## PHYSICS OF GALACTIC DISKS

A.M. Fridman and A.V. Khoperskov
ISBN-13: 978-1-907343-30-8; 680 pages, hardback, January 30 2013
£115.00

The book includes a number of new data obtained in recent years, in particular material relating to the recently discovered new structures in spiral galaxies: giant anticyclones, cyclones and slow bars. New methods for the detection of these structures are described. Types of vertical motions of stars and gas in the galaxies, whether due to the presence of spiral arms, or hose instability are discussed. An important place is given to modern numerical methods for describing the dynamics of galaxies, stellar as well as gas components. Algorithms of numerical models and a number of important results are presented. Other topics discussed include: the role of vertical motions in the disk systems and a new two-dimensional model of the gas disk, the theory of turbulence; a simple self-consistent model of the inhomogeneous differentially rotating hot stellar disk of finite thickness; conditions for stability of stellar disks, taking into account the worse stabilizability of non-axisymmetric disturbances compared to axisymmetric one; technique of construction of numerical dynamical models of gas and collisionless stellar disks; gravitational-hydrodynamic concept of spiral structures; problems in the dynamics of disks taking into account non-linear factors; a method of reconstruction of the three-dimensional velocity field of gas from the observational data; dynamic role of various components: the bulge, bar, halo, spirals; the dynamics of accretion disks; comprehensive analysis of large-scale processes in the accretion disk of binary stars, etc.
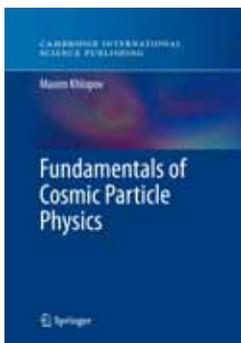
FUNDAMENTALS OF COSMIC PARTICLE PHYSICS

Maxim Khlopov, Virtual Institute of Astroparticle Physics, Paris, France

ISBN 978-1-907343-48-3, 375 pages, hardback, March 2012,
£100.00

The book is concerned with the problems of cosmoparticle physics - science dealing with the fundamental interactions of micro- and macroworld. The problems of reasons for cosmological expansion, the origin of baryon matter and existence in the universe of other non-baryon forms of matter, are discussed. The foundation of this science as an unavoidable stage of internal development and cosmology and also the physics of elementary particles, together with the main principles are only some of the topics discussed in the book. The physics of neutrino mass and its cosmological manifestations, the physical fundamentals of the existence and possibilities of astronomic search for the mirror and shadow matter, unstable massive neutrinos, invisible axions, and the domains of antimatter in the baryon-asymmetric universe, primary black holes, various stable and unstable particles of the hidden mass are just some of the problems of elements of cosmomicrophysical analysis analysis which should be studied when investigating the universe and physical lawas determining its origin, structure and evolution.
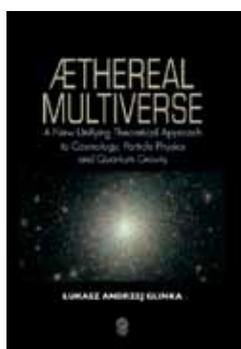
AETHEREAL MULTIVERSE: A NEW UNIFYING THEORETICAL APPROACH TO COSMOLOGY, PARTICLE PHYSICS AND QUANTUM GRAVITY

Lukasz Glinka, International Institute for Applied Mathematics and Information Science
ISBN-13: 978-1-907343-56-8; 830 pages, Hardback, May 2012; £100.00

This monograph is first of all the proposal of the unifying approach to particle physics, cosmology, and quantum gravity based on the most essential pieces of modern theoretical physics – Quantum Mechanics, Quantum Field Theory, Special Relativity, General Relativity, and Thermodynamics – and creates fruitful methodological background to solve the intriguing problems of high energy physics, cosmology, and gravitational physics.
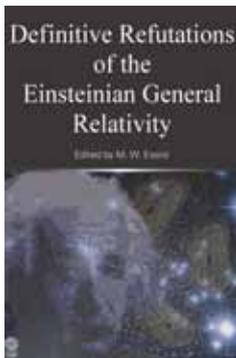
DEFINITIVE REFUTATIONS OF THE EINSTEINIAN GENERAL RELATIVITY

