

New books on physics and related sciences

Abakumov V N, Perel' V I, Yassievich I N *Nonradiative Recombination in Semiconductors* (S.-Pb.: B P Konstantinov St. Petersburg Institute of Nuclear Physics, RAS, 1997) 367 pp. Bibliography: 466 refs. RFBR Grant No 96-02-30061.

The book addresses the physical concepts and theoretical principles involved in the study of the nonradiative recombination and thermal ionization of electrons and holes in semiconductors. Theoretical results are compared with experimental data. The book is intended for researchers, university teachers and also for postgraduate and undergraduate students. First published in English as the 33rd volume of the series 'Modern Problems in Condensed Matter Sciences' (Eds V M Agranovich and A A Maradudin) (Amsterdam: North-Holland, 1991).

Frenkel' V Ya *Professor Friedrich Houtermans: Life, Career, Destiny* (S.-Pb.: B P Konstantinov St. Petersburg Institute of Nuclear Physics, RAS, 1997) 200 pp. Bibliography: 12 refs. RFBR Grant No 96-06-87043.

Drawing on unique documentary materials from state and private archives in both Russia and abroad, this book looks at the scientific career and the fascinating and tragic life of the prominent German physicist Friedrich Georg Houtermans (1903-1966). For those interested in the history of physics.

Miller M A *Selected Essays on How Radio Physics Was Born and Matured in Gor'kiĭ (Nizhniĭ Novgorod)* (N. Novgorod: IAP, RAS, 1997) 224 pp. Published with support from the Russian Humanitarian Science Foundation under project 97-03-16118.

Acquaints the reader with the facts and events of the history of radio physics in Nizhniĭ Novgorod (formerly Gor'kiĭ city). Following a roughly chronological scheme, the book describes the prehistory of radio physics, the creation and early successes of the country's first Radio Physics Department at Gor'kiĭ State University, ideological struggle, rehabilitation of vibrations and waves, the founding of the Radio Physics Research Institute, and finally the evolution to the current status. As the founders of the field, A A Andronov, M T Grekhova, and G S Gorelik are given special attention. Intended for the readers who maintain interest in the history of Soviet-time science.

Mathematical Physics. Encyclopedia (Editor-in-Chief L D Faddeev) (Moscow: Great Russian Encyclopedia, 1998) 691 pp. Published with support from the RFBR, under project 97-01-14053.

Covering the basic research directions of modern mathematical physics, the Encyclopedia contains entries on classical and quantum mechanics, field theory, statistical mechanics, and methods of mathematical physics.

Tuchin V V *Lasers and Fiber Optics in Biomedical Studies* (Saratov: Saratov State University, 1998) 384 pp. Bibliography:

716 refs. Published with support from the RFBR under project 97-04-62137.

This book examines the operation principles and characteristics of lasers, fiber waveguides, and laser fiber-optical systems used in biology and medicine, including dye, ultrashort-pulse, and fiber lasers. For researchers and teachers, as well as senior undergraduate and postgraduate students in biomedical optics, laser biophysics, and biomedical laser application.

Tsverava G K Ruggero Guiseppe Boscovich (1711–1787) (Eds A A Gurshtein and N I Nevskaya) (S.-Pb.: Nauka, 1997) 203 pp. Published with support from the Russian Humanitarian Science Foundation under project 97-03-16045.

The book resurrects the life and work of the eighteenth-century Croat Jesuit scholar — a man who contributed greatly to such diverse areas of science as physics, astronomy, geodesy, optics, mathematics, geology, archeology, and even diplomacy.

Physics. Great Encyclopedic Dictionary 4th ed. (Editor-in-Chief A M Prokhorov) (Moscow: Great Russian Encyclopedia, 1998) 944 pp.

Bordovskii G A, Izvozchikov V A *Naturally Disordered Semiconductor Crystals* (To the 200 years of A I Gertsen Russian State Pedagogical University) (S.-Pb.: Obrazovanie, 1997) 422 pp. Bibliography: 466 refs.

