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Academician M A Leontovich: Scientist. Teacher. Citizen (Ed. by V D Shafranov et al. Compiled by V I Kogan, L K Kuznetsova, V D Novikov) (Moscow: Nauka, 2003) 511 pp. ISBN 5-02-002867-3.

This book is a new, jubilee (100th birthday) edition of the recollections of Academician M A Leontovich (1903–1981) — the prominent Russian theoretical physicist, founder of major scientific schools of radio and plasma physics — written by his friends, colleagues, students, and relatives. The recollections offer a portrait of a remarkable Soviet scientist who courageously opposed the lawlessness of the authorities when developing high government priority applications of physics in such areas as radiolocation and controlled nuclear fusion. The new edition builds upon two editions of the *Recollections of Academician M A Leontovich* (Moscow: Nauka, 1990; 1996). It opens with a brief account of the life and career of the scientist, followed by an interesting article by T A Leontovich, M A's younger sister, on his genealogy. The book ends with an appendix, which includes Leontovich's paper 'On systems of measures,' a record of his two memoir conversations with Dr. Phys. Math. Sci. A B Mikhailovskii, and archival documents reflecting the first of Leontovich's two main life stages. The book contains many illustrations, some of them previously unpublished. For a wide range of readers interested in learning more about what Russian physicists went through and what atmosphere they lived in during 60 post-revolutionary years (from the 1920s to the 1970s). (Nauka Publ.: 117997 GSP-7, Moscow V- 485, Profsoyuznaya ul. 90; tel/fax: (7-095) 334-9859; e-mail: initsiat@naukaran.ru; URL: <http://www.naukaran.ru/>)

Kalashnikov S G Electricity 6th ed. stereotype (Moscow: Fizmatlit, 2003) 624 pp. ISBN 5-9221-0312-1.

This book grew out of a lecture course that was taught by the author in the physics department at Moscow State University for a number of years. The basic laws of electrodynamics are formulated in a concise yet clear manner by generalizing experimental facts, and the physical meaning of the laws is discussed. SI units are used throughout the book. The book is intended for physics and engineering courses at universities and physics and engineering colleges and can be used at any higher education institution with physics as a major discipline. Higher school physics teachers will also find this book helpful. (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/>)

Yakovlev V I The ABC's of Analytical Mechanics 2nd ed. (Izhevsk: RKhD, 2002) 352 pp. ISBN 5-93972-166-4.

This book traces the development of basic concepts, principles, laws, and problems in classical mechanics until the middle of the 18th century. For historians of science and engineering, teachers and students in higher and special vocational education specialists in mechanics, physicists, engineers. ('Regular and Chaotic Dynamics' Publ.: 426034 Izhevsk, ul. Universitetskaya, 1; UdSU, RKhD; tel.: (7-3412) 50-02-95; fax: (7-3412) 50-02-95; e-mail: subscribe@rcd.ru; URL: <http://rcd.ru>)

Ivashev-Musatov O S The ABC's of Mathematical Analysis A Textbook. 6th ed. revised and enlarged (Moscow: Fiziko-Matematicheskaya Literatura Publ., FIMA, 2002) 256 pp. ISBN 5-94052-054-5 (Fizmatlit), 5-89492-012-4 ('FIMA').

A higher mathematics textbook for first and second year undergraduate students engaged in a short (200 hours or less) program in mathematics. In this sixth edition, material on analytical geometry and linear algebra, functions of several variables, and functions of a complex variable is included, and presentation is simplified in some chapters. For undergraduate courses in the fields of biology, geography, geology, medicine, and agriculture. Approved by the RF Ministry of Education as a textbook for the courses Biology 011600; Soil Science 01300; Geography 012500; Geology 011100. Recommended for publication by the RF Education Ministry's Research Methodology Council, to be used by undergraduate students in natural sciences. (Fiziko-Matematicheskaya Literatura Publ.: 117071 Moscow, Leninskii prosp., 15; tel.: (7-095) 952-4925, 955-0330; fax: (095) 955-0314; e-mail: fizmatlit@narod.ru; URL: <http://fizmatlit.narod.ru/>)