Edited by M.W. Evans, Alpha Institute for Advanced Studies
ISBN-13: 978-1-907343-08-7 200 pages, softback; £22.00/$35.00; hardback ISBN 978-1907343-38-4, £65.00/$70.00, April 2012

This book collects fourteen recent papers which refute the Einsteinian general relativity (EGR) definitively. The refutations are so simple that the theory is obsolete. To deny this conclusion would be to deny algebra at its simplest level. These refutations emerged during the development of Einstein Cartan Evans (ECE) unified field theory, and as that development gathered pace, the refutations became simpler and clearer so that they became irrefutable to any rational individual. The various refutations are summarized in the frontispiece of the book, starting with the simplest of all, the straightforward algebraic demonstration that EGR does not produce a precessing elliptical orbit.
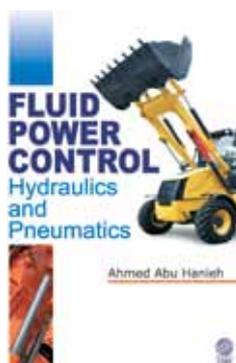
FLUID POWER CONTROL: HYDRAULICS AND PNEUMATICS

Ahmed Abu Hanieh, Birzeit University, Palestine
ISBN-13: 978-1-907343-14-8; 215 pages, softback, January 2012
£35.00

The idea of this book came out after five years of teaching the fluid power control course in Birzeit University besides to the long experience of the author in the real hydraulic and pneumatic systems which is reflected on the different applications of the diskussed circuits. Most of the existing books in this field diskuss the hydraulic and pneumatic systems in concentrating on the design and components of the system without going deep enough into the problem of dynamic modelling and control of these systems. This book attempts to compromise between theoretical modelling and practical understanding of fluid power systems by using modern control theory based on implementing Newton's second law in second order differential equations transformed into direct relationships between inputs and outputs via transfer functions.
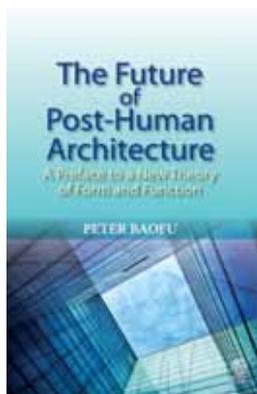
THE FUTURE OF POST-HUMAN ARCHITECTURE: A PREFACE TO A NEW THEORY OF FORM AND FUNCTION

Peter Baofu (USA)
ISBN-13: 978-1-907343-20-9, 610 pages, hardback, March 2012
£50.00

This book provides an alternative (better) way to understand the future of architecture, especially in the dialectic context of form and function-while learning from different approaches in the literature but without favoring any one of them (nor integrating them, since they are not necessarily compatible with each other). Differently put, this book offers a new theory (that is, the transcendent theory of architecture) to go beyond the existing approaches in a novel way.
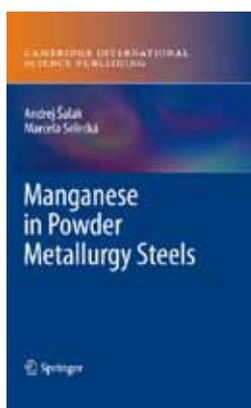
MANGANESE IN POWDER METALLURGY STEELS

A. Salak and M. Selecka, Materials Research Institute, Slovakia

This work in three parts presents a summary of the sintered manganese steel properties from 1948 to 2011 involving processing conditions and other characteristics. In the first and third part are given results attained by the authors based on their finding that manganese (cheapest element) during sintering evaporates and by this the vapour cleans the sintering atmospheres from humidity. The second part presents other positive properties of manganese steels in spite of the doubt of oxidation of manganese during sintering and by this excluding the sintering manganese steels what hinderd the use of manganese in production of sintered parts

