

New books on physics and related sciences

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De Broglie L *Selected Scientific Work* Vol. 1 *Formation of Quantum Physics: Publications of 1921–1934* (Editor-in-Chief G Lochak) (Moscow: Logos, 2010) 556 pp. ISBN 978-5-98704-505-3.

The Publishing Group Logos and Moscow State University of Printing, supported by Fondation Louis de Broglie (Paris), published volume 1 of *Selected Scientific Work* of Louis de Broglie. This volume comprises publications of the 1920s–1930s when the foundations of quantum theory were being built. The book opens with the biography of the great French scholar *The Prince of Science*, written by his disciple, currently President of Fondation Louis de Broglie, Professor George Lochak and published in France. Volume 1 also contains de Broglie's PhD thesis, his Nobel lecture given in Stockholm on 12 December 1929, and the widely known monograph *Magnetic Electron*—the textbook on relativistic quantum mechanics. De Broglie is one of the great scientists of the 20th century. His contribution to the development of quantum physics won him the Nobel Prize in Physics 1929. He accomplished much in the philosophy of science and in organizing fundamental education. Many of de Broglie's ideas are still important today. Alas, the published body of work of Foreign Member of the USSR Academy of Sciences de Broglie is hardly known in this country. De Broglie wrote in French only; those few publications that happened to appear in Russian translations were printed more than 30 years ago and became bibliographic rarities. A team was formed of distinguished scientists and competent translators from French to correct the available not numerous translations and to prepare new ones. The book is intended for physicists, representatives of other sciences, philosophers, and science historians. (To acquire the book please contact: afsmk@mail.ru; tel. +7 915-119-42-12, +7 499-976-39-87)

Trubetskov D I *Introduction to Synergetics: Chaos and Structures* 3rd ed. (Series 'Synergetics: From Past to Future') (Moscow: LKI, 2010) 240 pp. ISBN 978-5-354-01218-3.

The contemporary science of oscillations and waves is presented in the book by its effects and phenomena encountered in medicine, chemistry, ecology, hydrodynamics, electronics, economics, and in social and some other sciences. The purpose of the book is to show that notions such as vibrations and waves, instability and nonlinearity, chaos and structures help us understand the unity of the modern pattern of the world. The book also

illustrates how ideas related to these notions permeate different branches of science. The main focus is on chaos and structures, i.e., the central subject matters of synergetics. The book is of interest in itself but can be equally regarded as a sequel to D I Trubetskov's book *Introduction to Synergetics. Oscillations and Waves* (Moscow: URSS, 2003). The book may prove useful for high school pupils in special classes for physics and mathematics, and for first-year university students of natural sciences. The book was based on lecture courses taught to students of humanities at Saratov State University. It can therefore be interesting and useful for a broad range of readers wishing to know more about synergetics. (Publishing Group URSS: 117312 Moscow, prosp. 60-letiya Oktyabrya 9, office 203 at the Institute for System Analysis, RAS; tel./fax +7 (499) 135-44-23; e-mail: urss@URSS.ru; URL: <http://urss.ru/>)

Bezruchko B P, Koronovskii A A, Trubetskov D I, Khramov A E *Path to Synergetics: Digression in Ten Lectures* 2nd ed. (Series 'Synergetics: From Past to Future') (Moscow: LKI, 2010) 304 pp. ISBN 978-5-397-01016-0.

The book outlines one of the most promising interdisciplinary approaches—the theory of self-organization, or synergetics. Well-known physicist and brilliant writer Charles P Snow lamented the dangerous gulf that opened up in the mid-20th century between the cultures of the natural sciences and humanities. One of the objectives of synergetics is to construct a bridge across this gulf. The notions, ideas, and concepts of synergetics are being applied on an ever wider scale in economics and sociology, in politics and business, in psychology and public administration, thereby affecting our world-outlook. The book introduces anyone interested in the subject, and first of all people from the humanitarian branch of knowledge, to the development and application of these ideas to the sciences dealing with human being and society and with the scientific roots of synergetics. The book is built around the course of lectures which were given to students of the social, humanitarian, philosophical, biological, and geological departments and the department of computer sciences and information technologies of N G Chernyshevsky Saratov State University. The accumulated experience of the authors shows that school pupils also absorb the material included in the book successfully and with interest. The lectures in this volume comply to a large extent with the program of the course 'Synergetics: A new vision of the world' recommended by the Russian Federation Ministry of Education for the 11th grade of general schools, specialty schools, and lyceums. The range of potential readers of this book is therefore fairly broad. (Publishing Group URSS: 117312 Moscow, prosp. 60-letiya Oktyabrya 9, office 203 at the Institute for System Analysis, RAS; tel./fax +7 (499) 135-44-23; e-mail: urss@URSS.ru; URL: <http://urss.ru/>)

Ochkin V N *Spectroscopy of Low-Temperature Plasma*

2nd ed., revised and expanded. (Moscow: FIZMATLIT, 2010) 592 pp. ISBN 978-5-9221-1172-0.

The book provides a description of the capabilities and current status of research in low-temperature plasma by methods of classical and laser spectroscopy. The author considers the physical interpretation of the results of the application of the emission, absorption, refraction, and light scattering methods to thermally nonequilibrium plasmas and to their relations with microscopic and macroscopic plasma parameters. Considerable attention is paid to studying plasma through electronic and vibrational–rotational plasma spectra of simple molecules in the absence of equilibrium among various degrees of freedom. Methods are discussed of identifying the chemical composition, energy balance, and partial temperatures of the neutral and charged components of electric and magnetic fields in plasmas. The text mostly tends to address practical aspects and provides reference data useful for the experimentalists, including atomic and molecular constants and emission spectra of molecules in plasmas. The book is intended for experimentalist experts working in physics and the chemistry of low-temperature plasma and gas lasers, as well as for postgraduates and senior year university students specializing in physics. (Publishing Company ‘Fiziko-matematicheskaya literatura’ MAIK ‘Nauka/Interperiodika’: 117997 Moscow, ul. Profsoyuznaya 90; tel. (7-495) 334-74-21; fax (7-495) 334-76-20; e-mail: fizmat@maik.ru; URL: <http://www.fml.ru/>)

Dissipative Solitons (Eds N Akhmediev, A Ankiewicz; translated from English under editorship of N N Rozanov) (Moscow: FIZMATLIT, 2008) 504 pp. ISBN 978-5-9221-0990-1.

The book is devoted to the fascinating area of modern nonlinear science, namely that of dissipative solitons, i.e., pulses or spatially localized waves in systems with gain and loss. Examples include laser systems, nonlinear resonators, and optical communication lines. Physical principles and mathematical tools are explained in a simple and laconic manner accessible to undergraduate students and young researchers. Similarities and differences between solitons in dissipative media and in Hamiltonian and integrable systems are discussed. The chapters were written by leading world experts in this area, which makes the book a unique source of information on this important area of research. [Translated into Russian from Akhmediev N, Ankiewicz A (Eds) *Dissipative Solitons* (Lecture Notes in Physics, Vol. 661) (Berlin: Springer, 2005)] (Publishing Company ‘Fiziko-matematicheskaya literatura’ MAIK ‘Nauka/Interperiodika’: 117997 Moscow, ul. Profsoyuznaya 90; tel. (7-495) 334-74-21; fax (7-495) 334-76-20; e-mail: fizmat@maik.ru; URL: <http://www.fml.ru/>)

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