

New books on physics and related sciences

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Landau L D, Lifshitz E M *Theoretical Physics* Vol. I *Mechanics* 6th edition (Ed. L P Pitaevskii) (Moscow: Izd-vo Fizmatlit, 2013) 616 pp. ISBN 978-5-9221-1509-4.

The volume begins the reedition of the complete course of *Theoretical Physics* which gained wide recognition in our country and abroad. It is devoted to a presentation of mechanics as part of theoretical physics. The Lagrangian and Hamiltonian formulations of the equations of mechanics, the conservation laws in mechanics, the particle collision theory, the oscillation theory, and solid body motion are considered. The book is intended for senior students of higher educational institutions specializing in physical sciences, as well as for postgraduates and research workers engaged in theoretical physics (Fizmatlit Publishers: 117342 Moscow, ul. Butlerova 17B; tel. +7 (499) 968-92-28; e-mail: fizmat@maik.ru; URL: <http://www.fml.ru/>)

Landau L D, Lifshitz E M *Theoretical Physics* Vol. II *The Classical Theory of Fields* 9th edition (Ed. L P Pitaevskii) (Moscow: Izd-vo Fizmatlit, 2014) 508 pp. ISBN 978-5-9221-1568-1.

The second volume in the course of theoretical physics which became famous in our country and abroad concerns with the classical theory of electromagnetic and gravitational fields. The basic principles of the Special Relativity are presented, the electrodynamic equations are derived from the least action principle, and the problems of electromagnetic wave propagation and emission are considered. The last chapters of the book deal with General Relativity. In parallel with the development of this theory, the fundamentals of tensor analysis are expounded. The book is intended for university students, students specializing in physics, and postgraduates in corresponding specialties. (Fizmatlit Publishers: 117342 Moscow, ul. Butlerova 17B; tel. +7 (499) 968-92-28; e-mail: fizmat@maik.ru; URL: <http://www.fml.ru/>)

Landau L D, Lifshitz E M *Theoretical Physics* Vol. VI *Hydrodynamics* 6th edition (Ed. L P Pitaevskii) (Moscow: Izd-vo Fizmatlit, 2015) 728 pp. ISBN 978-5-9221-1625-1.

Hydrodynamics is presented as part of theoretical physics, defining the character of its content and distinguishing it from other courses. The authors tried to analyze all the questions of physical interest as thoroughly as possible and to harness a clear picture of phenomena and their interrelations. In the preparation of the new edition, practically all the chapters, especially those concerning turbulence and shock waves, were supplemented with some additional material. However, the revision has not changed the character of the book which appeared as the first part of the *Mechanics of Continuous Media* in 1953 and its 4th edition under the title *Fluid*

Mechanics in 1988. The book will be useful for senior students of higher educational institutions specializing in physics, as well as for postgraduates and research workers in corresponding specialties. (Fizmatlit Publishers: 117342 Moscow, ul. Butlerova 17B; tel. +7 (499) 968-92-28; e-mail: fizmat@maik.ru; URL: <http://www.fml.ru/>)

Landau L D, Lifshitz E M *Theoretical Physics* Vol. V *Statistical Physics* In two parts. Part 1. 6th edition (Ed. L P Pitaevskii) (Moscow: Izd-vo Fizmatlit, 2013) 616 pp. ISBN 978-5-9221-1510-0.

This volume expounds quantum and classical statistical physics on the basis of the Gibbs method. Presented in the book are the basic principles of thermodynamics, the statistical physics of an ideal gas, the theory of nonideal gases, Fermi and Bose distributions and their application to the thermodynamics of black body radiation and to the theory of solids, the theory of solutions, the theory of chemical equilibrium, and surface phenomena. Magnetic properties of gases are also examined. The theory of crystal symmetry, fluctuations, first- and second-order phase transitions, the properties of matter in the neighborhood of a critical point, and the role of fluctuations in these phenomena are considered. The book will be of interest to senior students of physical specialties, postgraduates, and researchers engaged in theoretical physics. (Fizmatlit Publishers: 117342 Moscow, ul. Butlerova 17B; tel. +7 (499) 968-92-28; e-mail: fizmat@maik.ru; URL: <http://www.fml.ru/>)

Landau L D, Lifshitz E M *Theoretical Physics* Vol. IX *Statistical Physics* In two parts. Part 2. *The Theory of Condensed States* 5th edition (Ed. L P Pitaevskii) (Moscow: Izd-vo Fizmatlit, 2014) 496 pp. ISBN 978-5-9221-1580-3.