Kuz'min G E, Paï V V, Yakovlev I V Experimental and Analytical Methods for Problems of Dynamic Loading of Materials (Novosibirsk: SO RAN Publ., 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 explosive detonation products 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 methods for measuring pressure and temperature are described. The mathematical models presented are confirmed by available experimental data. On the other hand, theoretical justifications are given for all the experimental methods used in the field. The book is intended for senior undergraduate and postgraduate students and specialists in the physics and mechanics of explosive processes. (SO RAN Publ.: 630090 p/b 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/>)

Gorelik Ya B, Kolunin V S *Physics and Modeling of Cryogenic Processes in the Lithosphere* (Ed.-in-Chief V P Mel'nikov) (Novosibirsk: SO RAN Publ., branch 'Geo,' 2002) 317 pp. ISBN 5-7692-0511-3.

Physical mechanisms behind and the theoretical treatment of cryogenic processes and phenomena in dispersed lithospheric deposits are discussed in this book. Topics covered include causes of ice–water equilibrium at negative temperatures, regelation phenomena, migration, swelling and texture formation processes, and frozen rock consolidation due to external mechanical factors. The nature of considered phenomena is discussed in terms of pore moisture energetics as affected by the lithosphere's solid components (the phase surface tension and the cleaving pressure in liquid layers). The monograph presents the results of the author's own research and provides a review of recent publications on the subject. For geocryologists and specialists in the physics of processes in dispersive media. (SO RAN Publ.: 630090 p/b 187, Novosibirsk, Morskoi 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/>)

Anatychuk L I, Bulat L P *Semiconductors at Extreme Temperature Conditions* (St. Petersburg: Nauka, 2001) 224 pp. ISBN 5-02-024960-2.

This book discusses kinetic phenomena in semiconductors in the presence of large temperature gradients. It examines mechanisms of response to large temperature gradients and develops theoretical methods for treating kinetic phenomena in uniform and macroscopically nonuniform structures at highly nonuniform temperature. New nonlinear and nonlocal kinetic effects arising at large temperature gradients are identified and examined, and devices using these effects are proposed. The monograph is intended for research scientists and post-graduates working in the fields of semiconductor physics, solid state physics, and energy conversion physics, and for undergraduate students in related disciplines. The book will also be of interest to the specialists in the properties of materials under intense energy fluxes. (St. Petersburg Publishing Company at the RAS Publishing Center 'Nauka': 199164 St. Petersburg, Mendelevskaya lin. 1; tel.: (7-812) 328-3912; fax: (7-812) 328-0051; e-mail: main@nauka.nw.ru; URL: <http://nauka.nw.ru/>)

Berezin F A *Lectures on Statistical Physics* (Izhevsk: RKhD, 2002) 192 pp. ISBN 5-93972-193-1.

This book examines the fundamentals of equilibrium statistical physics. It consists of two parts: the first addresses classical statistical physics, the second, quantum one. For research scientists and undergraduate and post-graduate students. (Research Publishing Center 'Regular and Chaotic Dynamics' Publ.: 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/>)

Samarskiĭ A A, Vabishchevich P N *Additive Schemes for Problems in Mathematical Physics* (Moscow: Nauka, 2001) 319 pp. ISBN 5-02-006505-6.

This monograph discusses additive difference schemes for the approximate solution of multidimensional nonstationary

problems in partial differential equations. Special attention is given to schemes involving splitting of spatial variables (variable direction schemes) and physical process splitting. For parallel computer architecture, region decomposition (or region additive) schemes are constructed. Unconditionally stable, additive multicomponent splitting schemes for first- and second-order evolution equations are discussed. The material of the book is based on the general theory of stability of operative difference schemes. (RAS Publishing Center 'Nauka': 117997 GSP-7, Moscow V-485, Profsoyuznaya ul. 90; tel./fax: (7-095) 334-9859; e-mail: initsiat@naukaran.ru; URL: <http://www.naukaran.ru/>)

Solov'ev L S *Collected Works* 2 Vols. Vol. 1. *Equilibrium and Stability of Plasma Configurations* Vol. 2. *Nonlinear Development of Convective Plasma Instabilities* (Moscow: Nauka, 2001) Vol. 1. 396 pp. ISBN 5-02-002506-2; Vol. 2. 414 pp. ISBN 5-02-002573-9.