This book summarizes numerous original results achieved over the years in the study of positionally disordered semiconductors. Specific topics covered photoelectrically active anantiotropic oxides of lead and bismuth and lead-containing triple semiconductors, both crystal and glass-like. Intended for researchers, teachers, and postgraduate and undergraduate students in solid-state physics.

Gladkov S O *Physics of Porous Structures* (Moscow: Nauka, 1997) 175 pp. Bibliography: 146 refs.

With this volume, the reader has a coherent account of the principles involved in the experimental and theoretical study of the physical properties of porous structures. The author examines the unusual behaviour of certain physical parameters and describes a method for calculating the heat conductivity of porous dielectrics using the nonequilibrium principle. For researchers and undergraduate and postgraduate students in physics and chemistry or both.

Mel'nikova O N *Free-Surface-Flow Bottom Deformation* (Moscow: MSU Physics Department, 1997) 108 pp. Bibliography: 66 refs.

The monograph offers an entirely new approach to duct flow bottom deformation and to the formation of regular bottom structures like ridges and river bends. For researchers in the field of hydrology and also for undergraduate and postgraduate students in geophysics.

Recollections of Academicians D V Skobel'tsin and S N Vernov (Eds M I Panasyuk and E A Romanovskii) (Moscow: MSU, 1995) 114 pp.

Staff members of the Nuclear Physics Research Institute and the Nuclear Physics Division of the MSU Physics Department reminisce about Academicians D V Skobel'tsin and S N Vernov as the founders of their respective institutions and as leaders of a major scientific school.

50 Years of the D V Skobel'tsin Nuclear Physics Research Institute (Eds M I Panasyuk, E A Romanovskii, and V I Savrin) (Moscow: MSU, 1996) 194 pp.

A brief review of the basic research and teaching developments at the MSU Nuclear Physics Research Institute from 1946 to 1995.

Chuvil'skii Yu M Cluster Radioactivity: Textbook (Moscow: MSU, 1997) 166 pp. Bibliography: 38 refs.

The textbook provides an in-depth description of cluster radioactivity, a new spontaneous nuclear process discovered in 1984. Intended for university students in physics, the text may also be useful for nuclear specialists entering to such fields as cluster phenomena, nuclear decay, and the interaction of nuclear compound particles.

Samokhin A B Integral Equations and Iteration Methods in Electromagnetic Scattering (Moscow: Radio and Svyaz', 1998) 160 pp. Bibliography: 57 refs.

The book gives an understanding of iteration methods as a tool for solving integral equations for electromagnetic wave scattering from three-dimensional bodies. Application areas covered include radar, radio communication, radio astronomy, microwave technology, plasma physics, and more. For researchers and specialists in computational mathematics, mathematical physics, and radiophysics.

Boyarskii P V École Polytechnique (Moscow: S I Vavilov Institute of the History of Natural Sciences, 1997) 198 pp. Bibliography: 142 refs.

An attempt to review certain aspects of the history of mechanics in France of late 18th–early 19th century against the country's political and economic background. From this perspective, the founding and development of the Polytechnical High School are considered.

Dikin I I, Popova O M Internal Point Algorithms: Investigation, Acceleration, and the Optimization Problems of Thermodynamics (Novosibirsk: Nauka, Siberian Branch of the RAS, 1997) 70 pp. Bibliography: 53 refs.

Presenting algorithms based on an innovative approach to the use of inequality constraints, the authors examine new convergence acceleration techniques for the optimization problems of thermodynamics. Coverage also includes new convergence theorems for direct variable sequences and for double estimates involved in the search for the inner admissible point of a linear system. Intended for a broad circle of specialists interested in the theory and application of mathematical programming techniques.

Larin I I Academician for Atomic Jobs (Moscow: Izdatel'stvo Atomn. Tekh., 1998) 144 pp. Bibliography: 40 refs.

The author portrays Academician Anatolii Petrovich Aleksandrov, a prominent scientist, engineer, and science organizer of Soviet times.

Compiled by *E V Zakharova*