The book is devoted to the quantum theory of the condensed state of matter. The theory of quantum liquids — Bose and Fermi liquids — is presented in detail. Much attention is paid to methodical questions, namely, the theory of Green's functions of macroscopic bodies. The fifth edition of the book contains additional materials reflecting the modern state of the subject. The previous second nonstereotype edition appeared in 2000. The book will be of interest and value for senior students of physical specialties, as well as postgraduates and researchers in corresponding specialties. (Fizmatlit Publishers: 117342 Moscow, ul. Butlerova 17B; tel. +7 (499) 968-92-28; e-mail: fizmat@maik.ru; URL: <http://www.fml.ru/>)

Landau L D, Lifshitz E M *Theoretical Physics* (General Ed. L D Landau) Vol. 2 *Statistical physics* (Moscow–Leningrad: Main editorial office of technical-theoretical literature, 1938) 227 pp. Digital library ‘Russian Scientific Heritage’: e-book.

The second volume of the course of *Theoretical Physics* expounds systematically statistical physics and thermodynamics on the basis of the Gibbs method. The book is intended for theoretical and experimental physicists, and students. The reader has to be acquainted with differential

and integral calculus, as well as the fundamentals of mechanics (<http://books.e-heritage.ru/book/10075584>)

Landau L D, Lifshitz E M *Theoretical Physics* (General Ed. L D Landau) Vol. 3. *Mechanics of Continuous Media: Hydrodynamics and Theory of Elasticity* (Moscow–Leningrad: OGIZ. State Publishing House of Technical-Theoretical Literature, 1944) 624 pp. Digital library ‘Russian Scientific Heritage’: e-book.

This book is the third volume of the course of *Theoretical Physics*. It is devoted to the study of hydrodynamics and theory of elasticity. The authors tried to give the most comprehensive consideration to the questions of physical interest. The book contains nearly two hundred problems, many of which are of interest in and of themselves (<http://books.e-heritage.ru/book/10077925>)

Landau L D, Lifshitz E M *Theoretical Physics* (General Ed. L D Landau) Vol. 4. *Theory of Fields* (Moscow–Leningrad: State Publishing House of Technical-Theoretical Literature, 1941) 283 pp. Digital library ‘Russian Scientific Heritage’: e-book.

The fourth volume of the course of *Theoretical Physics* is concerned with the theory of electromagnetic and gravitational fields, i.e., electrodynamics and General Relativity. Electrodynamics is presented from the very beginning on the basis of the special relativity principle. The reader must be generally acquainted with electromagnetic phenomena, as given in the general physics course. A good knowledge of vector analysis is also needed (<http://books.e-heritage.ru/book/10076862>)

Landau L D, Lifshitz E M *Theoretical Physics: Electrodynamics of Continuous Media* (State Publishing House of Physics and Mathematics Literature ‘Fizmatlit’, 1959) 532 pp. Digital library ‘Russian Scientific Heritage’: e-book. This volume of the course of *Theoretical Physics* is devoted to the theory of electromagnetic fields in material media and the theory of the macroscopic electric and magnetic properties of matter (<http://books.e-heritage.ru/book/10084385>)

Prof. L Landau, Ass. Prof. E Lifshitz, Prof. L Rozenkevich *Problems in Theoretical Physics* Part 1. *Mechanics* (Kharkov: ONTI NKTP. State Scientific and Technical Publishing House of Ukraine, 1935) 119 pp. Digital library ‘Russian Scientific Heritage’: e-book.

