

New books on physics and related sciences

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Feinberg E L *Two Cultures: Intuition and Logic in Art and Science* 3rd ed., enlarged and augmented ('Science for All' Series) (Fryazino: Vek-2, 2004) 288 pp. ISBN 5-85099-145-X.

What does humankind need art for? How do art and science relate? Where does logic end and intuition begin? Problems common to 'two cultures' — natural-science knowledge on the one hand, and art and humanities on the other — are explored from a philosophical perspective in this book by E L Feinberg, a noted physicist and RAS Academician. The first edition was published by 'Radio and Svyaz' (Radio and Communications) in 1981 under the title *Kibernetika, Logika, Iskustvo* (*Cybernetics, Logic, Art*). The book was also published in English under the title *Art in the Science-Dominated World* (Gordon and Breach, 1987). The second book in this series, namely *Dve Kul'tury: Intuitsiya i Logika v Iskustve i Nauke* (*Two Cultures: Intuition and Logic in Art and Science*) (Moscow: Nauka, 1992) updated the first edition and addressed a new topic, the fate of the art–science relationship. This second book was published in Germany under the title *Zwei Kulturen: Intuition und Logik in Kunst und Wissenschaft* (Berlin: Springer-Verlag, 1998). In the third edition, in addition to the revised and occasionally augmented material of the first two editions, a new theme — the nineteenth–twentieth century debate over the role of intuition between philosophers and scientists — is also discussed. (Vek-2 Ltd. Publ.: 141195 Fryazino, Moscow Region, P.O. Box 107; tel. (7-095) 365-4355; e-mail: vek-2@mail.ru; URL: <http://www.vek2.nm.ru/>)

Fortov V E, Khrapak A G, Yakubov I T *Physics of Nonideal Plasma* A textbook (Moscow: Fizmatlit, 2004) 528 pp. ISBN 5-9221-0173-0.

This book covers the physics of high-density plasma compressed to the degree that the interparticle interaction energy becomes comparable to the kinetic energy of particle thermal motion. Interparticle interaction effects — i.e., nonideality — determine the unusual properties of such a plasma. It is this exotic state in which most of the Universe's matter finds itself. Interest in the study of nonideal plasma has increased in recent years with the availability, for pulse experiments, of high-energy-density states lying at the basis of many modern technological devices and energy facilities. Topics discussed include nonideal plasma generation and diagnostics techniques, results of experimental research on the thermodynamic, transport, and optical properties of nonideal plasma, and major theoretical methods and models. Special attention is given to new fast-growth areas of nonideal plasma physics, such as metallization of dielectrics and dielectrization of metals; singly charged plasma, and dust plasma and its crystallization. Intended for undergraduate and postgradu-

ate students and research workers in plasma physics, high-density media, statistical theory of many particles, plasma technologies, and gas discharge phenomena. (Fizmatlit Publ.: 117997 Moscow, Profsoyuznaya ul. 90; tel. (7-095) 334-7421; fax: (7-095) 334-7620; e-mail: fizmat@maik.ru; URL: <http://www.fml.ru/>)

Belotserkovskii O M, Oparin A M *Numerical Experiment in Turbulence: from Order to Chaos* 2nd enlarged ed. (Moscow: Nauka, 2001) 223 pp. ISBN 5-02-013191-1.

This book provides an authoritative review of fundamental concepts and methods in the study of turbulence and the order–chaos transformations. Employing new numerical techniques (numerical experiment), the authors perform the direct numerical simulation of freely developed turbulence, thereby providing major turbulence structure parameters for a number of turbulence regimes (coherent structures, laminar turbulent flows, transition to chaos). Added to the second edition is a vast amount of material by Oparin, pertaining to the way hydrodynamic instabilities develop in three dimensions. The information contained in this book will be of interest to specialists in various fields of science and engineering, as well as faculty and undergraduate students. (Nauka Publ.: 117997 GSP-7, Moscow V-485, Profsoyuznaya ul. 90; tel. (7-095) 334-7151; fax: (7-095) 420-2220; e-mail: secret@naukaran.ru; URL: <http://www.naukaran.ru/>)

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