SIMILARITY AND MODELING IN SCIENCE AND ENGINEERING

J. Kuneš, West Bohemian University, Plzen, Czech Republic

The present text sets itself in relief to other titles on the subject in that it addresses the means and methodologies versus a narrow specific-task oriented approach. Concepts and their developments which evolved to meet the changing needs of applications are addressed. This approach provides the reader with a general tool-box to apply to their specific needs. Two important tools are presented: dimensional analysis and the similarity analysis methods. The fundamental point of view, enabling one to sort all models, is that of information flux between a model and an original expressed by the similarity and abstraction. Each chapter includes original examples and ap-plications. In this respect, the models can be divided into several groups. The following models are dealt with separately by chapter; mathematical and physical models, physical analogues, deterministic, stochastic, and cybernetic computer models. The mathematical models are divided into asymptotic and phenomenological models.
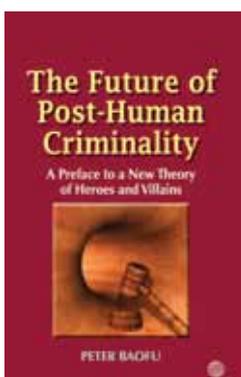
THE FUTURE OF POST-HUMAN CRIMINALITY: A PREFACE TO A NEW THEORY OF HEROES AND VILLAINS

Peter Baofu (USA)

This book offers an alternative (better) way to understand the future of criminality, especially in the dialectic context of heroes and villains-while learning from different approaches in the literature but without favoring any one of them (nor integrating them, since they are not necessarily compatible with each other).

In other words, this book offers a new theory (that is, the reflective theory of criminality) to go beyond the existing approaches in a novel way.
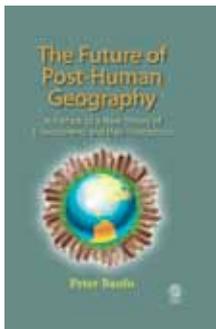
THE FUTURE OF POST-HUMAN GEOGRAPHY: A PREFACE TO A NEW THEORY OF ENVIRONMENTS AND THEIR INTERACTIONS

Peter Baofu (USA)
ISBN-13: 978-1-907343-69-8, 590 pages, hardback, January 2012; £50.00

This book provides an alternative (better) way to understand the future of geography, especially in the dialectic context of environments and their interactions-while learning from different approaches in the literature but without favoring any one of them (nor integrating them, since they are not necessarily compatible with each other). In other words, this book offers a new theory (that is, the interventive-reshaping theory of geography)
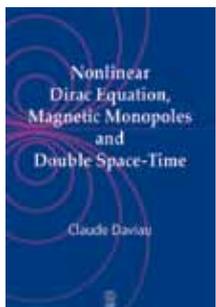
NONLINEAR DIRAC EQUATION, MAGNETIC MONOPOLES AND DOUBLE SPACE-TIME

Claude Daviau (France)
ISBN-13: 978-1-907343-58-2, 180 pages, hardback, August 2012; £50.00

Beginnings of quantum mechanics are revised and the author starts from the point where relativity and quantum mechanics were compatible. A modified wave equation for the electron is used. The relativistic invariance is then enlarged to a greater invariance group and the first consequences are studied. This invariance applies to the whole electromagnetism, including magnetic monopoles. Another space-time variety is seen which is very different from the usual relativistic space-time.
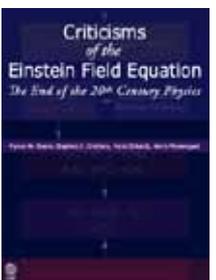
CRITICISMS OF THE EINSTEIN FIELD EQUATION: END OF THE 20TH CENTURY PHYSICS

Myron W. Evans, Stephen J. Crothers, Horst Eckardt and Kerry Pendergast
(Alpha Institute for Advanced Study)
ISBN 978-1-907343-28-5, 480 pages, hardback, January 2012; £95.00