The goal of this collection of problems is to help those studying theoretical physics to learn using the basic methods and relationships of this science. The mathematical knowledge necessary to solve the problems in this collection is as follows: a thorough command of differential and integral calculus and vector algebra, as well as the ability to integrate elementary differential equations. The collection is intended for students at physical institutes and a wide range of physicists eager to enrich their theoretical knowledge (<http://books.e-heritage.ru/book/10075014>)

Landau L D, Lifshitz E M *Theoretical physics*. (General Ed. L D Landau) Vol. 5. *Quantum Mechanics* Part 1. *Nonrelativistic Theory* (Moscow–Leningrad: State Publishing House of Technical-Theoretical Literature, 1948) 567 pp. Digital library ‘Russian Scientific Heritage’: e-book.

This book, which is part of the many-volume course of *Theoretical Physics*, covers a wide range of quantum-

mechanical problems whose interpretation does not require the application of relativistic theory. The book is intended for senior students in physical faculties of universities, especially those specializing in theoretical physics, and also for post-graduates and research workers (<http://books.e-heritage.ru/book/10084387>)

Landau L D, Akhiezer A I, Lifshitz E M *Mechanics and Molecular Physics* Textbook. 4th edition (Moscow: Izd-vo Intellect, 2014) 400 pp. ISBN 978-5-91559-177-5.

The proposed book, which certainly refers to the classical textbooks of the Russian scientific school of physics, contains a rather rigorous and legible presentation of classical mechanics, including basic information on acoustics; the principles of thermodynamics, including some aspects of physical chemistry, and the teachings of symmetry and structure of matter. In expounding the material, the authors used only the minimum necessary mathematical apparatus. The book was written for junior students at higher educational institutions in natural science and technology and for senior pupils at physico-mathematical schools (Publishing House Intellect: Promyshlennyyi proezd 14, 141700 Moscow region, Dolgoprudnyi, Russian Federation; tel: +7 (495) 579-96-45; fax: +7 (495) 617-41-88; e-mail: id-intellect@mail.ru; <http://www.id-intellect.ru/>)

Gorobets B S *Landau’s and Lifshitz’s Circle* 2nd edition (Moscow: Izd-vo URSS, 2013) 336 pp. ISBN 978-5-397-03329-9.

This book is the third in the trilogy *Landau’s Circle* (the first book is *A Life of Genius*, the second is *Physics of War and Peace*). It continues the life story of Academician L D Landau (1908–1968), Nobel Prize winner in Physics 1962 and laureate of the Lenin Prize and three Stalin Prizes. The book has 12 chapters with essays about the main hero-scientists, disciples, and/or contemporaries of Landau who were in close contact with him. They were E M and I M Lifshitz, A A Kompaneets, A B Migdal, V L Ginzburg, A A Abrikosov, I M Khalatnikov, Ya B Zel’dovich, P L Kapitza, A I Leipunskii, V S Fursov (Dean of the Faculty of Physics of Moscow State University), and M A Styrikovich (a power engineer). Many other outstanding scientists participate in the events, in particular, Niels Bohr, I E Tamm, I G Petrovsky, R Z Sagdeev, L A Artsimovich, I Ya Pomeranchuk, V G Levich, E L Feinberg, V Ya Fainberg, V P Silin, Yu L Klimontovich, A A Rukhadze, and others, presented through vivid episodes and characterizations in the gallery of essays and portraits. The Appendix contains the lecture by E M Lifshitz, “L D Landau as a scientist, a teacher, a man”, the letter by P L Kapitza to Stalin (a complete text), and others. The book is addressed to a wide range of readers interested in the history of 20th-century physics (URSS Publishers: Nakhimovskii prospect 56, 117335 Moscow, Russian Federation; tel./fax: +7 (499) 724-25-45; e-mail: urss@URSS.ru; URL:<http://urss.ru/>)

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