物理学関係書

新刊・近刊ご案内（2016 年 10-11 月）

　外国出版社の新刊・近刊案内のなかから物理学関係のものを選んでご案内致します。ご注文・お見積りなどお気軽にお申し込みください。

物理学一般

1.　Atmanspacher, H. & U. Müller-Herold (eds)
From Chemistry to ConsciousnessThe Legacy of Hans Primas. Sept 2016, 139pp., Hardback　(Springer)　ISBN 9783319435725
¥15,030

【量子力学講義 – 問題と解答】
2.　Basdevant, J.
Lectures on Quantum Mechanics: With Problems, Exercises and their Solutions, 2nd Edition. .(Graduate Texts in Physics) Original French edition published by Vuibert, Paris, France, 2005. Sept 2016, 500pp., Hardback　(Springer)
ISBN 9783319434780　¥13,150
CONTENTS: The appeal of physics.- A quantum phenom-enon.- Wave function, Schrödinger equa-tion.- Physical quantities.- Energy quantiza-tion.- Principles of quantum mechanics.- Two-state systems.- Algebra of observables.- Approximation methods.- Angular momen-tum.- The Hydrogen Atom.- Spin 1/2.- Addi-tion of angular momenta.- Identical particles, the Pauli Principle.- Lorentz force in quantum mechanics.

【時間の科学史】
3.　Ben-Naim, A.
The Briefest History of Time: The History of Histories of Time and the Misconstrued

Association between Entropy and Time.
May 2016, 264pp., Hardback　(World Scientific)
ISBN 9789814749848　¥9,140
(Paperback　ISBN 9789814749855　¥4,650)
CONTENTS: What is Time?; What is a History of Something?; The Briefest History of Space; The Briefest History of Time; Entropy and the Second Law of Thermodynamics; The History of Histories of Time.

4.　Bettini, A.
A Course in Classical Physics 3: Electromagnetism. (Series: Undergraduate Lecture Notes in Physics)　Aug 2016, 403pp., Paperback　(Springer)　ISBN 9783319408705
¥13,150

【宇宙論の哲学】
5.　Chamcham, K. et al. (eds)
The Philosophy of Cosmology. April 2016, Hardback　(Cambridge U.P.)
ISBN 9781107145399　¥11,640
Following a long-term international collaboration between leaders in cosmology and the philosophy of science, this volume addresses foundational questions at the limit of science across these disciplines, questions raised by observational and theoretical progress in modern cosmology. Space missions have mapped the Universe up to its early instants, opening up questions on what came before the Big Bang, the nature of space and time, and the quantum origin of the Universe. As the foundational volume of an emerging academic discipline, experts from relevant fields lay out the fundamental problems of contemporary cosmology and explore the routes toward finding possible solutions. Written for graduates and researchers in physics and philosophy, particular efforts are made to inform academics from other fields, as well as the educated public, who wish to understand our modern vision of the Universe, related philosophical questions, and the significant impacts on scientific methodology.

6.　Chinnici, I.
Merz Telescopes: A heritage worth preserving. (Series: Historical & Cultural Astronomy)　Dec 2016, ca.200pp., Hardback (Springer)　ISBN 9783319414850　¥15,030

7.　Crelinsten, J.
Einstein's Jury: The Race to Test Relativity.
2016, 432pp., Now in Paperback　(Princeton U.P.)
ISBN 9780691171074　¥4,640
(Hardback: 2006　ISBN 9780691123103　¥8,640)

8. Crull, E. & G. Bacciagaluppi (eds)
Grete Hermann - Between Physics and Philosophy. (Studies in History and Philosophy of Science, Volume 42) Oct 2016, ca.350pp., Hardback (Springer)　ISBN 9789402409680　¥18,790