In 2003 one of the four authors of this book began to construct a unified field theory of general relativity called "Einstein Cartan Evans" or ECE theory. This time, the geometry was correct, and physics was based on torsion. The ECE theory has developed into about 168 source papers to date and several books and articles by ECE scholars. It has made a phenomenal worldwide impact, indicating a great dissatisfaction with the obsolete physics. This book is the first to collect the severe criticisms of Einstein that are now commonplace.
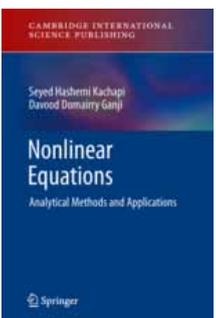
NONLINEAR EQUATIONS: ANALYTICAL METHODS AND APPLICATIONS

Hashemi Kachapi, Seyed, Domairry Ganji, Davood (Iran)
ISBN 978-1-907343-80-3, 440 pages, hardback, August 2012; £115.00

The present text reflects developments in the literature on nonlinear systems, while retaining a reader-friendly presentation. It has been developed from problems on nonlinear differential equations given over several years in the nonlinear dynamics team at the Mechanical Department of Babol Noshirvani University of Technology. A large variety of applied processes in both linear and nonlinear forms for important nonlinear differential equations are covered, enabling readers to solve problems without needing to refer to other sources. An introduction to systems in the context of nonlinear differential equations is provided and is suitable for courses of varying emphasis. The chapters are designed to be self-contained so readers can easily navigate to the material of interest.

SURFACE PHYSICS: THEORETICAL MODELS AND EXPERIMENTAL METHODS

M.V. Mamonova, V.V. Prudnikov and I.A. Prudnikova, Omsk State University, Russia

ISBN-13 to be allocated; approx. 380 pages, hardback, £100.00, Spring 2013

The book describes relatively simple and efficient approaches and methods, developed by the authors on the basis of the theory of the functional of electronic density and dielectric formalism. The methods can be used for calculating the strength and adhesion characteristics of a wide range of materials, with the results being in good agreement with the experimental data: metals, alloys, semiconductors and complex compounds. The methods have been applied in the adhesion theory of dry friction of metallic surfaces, developed by the authors of the book, which can be used for calculating the contributions to the friction coefficient as a result of the electrodynamics effects of dissipation of energy and effects of adhesive attraction of the surfaces of friction pairs. The principles and method for selecting the optimum pairs of the materials for non-lubricated friction sections taking into account the nature of their adhesion interaction have been developed and can be used, already in the stage of running-in of friction sections, to select the materials and coatings, characterised by the lowest friction coefficient. The original results of the authors of the book obtained in investigating the surface physics of a period of 20 years are also summarised.

PHASE TRANSITIONS IN SOLIDS UNDER HIGH PRESSURE

V. Blank and E.I. Estrin, **Russia**

ISBN-13 to be allocated, 400 pages, hardback, £100.00, Spring 2013

The book deals with the problem of phase transitions in solids at high pressure (HP). We consider the following questions: phase equilibria and kinetics of phase transformations in WA; phase transitions at HP in the elements (carbon, silicon, germanium, titanium, zirconium, iron, gallium, cerium) in compounds such as AIBVII, AIIBVI, AIIIBV, in alloys based on titanium and iron-based, the impact of strain on the phase transformation at HP; kinetics and hysteresis in high-and low-temperature transformations in WA; effects associated with phase transformations in WA, the nature of the basic laws of kinetics of phase transformations in WA, the conditions for obtaining and maintaining phases of WA.

FUNDAMENTALS OF FEMTOSECOND OPTICS

V. Kozlov and V. Samartsev, Zavoisky Physical Technical Institute, Russia

ISBN-13 to be allocated; 280 pages, hardback, £115.00, Spring 2013

This monograph is devoted to the presentation of the physical principles of the generation of femtosecond pulses, the description of the basic units of femtosecond lasers, methods for measuring the duration and parameters of ultrashort pulses, how best to use in the study of fast and stochastic processes on time scales of the order of hundreds or even tens of femtoseconds (ie, 10^{-13} -10^{-14} seconds), the description of the fundamentals of femtosecond coherent spectroscopy and review of numerous other applications of femtosecond technology