This two-volume publication presents the collected works of the prominent Soviet scientist Leonid Sergeevich Solov'ev, Doctor of Physical and Mathematical Sciences, one of the creators of modern plasma physics. The first volume contains papers which were published during the period 1955–1978 and cover general aspects of the geometry of the magnetic field; the motion of charged particles; and the development of magnetohydrodynamic and gasdynamic instabilities in equilibrium and steady-state plasma configurations. The second volume includes Solov'ev's studies of the 1980–1997 period and covers nonlinear two-dimensional instabilities in a plasma and a neutral gas; relativistic extension of previous theoretical results on the equilibrium and stability of plasma configurations; and some astrophysical applications of the theory of MHD equilibrium and stability. For specialists and research scientists with an interest in the theory of plasma and its applications. (RAS Publishing Center 'Nauka': 117864 GSP-7, Moscow V-485, Profsoyuznaya ul. 90; tel./fax: (7-095) 334-9859; e-mail: initsiat@naukaran.ru; URL: <http://www.naukaran.ru/>)

Kostyukov N S, Muminov M I, Atrash S M et al. *Dielectrics and Radiation* Books 1–4. Book 1. *Electric conduction under radiation* (Moscow: Nauka, 2001) 253 pp. ISBN 5-02-006493-9.

This monograph presents experimental and theoretical research on the radiation stability of non-organic, primarily ceramic, dielectrics. For scientists working in the field of radiation material science, engineers designing nuclear power plant equipment and nuclear facilities for various purposes, and specialists in the physics of dielectrics. (RAS Publishing Center 'Nauka': 117864 GSP-7, Moscow V-485, Profsoyuznaya ul. 90; tel./fax: (7-095) 334-9859; e-mail: initsiat@naukaran.ru; URL: <http://www.naukaran.ru/>)

Nonholonomic Dynamic Systems: Integrability, Chaos, Strange Attractors. Collection of papers ('Computing in mathematics, physics, and biology' series, edited by A V Borisov, I S Mamaev) (Moscow–Izhevsk: Institute of Computer Studies, 2002) 328 pp. ISBN 5-93972-167-2.

This is a collection of papers by leading Russian specialists on basic dynamic effects in the motion of nonholonomic systems. Most of the papers are written especially for this edition and

contain new results, in particular, numerical ones on three-dimensional images arising in the problem of a rolling body. New geometric images of dynamics are presented and hierarchies in the behavior of systems are discussed. The content of the book can be found on the Internet at URL: <http://ics.org/cgi/getfile.cg?id=22>. For undergraduate and post-graduate students, physicists, mathematicians, and specialists in dynamics systems. (Research Publishing Center 'Regular and Chaotic Dynamics' Publ.: 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/>)

Valiev K A, Kokin A A *Quantum Computers: Expectations and Reality* (Izhevsk: RKhD, 2002) 320 pp. ISBN 5-93972-024-2.

This monograph is the first attempt in Russia to systematically explore the mathematical and physical foundations of quantum computing and the principles of quantum computers. It presents the key definitions of quantum information theory and describes basic quantum logic operations and quantum algorithms; discusses limitations to full-scale quantum calculating and how they can possibly be overcome; and examines in detail some existing prototype quantum computers, and those under discussion, and analyzes their advantages, shortcomings, and realization problems. Some original results obtained by the authors are included in the book. The content of the book relies on research experience gathered up to the year 2000, reflected mainly in foreign journals and the Internet. The book will appeal to a wide range of specialists, including mathematicians, physicists, and computer system designers, and will also be a useful reference for faculty and undergraduate and postgraduate students in related disciplines. (Research Publishing Center 'Regular and Chaotic Dynamics' Publ.: 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/>)

Bogdanovich V A, Vostretsov A G *Theory of Robust Detection, Distinction, and Estimation of Signals* (Moscow: Fizmatlit, 2003) 320 pp. Bibliography: 33 refs. ISBN 5-9221-0359-8.