【初期 19 世紀におけるジュノー・ベスタの発見】
9. Cunningham, C.
The Discovery and Study of Juno and Vesta in the Early Nineteenth Century: Historical Studies in Asteroid Research.　Dec 2016, 350pp., Hardback　(Springer)
ISBN 9789811019821　¥24,420
Based on extensive primary sources, including many documents from Olbers, Gauss, Zach, and Regner never previously translated into English, this is the definitive account of the origins of Juno and Vesta by Hershel. Primary sources about the discovery are included in new translations, including personal correspondence and scientific papers. Cunningham, a dedicated scholar of asteroids, opens to scrutiny this critical moment of astronomical discovery, continuing the story begun in Volumes I, II and III of this series.　The discovery of this new class of celestial bodies, as well as the revelation of the existence of the Asteroid Belt, set off an entirely new understanding of the Solar System, the implications of which are thoroughly discussed. How the discovery of Juno influenced Bode in his thinking about "Bode's Law" is studied, and the volume concludes with a look at the instruments and observatories that analyzed the asteroids in these early years of the nineteenth century.

【第一原理から量子論へ】
10. D'Ariano, G.M. et al.
Quantum Theory from First Principles: An Informational Approach. Jan 2017, Hardback (Cambridge U.P.)　ISBN 9781107043428　¥12,470
Quantum theory is the soul of theoretical physics. It is not just a theory of specific physical systems, but rather a new framework with universal applicability. This book shows how we can reconstruct the theory from six information-theoretical principles, by rebuilding the quantum rules from the bottom up. Step by step, the reader will learn how to master the counterintuitive aspects of the quantum world, and how to efficiently reconstruct quantum information protocols from first principles. Using intuitive graphical notation to represent equations, and with shorter and more efficient derivations, the theory can be understood and assimilated with exceptional ease. Offering a radically new perspective on the field, the book contains an efficient course of quantum theory and quantum information for undergraduates. The book is aimed at researchers, professionals, and students in physics, computer science and philosophy, as well as the curious outsider seeking a deeper understanding of the theory.

11. Davies, S.R. & M. Horst
Science Communication: Culture, Identity and Citizenship. Aug 2016, 255pp., Hardback (Springer)　ISBN 9781137503640　¥16,910

12. Durham, I. T. & D. Rickles (eds)
Information and Interaction: Eddington, Wheeler, and the Limits of Knowledge. (The Frontiers Collection)　Sept 2016, 250pp., Hardback (Springer)　ISBN 9783319437583　¥10,700

【波動関数の意味】
13. Gao, Shan
The Meaning of the Wave Function. April 2017, Hardback　(Cambridge U.P.)
ISBN 9781107124356　ca. ¥23,280
At the heart of quantum mechanics lies the wave function, a powerful but mysterious mathematical object which has been a hot topic of debate from its earliest stages. Covering much of the recent debate and providing a comprehensive and critical review of competing approaches, this ambitious text provides new, decisive proof of the reality of the wave function. Aiming to make sense of the wave function in quantum mechanics and to find the ontological content of the theory, this book explores new ontological interpretations of the wave function in terms of random discontinuous motion of particles. Finally, the book investigates whether the suggested quantum ontology is complete in solving the measurement problem and if it should be revised in the relativistic domain. A timely addition to the literature on the foundations of quantum mechanics, this book is of value to students and researchers with an interest in the philosophy of physics.

14. Grupen, C. & M. Rodgers
Radioactivity and Radiation: What they are, what they do, and how to harness them. Sept 2016, 253pp., Hardback　(Springer)　ISBN 9783319423296　¥7,510

【オックスフォード科学哲学ハンドブック】
15. Humphreys, P. (ed)
The Oxford Handbook of Philosophy of Science. Sept 2016, 960pp., Hardback　(Oxford U.P., USA)　ISBN 9780199368815　¥29,100
This handbook provides both an overview of state-of-the-art scholarship in philosophy of science, as well as a guide to new directions in the discipline. Section I contains broad overviews of the main lines of research and the state of established knowledge in six principal areas of the discipline, including computational, physical, biological, psychological and social sciences, as well as general philosophy of science. Section II covers what are considered to be the traditional topics in the philosophy of science, such as causation, probability, models, ethics and values, and explanation. Section III identifies new areas of investigation that show promise of becoming important areas of research, including the philosophy of astronomy and astrophysics, data, complexity theory, neuroscience, simulations, post-Kuhnian philosophy, post-empiricist epistemology, and emergence. Most chapters are accessible to scientifically educated non-philosophers as well as to professional philosophers, and the contributors - all leading researchers in their field -- bring diverse perspectives from the North American, European, and Australasian research communities. This volume is an essential resource for scholars and students.

16. Kauffman, S.A.
Humanity in a Creative Universe. Apr 2016, 312pp., Hardback　(Oxford U.P., USA)　ISBN 9780199390458　¥5,810

17. Lewis, P.J.
Quantum Ontology: A Guide to the Metaphysics of Quantum Mechanics. Aug 2016, 232pp., Hardback   (Oxford U.P., USA)   ISBN 9780190469825   ¥16,460
(Paperback   ISBN 9780190469818   ¥5,820)

【科学的知識の本質】
18. McCain, K.
The Nature of Scientific Knowledge An Explanatory Approach. (Springer Undergraduate Texts in Philosophy)   June 2016, 264pp., Hardback (Springer)
ISBN 9783319334035   ¥12,500
This book offers a comprehensive and accessible introduction to the epistemology of science. It not only introduces readers to the general epistemological discussion of the nature of knowledge, but also provides key insights into the particular nuances of scientific knowledge. No prior knowledge of philosophy or science is assumed by The Nature of Scientific Knowledge.

19. Nadis, S. & Shing-Tung Yau
From the Great Wall to the Great Collider: China and the Quest to Uncover the Inner Workings of the Universe.   Dec 2015, 214pp., Hardback   (International Press of Boston, Inc.)
ISBN 9781571463104   ¥4,900

20. Nahin, P.J.
In Praise of Simple Physics: The Science and Mathematics behind Everyday Questions. 2016, 272pp., Hardback   (Princeton U.P.)   ISBN 9780691166933   ¥4,980

21. Neffe, J.
Einstein: A Biography. Translated by SHELLY FRISH   Sept 2016, 488pp., Paperback   (Wiley)
ISBN 9780745642215   ¥3,150

22. Neuenschwander, D. (ed)
Dear Professor Dyson: Twenty Years of Correspondence Between Freeman Dyson and Undergraduate Students on Science, Technology, Society and Life. Mar 2016, 350pp., Hardback   (World Scientific)   ISBN 9789814675840   ¥10,970
(Paperback   ISBN 9789814675857   ¥5,980)

【ウルフ賞物理学部門】
23. Piran, T. (ed)
Wolf Prize in Physics. July 2016, 900pp., Hardback   (World Scientific)   ISBN 9789813109858 ¥32,430
(Paperback   ISBN 9789813141025   ¥12,970)
CONTRIBUTORS: Leo P Kadanoff; Michael E Fisher; Martin Perl; Peter B Hirsch; Albert J Libchaber; Joseph H Taylor, Jr.; Michael V Berry; Anthony J Leggelt; Bertrand I Halperin; Peter W Higgs; Froancois Englert; Daniel Kleppner; Albert Fert; Anton Zeilinger; John F Clauser; Harald Rose; Maximilian Haider; Jacob D Bekenstein; Juan Ignacio Cirac; Peter Zoller.

24. Polini, M. et al.
No-nonsense Physicist: An Overview of Gabriele Giuliani's Work and Life.
(Publications of the Scuola Normale Superiore, Vol 2) Oct 2016, 240pp., Paperback   ((Edizioni della Normale / Springer)   ISBN: 9788876425356   ¥4,510

25. van Eck, D.
The Philosophy of Science and Engineering Design. (SpringerBriefs in Philosophy)   June 2016, ca.80pp., Hardback   (Springer)
ISBN 9783319351544   ¥15,030
This book discusses the relationship between the philosophy of science and philosophy of engineering, and demonstrates how philosophers of engineering design as well as design researchers can benefit from the conceptual toolkit that the philosophy of science has to offer.