NONLINEAR FEMTOSECOND ATMOSPHERIC OPTICS

Yu.E. Geints, A.A. Zemlyanov, A.M. Kabanov, and G.G. Matvienko, Russia

ISBN-13 to be allocated; 300 pages, hardback, £100.00, 2013

The monograph presents analysis and generalization of the experimental and theoretical results of interaction between high-power ultra-short laser pulses with atmospheric matter. It was considered such interaction effects as laser beam self-focusing and filamentation, generation of supercontinuum emission, droplet destruction, and inelastic light scattering by liquid-drop aerosol particles. This monograph also covers the effects of laser pulse influences on optical materials. The results of laboratory and field experiments on propagation of high-power ultra-short laser pulses in the air and droplet media are given, as well as theoretical models are suggested and empirical results are interpreted.
The monograph is addressed to all researchers, post graduate students, and students at the universities specialized in atmospheric optics and physics and nonlinear optics. It will be useful for engineers in the field of laser technological and optics location systems.
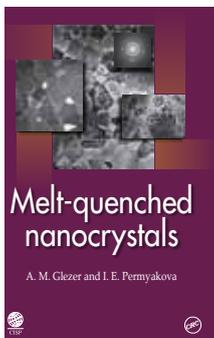
MELT-QUENCHED NANOCRYSTALS

A.M. Gleze, I.E. Permyakova, Russia

ISBN-13 to be allocated; 390 pages, hardback, £90.00, Spring 2013

This is the first book to focus on a detailed and systematic analysis of the nanostructured state formed in the process of melt quenching and subsequent thermal and deformation. It covers the metallurgical and mechanical properties of nanomaterials, focusing particularly on properties derived from nanocrystals and their agglomeration. The use of such materials is extensive, with applications from coatings to biological compatibility. This is a vast area with many specializations.optics location systems.

DIFFRACTIVE NANOPHOTONICS

V.A. Soifer (editor), Russia
ISBN-13 to be allocated; 750 pages, hardback, £115.00, Summer 2013
Diffractive nanophotonics, which is the subject of this book, deals with the processes and devices that are defining the wave properties of light. Diffractive nanophotonics suggests the possibility of describing the processes of behavior of light in the Maxwell equations. Using the Maxwell equations and the coherent electromagnetic fields. In this case, the characteristic dimensions of the optical elements and structures must be significantly higher than the atomic size. It is necessary to describe the optical properties with macroscopic characteristics of the dielectric permittivity and magnetic permeability

NANOSILICON: PROPERTIES, PRODUCTION, APPLICATIONS, METHODS OF STUDY AND CONTROL

A. Ischenko, et al., Russia
ISBN-13 to be allocated; 680 pages, hardback, £115.00, Summer 2013
The monograph is devoted to a systematic exposition of the properties, methods of synthesis and possible applications of porous silicon, nanosilicon and composite materials on their basis. Details are set out of methods for nanocrystalline silicon production and comparative analysis. The electronic and optical properties and the current methods studies that allow to characterize the spectral and structural properties of this material having unique optical (radiation absorption in the UV region and photoluminescence) and physical properties are described. Considerable attention is paid to the different areas of practical application:

ACOUSTICS OF NANODISPERSE MAGNETIC LIQUIDS

V.M. Poluniun, Russia
ISBN-13 to be allocated; 450 pages, hardback, £100.00, Summer 2013
The book systematically deals with a range of issues, which together lay the foundation for the formation of a new scientific direction – acoustic of nanodisperse media aimed at studying the nanoscale structure of matter: the currently known features of the propagation of sound waves in magnetized fluids and their model theory are described; acoustomagnetic and magnetoacoustic effects in magnetic fluids; specifics of the magnetic fluid seal as the oscillating system with magnetic fluid inertia member; acoustomagnetic spectroscopy modes of vibrations in a liquid-shell; acoustogranulometry - a new method for studying the physical properties of magnetic nanoparticles dispersed in a carrier fluid, vibration-rheological effects of the magnetized magnetic fluid and based on them acoustometry of the form of magnetic and non-magnetic nanoaggregates and microaggregates. Details are set out of methods for nanocrystalline silicon production and comparative analysis. region and photoluminescence) and physical properties are described. Considerable attention is paid to the different areas of practical application: