of Complexes and Control Systems* (Ed. by A G Shipunov) (Moscow: Izd. Fiziko-Matematicheskoi Literatury, 2002) 168 pp. ISBN 5-94052-051-0.

This book demonstrates a qualitatively new level of physico-mathematical modeling, when the comparison of dynamic systems is carried out over a set of functioning processes in phase space. Virtually no restraints are imposed on the number of similarity criteria used in designing. Principles for modeling complex dynamical objects are established. Physical and physico-mathematical models for control and regulating systems and for the digital computing system of a robot-aided engineering complex are constructed to illustrate the theoretical material. Design team leaders, practising engineers, scientific workers, and students will find this book a valuable source. (Fiziko-Matematicheskaya Literatura Publ.: 117071 Moscow, Leninskii prosp. 15; tel.: (7-095) 952-4925, 955-0330; fax: (7-095) 955-0314; e-mail: fizmatlit@narod.ru; URL: <http://fizmatlit.narod.ru/>)

Kruglov V V, Dli M I, Golunov R Yu *Fuzzy Logic and Artificial Neural Networks* A textbook (Moscow: Izd. Fiziko-Matematicheskoi Literatury, 2001) 224 pp. Bibliography: 10 refs. ISBN 5-94052-027-8.

The book provides a systematic presentation of the theory of artificial neural networks, the apparatus of fuzzy logic, and so-called hybrid neural networks. It explains how the models used in these three areas relate to each other and describes their control and decision-making applications. The realization of the models through the use of software packages of the mathematical system MATHLAB 5.2/5.3, namely Neural Networks Toolbox and Fuzzy Logic Toolbox, is discussed. A useful textbook for undergraduate students in applied informatics, for which purpose it is recommended by the Ministry of Education Department of Statistics, Applied Informatics, and Mathematical Methods in Economics. It will be a valuable addition to the bookshelves of anyone involved in the development of new technologies. (Fiziko-Matematicheskaya Literatura Publ.: 117071 Moscow, Leninskii prosp. 15; tel.: (7-095) 952-4925, 955-0330; fax: (7-095) 955-0314; e-mail: fizmatlit@narod.ru; URL: <http://fizmatlit.narod.ru/>)

Arnol'd V I *Geometrical Methods in the Theory of Ordinary Differential Equations* (Moscow: NITs 'RKhD', MTsNMO Publ., 2002) 400 pp. ISBN 5-93972-160-5.

Some basic ideas and methods used in the examination of ordinary differential equations are presented in this book. Elementary integration methods are considered based on general mathematical concepts such as the resolution of singularities, symmetries of Lie groups, Newton diagrams, etc. The theory of partial first-order equations is formulated on the basis of contact structure geometry. The book covers classical and modern aspects of the theory of dynamical systems: structural stability, U-systems, the analytical

methods of local theory near a singular point or in the vicinity of a periodic solution (normal Poincaré forms), theory of phase portrait bifurcations due to changes in the parameters (soft and hard excitation of auto-oscillations due to the loss of stability), Feigenbaum period doubling, Dulac's theorem and so forth. The book will be of interest to a wide range of mathematicians and physicists, from undergraduate students to teaching staff and research workers. (Science Publishing Center 'Regular and Chaotic Dynamics': 426034 Izhevsk, ul. Universitetskaya 1, UdSU, RCD; tel.: (7-3412) 50-02-95; fax (7-3412) 50-02-95; e-mail: subscribe@rcd.ru; URL: <http://rcd.ru>; Publishing House of the Moscow Center for Continuous Mathematical Education: 121002 Moscow, Bol'shoi Vlas'evskii per. 11; tel.: (7-095) 241-7285; fax: (7-095) 291-6501; e-mail: biblio@mccme.ru; URL: <http://www.mccme.ru/>)

Irodov I E *Atomic and Nuclear Physics*. A book of problems 8th ed. (St. Petersburg: Izd. Lan', 2002) 288 pp. ISBN 5-9511-0001-1.

This manual contains problems in atomic and nuclear physics. Aspects covered include the quantum nature of electromagnetic radiation, the wave properties of particles, quantum mechanics, atomic spectra, electron shells in atoms, molecules, and crystals, the physics of the nucleus, neutron physics, fusion reactions, elementary particles, the motion of charged particles in external fields, etc. The collection of problems is intended for students taking courses in atomic and nuclear physics. It is recommended by the RF Ministry of Education as a manual for undergraduate students in various disciplines concerned with the physical sciences. (Lan' Publ.: 193029 St. Petersburg, ul. Krupskoi 13; tel. (7-812) 567-8578, (7-812) 567-1445; tel./fax (7-812) 567-5493; e-mail: root@lanpbl.spb.ru; URL: <http://www.lanpbl.spb.ru>)

Timoshenko S P, Gere D *Mechanics of Materials* (St. Petersburg: Izd. Lan', 2002) 672 pp. ISBN 5-9511-0003-8.

Encyclopedic in coverage, this book is a comprehensive exposition of the methods available for materials strength design and stability calculations. The book provides a study of the stressed-strained state of rod systems for a variety of loading conditions. The exposition is accompanied by worked examples, vivid diagrams, and extensive historical commentary. The breadth of coverage and the wealth of factual material give the book a reference quality and make it a valuable student manual. A wide range of readers concerned with the mechanics of materials, including teachers and post-graduate and senior students, will find this book of interest. (Lan' Publ.: 193029 St. Petersburg, ul. Krupskoi 13; tel. (7-812) 567-8578, (7-812) 567-1445; tel./fax (7-812) 567-5493; e-mail: root@lanpbl.spb.ru; URL: <http://www.lanpbl.spb.ru>)

Butenin N V, Lunts Ya L, Merkin D R *Course of Theoretical Mechanics*. In two volumes. Vol. 1. *Statics and Kinematics* 6th ed. revised; Vol. 2. *Dynamics* 5th ed. revised. A textbook (St. Petersburg: Izd. Lan', 2002) 736 pp. ISBN 5-8114-0052-7. (Two volumes under one cover.)

Previously published in two separate volumes, *Course of Theoretical Mechanics* is now offered as a single two-volume

publication. The general theorems and mathematical apparatus of statics, kinematics, and dynamics are examined in detail. A large number of problems with detailed solutions and extended commentary are included, and the exercises for personal study are featured. With a moderate mathematical apparatus, numerous methodical advantages, and excellent selection of illustrative real-life examples and problems, the book is accessible to a wide range of students and is a useful manual for theoretical mechanics teachers. As the content of the book is wider than required by existing syllabus in the subject, it can be used for personal study purposes in student scientific circles and as a valuable resource in preparing for the master-of-science degree. Recommended by the RF Ministry of Education as a textbook for students in technical disciplines. Also intended for undergraduate and post-graduate students and teaching staff of technical colleges and faculties. (Lan' Publ.: 193029 St. Petersburg, ul. Krupskoi 13; tel. (7-812) 567-8578, (7-812) 567-1445; tel./fax (7-812) 567-5493; e-mail: root@lanpbl.spb.ru; URL: <http://www.lanpbl.spb.ru>)

Kats A M *Theory of Elasticity* 2nd ed. revised and enlarged (St. Petersburg: Izd. Lan', 2002) 208 pp. ISBN 5-8114-0453-0.

This book is a revised and somewhat enlarged version of the lecture course on the theory of elasticity which was given by the author repeatedly to undergraduate students at the power-plant engineering department as well as at the mechanics and mechanical engineering department of the then M I Kalinin Leningrad Polytechnical Institute in 1947–1951. The first edition was published earlier (Moscow: GITTL, 1956). General background in engineering mathematics is needed. The book gives the readers all the information necessary about the general equations and methods of elasticity theory (Chapters I to V) and, as illustrative material to the general part, presents solutions for a number of special problems of mechanical engineering interest (Chapters VII to XII). The book does not contain new results, but many formulas are derived in an unconventional manner for the sake of clarity and simplicity. For students in mechanics and mechanical engineering. (Lan' Publ.: 193029 St. Petersburg, ul. Krupskoi 13; tel. (7-812) 567-8578, (7-812) 567-1445; tel./fax (7-812) 567-5493; e-mail: root@lanpbl.spb.ru; URL: <http://www.lanpbl.spb.ru>)

Tairov Yu M, Tsvetkov V F *Technology of Semiconducting and Dielectric Materials* (St. Petersburg: Izd. Lan', 2002) 423 pp. ISBN 5-8114-0438-7.