This monograph provides a summary of the results the authors obtained in the theory of detection, distinction, and estimation of signals over a number of years. It covers the authors' methods which synthesize signal detection, distinction, and estimation algorithms and which use statistical invariance, unbiasedness, and similarity principles for solving limited-sampling problems with a parametric apriori uncertainty; and combines these principles with each other, with the popular Bayes approach, with the minimax principle, and with the asymptotic (large sampling) optimum principle. The authors propose methods for synthesizing robust and asymptotically robust algorithms weakly sensitive to the form of observed data distributions. Algorithm synthesis for analog digital signal processing systems is discussed as well. For research scientists, post-graduate students, and engineers working in the areas of signal processing theory, mathematical statistics, statistical radio engineering, radiolocation, statistical communications theory, and information measurement engineering. (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/>)

Arnol'd V I *Astroidal Geometry of Hypocycloids and the Hessian Topology of Hyperbolic Polynomials* ('Summer School. Modern Mathematics' series) (Moscow: MTsNMO, 2001) 79 pp. ISBN 5-94057-012-7.

This book will appeal to a wide range of prepared readers interested in mathematics. (Publishing House of the Moscow Continuous Mathematical Education Center: 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/>)

Gershenzon E M, Malov N N, Mansurov A N *Mechanics* ('Higher Education' series) A textbook for undergraduate students (Moscow: Publishing Center 'Academia,' 2001) 378 pp. 5-7695-0349-1.

Topics in this textbook include the kinematics and dynamics of a material point and a solid, motions in non-inertial reference frames, elements of the special theory of relativity, vibrations and waves, elements of acoustics and hydrodynamics, and gravity. (Publishing Center 'Academia': 117399 Moscow, ul. Martenovskaya 3; tel.: (7-095) 176-9338; fax: (7-095) 176-9523.)

Korol'kov D V, Skorobogatov G A *Theoretical Chemistry* (St. Petersburg: SPb State University Publ., 2001) 425 pp. ISBN 5-288-02414-6.

This book focuses on the principles and concepts forming the arsenal of modern theoretical chemistry, and considers the kinetic theories of nonequilibrium, in particular, stochastic processes. The book is intended for senior undergraduate students and post-graduate students and will be useful to chemistry department faculty at classical, pedagogical, and technological universities, technological institutes, and academies. (SPb University Publ.: 199034 St. Petersburg, Universitetskaya nab. 7/9; tel.: (7-812) 328-7763; fax: (7-812) 328-4422; e-mail: books@dk2478.spb.edu; website: <http://unipress.spb.ru/>)

Yablonskiĭ A, Nikiforova V M *Coursebook on Theoretical Mechanics* 9th ed. (St. Petersburg: Lan', 2002) 768 pp. ISBN 5-8114-0390-9.

This book is recommended by the RF Ministry of Education as a textbook for undergraduate students in technical disciplines. It includes sections: Statics, Kinematics, and Dynamics. The basic concepts and axioms are discussed in detail. A large number of practical examples are presented. Questions for self-testing and an author index and a subject index are included. For undergraduate and post-graduate students and faculty. (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>)

Faddeev D K *Lectures on Algebra* (St. Petersburg: Lan', 2002) 416 pp. ISBN 5-8114-0447-6.

This book is based on a lecture course the author taught in the Mathematics and Physics Department at St Petersburg State University for decades for students in all mathematical disciplines. The great merit of the book is that abstract

concepts are introduced by generalizing specific mathematical material. For students in universities and teacher training colleges. (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>)

Kireitov V R *Direct and Inverse Dirichlet Problems for the Kepler Potential* (Novosibirsk: Manuscript Publishing House, 2002) 240 pp. ISBN 5-93240-042-0.

