

New books on physics and related sciences

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Mesyats G A *Pulsed Power and Electronics* (Moscow: Nauka, 2004) 704 pp. ISBN 5-02-033049-3.

This book takes an in-depth look at the generation of high-power nanosecond pulses. Topics covered include: a brief history of electric circuit theory; the physics of discharge in a vacuum, gas, and liquid; plasma, semiconductor, and magnetic high-power switches of normally open and normally closed types; pulse generation and transformation techniques, and methods for producing electron and ion beams and pulses of X-ray, laser, microwave, and super-wide-range radiation. Many of the results described in the book were obtained by the authors and his colleagues at Tomsk Polytechnic University and at two Russian Academy of Sciences institutes, of which the author himself was a founder and a long-time head (the Institute of Heavy Current Electronics in Tomsk, and the Institute of Electrophysics in Ekaterinburg). These results of the investigation were published in G A Mesyats's numerous papers and in his dissertations and patents, as well as in a series of monographs, the first of which appeared in 1963. Major results from leading laboratories in the US, Russia, and Great Britain are also used in the book. The book is intended mainly for those studying plasma and discharge physics, electrophysics, radio physics, electrical engineering, high-voltage engineering, heavy current electronics, etc. (The RF Academy of Sciences Publishing Center 'Nauka': 117997 GSP-7, Moscow V-485, Profsoyuznaya ul. 90; tel. (7-095) 334-71-51; fax: (7-095) 420-22-20; e-mail: secret@naukaran.ru; URL: <http://www.naukaran.ru/>)

Esakov V D, Rubinin P E *Kapitza, Kremlin, and Science in 2 Vols. Vol. 1. Creation of the Institute for Physical Problems. 1934–1938* (Moscow: Nauka, 2003) 655 pp. ISBN 5-02-006281-2.

Twentieth-century Russian science not only made a recognized contribution to scientific knowledge but it also accumulated unique expertise in organizing science and research activities. The creation of the Russian Academy of Sciences Institute for Physical Problems — the first Academy scientific-research institute to be built in Moscow after the Academy's 1934 Leningrad–Moscow move — holds special place in the history of how new research institutions came into being in this country. Drawing widely on archival materials — including the 'top secret' documents of the Central Committee CPSU Presidium and those from the personal archives of I V Stalin, V M Molotov, and V I Mezhlauk (the principal curators of the IPP project), as well as the personal archive of P L Kapitza, this documentary narrative recreates the story of Kapitza's prohibition from continuing his research in England and of his struggle to acquire the scientific equipment of the Royal Society Mond Laboratory at Cambridge, describes the main stages of the creation of the

Institute, and discusses the Institute's first achievements, including Kapitza's work on the superfluidity of helium, the latter being later awarded the Nobel Prize in Physics 1978. The book will be of interest and value to a wide range of readers. (The RF Academy of Sciences Publishing Center 'Nauka': 117997 GSP-7, Moscow V-485, Profsoyuznaya ul. 90; tel. (7-095) 334-71-51; fax: (7-095) 420-22-20; e-mail: secret@naukaran.ru; URL: <http://www.naukaran.ru/>)

Nagaev É L *Selected Works* (Conception and selection: V I Gorchakov, V E Zil'bervarg, K I Kugel', V D Lakhno, V M Matveev. Manuscript preparation: A A Tsirlin, G A Tsirlina) (Moscow: Fizmatlit, 2004) 320 pp. ISBN 5-9221-0458-6.

The six thematic sections of this posthumously published collection reflect the main directions of É L Nagaev's rich and diverse activity in solid-state theory. The central section of the book is devoted to the physics of magnetic semiconductors, an area of research which Nagaev founded and actively worked in for thirty years, and which propelled him to international recognition. Other highlights of Nagaev's creative career are described in sections on non-Heisenberg magnets, photomagnetism, the physics of small particles, high-temperature superconductors, and colossal magnetoresistance materials. The publication of this book was supported by the Russian Foundation for Basic Research under project No. 03-02-30002. (Fizmatlit Publ.: 117997 Moscow, Profsoyuznaya ul. 90; tel. (7-095) 334-74-21, fax: (7-095) 334-76-20; e-mail: fizmat@maik.ru; URL: <http://www.fml.ru/>)

Tverskoï B A *Fundamentals of Theoretical Space Physics* Selected Works (Moscow: Editorial URSS, 2004) 376 pp.

The first part of this collection of selected works of MSU space physics Professor Boris Arkad'evich Tverskoï (1936–1997), which is a re-publication of his long-out-of-print 1968 monograph *Dynamics of Earth Radiation Belts*, covers Tverskoï's commonly accepted theory of the Earth radiation belts. The second part presents Tverskoï's most important papers on the four key areas of his research: (1) the theory of Earth radiation belts; (2) the theory of the magnetosphere–ionosphere interaction and of related magnetospheric processes, in particular, magnetic storms and polar auroras; (3) the theory of the statistical acceleration of charged particles in space plasma, and (4) the theory of magnetic field generation in space objects (including some other works related to solar physics). The book is intended for specialists in space studies, geophysics, astrophysics, plasma physics, etc., as well as for faculty and postgraduates and senior undergraduates in related disciplines. (Editorial URSS Publ.: 117312 Moscow, prosp. 60-letiya Oktyabrya 9, office 203 at the RAS Institute for Systems Analysis; tel./fax (7-095) 135-44-23, 135-42-16, e-mail: urss@urss.ru; URL: <http://urss.ru/>)