This book provides insight into the basic processes used to fabricate electronics materials, such as heat and mass transfer, chemical processes, raw material processing, crystallization and vitrification, and modeling. Technological processes for manufacturing major superconductor and dielectric materials of electronics in the form of single crystals, glass, or ceramics are described. (Lan' Publ.: 193029 St. Petersburg, ul. Krupskoi 13; tel. (7-812) 567-8578, (7-812) 567-1445; tel./fax (7-812) 567-5493; e-mail: root@lanpbl.spb.ru; URL: <http://www.lanpbl.spb.ru>)

Kuz'min G E, Paï V V, Yakovlev I V *Experimental and Analytical Methods in Problems of the Dynamic Loading of*

Materials (Novosibirsk: Izd. SO RAN, 2002) 312 pp. ISBN 5-7692-0529-6.

This book introduces experimental and analytical methods for studying the behavior of continuous and powdery media under explosive loading. It discusses the throwing and collision of plates and cylindrical shells accelerated by the products of the detonations of explosives and describes methods for probing pressure and temperature fields in metals subject to high-speed deformation. For shock-compressed powdery media, research into flows behind shock waves is reviewed and the methods for measuring pressure and temperature are described. The mathematical models presented in the monograph are confirmed by available experimental data. On the other hand, all the experimental methods used in the field are justified theoretically. The book is intended for senior undergraduate and post-graduate students and practising specialists in the physics and mechanics of explosive processes. (SB RAS Publ.: 630090 P.O. box 187, Novosibirsk, Morskoï prosp. 2; tel./fax (7-3832) 30-17-58; fax (7-3832) 33-37-55; e-mail: sprice@as-sbras.nsc.ru; URL: <http://www-psb.ad-sbras.nsc.ru/>)

Dobretsov N L, Kirdyashkin A G, Kirdyashkin A A *Abyssal Geodynamics* (Proceedings of the OIGGM SO RAN, issue No. 850) 2nd ed. revised and enlarged (Novosibirsk: Izd. SO RAN, 'Geo' branch, 2001) 409 pp. ISBN 5-7692-0499-0.

The book covers the fundamentals of thermophysical modeling; the authors' own modeling results and their geodynamic applications; the dynamics of tectonic processes with due regard for geophysical and petrological data, and the resulting new formulations of geodynamics problems. Topics addressed include thermal convection in the Earth's upper mantle, modeling turbulent convection in the outer core, and the conditions of formation and the dynamics of mantle plumes. The book presents successively thermophysical models for thermal convection in the asthenosphere in the vicinity of the mid-ocean ridge and close to the subduction; for the lower mantle convection including subduction zone effects, and for free convective flows near the mantle-core boundary. Coverage also includes possible models for the induction of the terrestrial magnetic field; for spreading and continental rifting, and for the accretion wedge as the main regulator of the subduction process. The *Abyssal Geodynamics* reader gains real understanding of the magmatism and metamorphism processes in the subduction and collision zones; the evolution of the earth's active zones; the structure and evolution of the lithosphere; the periodicity of geological processes, and climate change and biospheric evolution periodicities. It will be useful for geologists, geochemists, geophysicists, and thermophysics specialists studying geodynamic processes, and undergraduate students seeking scientific qualification through the relevant courses. (SB RAS Publ.: 630090 P.O. box 187, Novosibirsk, Morskoï prosp. 2; tel./fax (7-3832) 30-17-58; fax (7-3832) 33-37-55; e-mail: sprice@as-sbras.nsc.ru; URL: <http://www-psb.ad-sbras.nsc.ru/>)

Compiled by *E V Zakharova*
(E-mail: zaharova@ufn.ru)