This book focuses on direct and inverse Dirichlet problems for the Kepler potential, a potential whose representative kernel is proportional to the square of the fundamental Coulomb (Newton) potential. The theory of the Kepler potential is the simplest nonlocal potential theory for which Dirichlet problems can be studied and solved nearly as completely and constructively as they can for the Coulomb potential. The theorems of uniqueness, existence, and integral representability of the solutions of the direct external and internal Dirichlet problems in domains with compact regular border are proved, as is the uniqueness theorem for the solution of the inverse problem. Some aspects of the theory of the generalized Kepler potential in a geometrically non-uniform space are discussed. The book can be recommended to undergraduate and post-graduate students in physics and mathematics and to research scientists specializing in the fields of mathematical physics and theoretical physics. (SO RAN Publ.: 630090 p/b 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/>)

Vasil'ev A V, Baranov A I *Defect-Impurity Reactions in Semiconductors* (Novosibirsk: SO RAN Publ., 2001) 256 pp. ISBN 5-7692-0428-1.

This book is devoted to physical processes in the atomic subsystem of semiconductors, primarily silicon. It presents the material from the unifying point of view, that all reactions in a semiconductor have as their basis reactions between defects and impurities that either are present initially or introduced by special treatment into the crystal. The book provides a general introduction to reactions and defects in solids. The classification of basic defect-impurity reactions in silicon is included. Reactions in silicon that involve oxygen, hydrogen, and carbon and those forming metastable and radiational defects are discussed in detail, as is the relation between defect-formation and diffusion processes. The book presents the results of research into large defect associations such as thermodonors, disordered regions, and impurity agglomerates. An original theory of reactions between neutral and charged centers in semiconductors is presented. The book is designed both for specialists in semiconductor physics and for readers entering the study of processes in semiconductor crystals. (SO RAN Publ.: 630090 p/b 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/>)

Kiryakov P P, Senashov S I, Yakhno A N *Symmetry and Laws of Conservation Applied to the Solution of Differential Equations* (Novosibirsk: SO RAN Publ., 2001) 192 pp. ISBN 5-7692-0459-1.

This monograph is devoted to the use of conservation laws and symmetry in solving differential equations. The construction of point and higher symmetries for systems of differential equations is discussed. Particular attention is given to conservation laws and to their use in finding exact solutions for certain systems of hyperbolic and elliptic equations of continuum mechanics. The book will be of use to research scientists, technologists, and engineers involved in the study and construction of exact solutions to various types of equations, and to undergraduate and post-graduate students. (SO RAN Publ.: 630090 p/b 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/>)

English-Russian Dictionary of Mathematical Terms, about 20,000 entries (Ed. by P S Aleksandrov) 3rd ed., stereotype (Moscow: Mir, 2001) 416 pp. ISBN 5-03-003393-9.

The first edition was published by Inostrannaya Literatura in 1962 and has long since become a rare book. Shortly before, in the USA, the *Russian-English Dictionary of the Mathematical Sciences* (Ed. A J Lohwater) (Providence: American Mathematical Society, 1961) had appeared, followed by its second edition, *A.J. Lohwater's Russian-English Dictionary of the Mathematical Sciences* (Ed. R P Boas) (Providence: American Mathematical Society, 1990). The second, revised and enlarged edition of the English-Russian Dictionary of Mathematical Terms was published by Mir in 1994. In it, misprints were corrected, the vocabulary was enlarged through a comparative analysis of the two editions of Lohwater's dictionary, and an index of Russian terms was added, allowing the dictionary to be read backwards as a Russian-English dictionary. The dictionary is designed in such a way as to eliminate the need for other dictionaries when reading mathematical texts. For anyone dealing with either English or Russian mathematical texts. (Mir Publ.: 107996, GSP-6, Moscow, I-110, 1st Rizhskii per. 2; tel.: (7-095) 286-8388; URL: <http://www.mir-pubs.dol.ru/>)

Puzyrev N N *Memoirs of a Geophysicist* 2nd ed. Revised and enlarged (Novosibirsk: SO RAN Publ., branch 'Geo,' Institute of Mathematics of the RAS SB, 2001) 226 pp. ISBN 5-86134-102-8.

The author gives an account of the path the science of geophysics has been making for over sixty years. The development of some aspects of exploratory geophysics, particularly seismic prospecting and deep seismic probing, is traced. Special attention is given to the period 1930–1960, with emphasis on the contribution the older generation of geophysicists made to the science. The author's activities in the Siberian Branch of the RAS are discussed. Designed to appeal to a wide range of readers. (SO RAN Publ.: 630090 p/b 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/>)

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