26. Walker, S.I. et al. (eds)
From Matter to Life: Information and Causality. March 2017,   Hardback   (Cambridge U.P.)   ISBN 9781107150539   ¥5,010

【若手物理学者の国際トーナメント 2014】
27. Wang, Sihui & W. Gao
International Young Physicist's Tournament: Problems and Solutions 2014.
Feb 2016, 192pp., Paperback   (World Scientific)   ISBN 9789814740333   ¥6,320
International Young Physicists' Tournament (IYPT), is one of the most prestigious international physics contests among high school students. This book is based on the solutions of 2014 IYPT problems. The authors are undergraduate students who participated in the CUPT (Chinese Undergraduate Physics Tournament). It is intended as a college level solution to the challenging open-ended problems. It provides original, quantitative solutions in fulfilling seemingly impossible tasks. This book is not limited to the tasks required by the problems and it is not confined to the models and methods in present literatures. This book provides quantitative solutions to practical problems in everyday life.

28. Wilds, R.
Bright and Dark Nebulae: A Pocket Field Guide. Dec 2016, 379pp., Paperback   (Springer)
ISBN 9783319328133   ¥5,630

29. Wuppuluri, S. & G. Ghirardi (eds)
Space, Time and the Limits of Human Understanding. (The Frontiers Collection) Sept 2016, 542pp., Hardback   (Springer)
ISBN 9783319444178   ¥13,150

数理物理学

CONTENTS: Theory of Probability.- Random Variables and Their Distribution.- Sum and Functions of Random Variables.- Estimate of Mean and Variance and Confidence Intervals.- Median, Weighted Mean and Linear Average (NEW).- Distribution Function of Statistics and Hypothesis Testing.- Maximum Likelihood Fit to a Two-Variable Dataset.- Goodness of Fit and Parameter Uncertainty.

This book elaborates on the asymptotic behaviour, when N is large, of certain N-dimensional integrals which typically occur in random matrices, or in 1+1 dimensional quantum integrable models solvable by the quantum separation of variables.

This text introduces geometric spectral theory in the context of infinite-area Riemann surfaces, providing a comprehensive account of the most recent developments in the field. For the second edition the context has been extended to general surfaces with hyperbolic ends, which provides a natural setting for development of the spectral theory while still keeping technical difficulties to a minimum.

This is a book about the Hilbert space formulation of quantum mechanics and its measurement theory. It contains a synopsis of what became of the Mathematical Foundations of Quantum Mechanics since von Neumann's classic treatise with this title.

This text is the first of its kind to bring together both the thermomechanics and mathematical analysis of Reiner-Rivlin fluids and fluids of grades 2 and 3 in a single book. Each part of the book can be considered as being self-contained.

This fifteenth volume of the Poincare Seminar Series, Dirac Matter, describes the surprising resurgence, as a low-energy effective theory of conducting electrons in many condensed matter systems, including graphene and topological insulators, of the famous equation originally invented by P.A.M. Dirac for relativistic quantum mechanics.

This work deals with several aspects of the Coulomb problem as well as with a large number of related multivariable hypergeometric functions. Intended for atomic physicists and mathematicians, it builds a bridge of understanding between both the Physical and Mathematical sciences. After a basic introduction on the Coulomb problem, it is divided into two parts.

CONTENTS: 1 Introduction.- 2 Spiking in Single-Mode Laser.- 3 Spiking in Lasers with Delayed Feedback.- 4 Rectangular Pulsing in Lasers with Delayed Feedback.- 5 Relaxation Oscil-lations in Coupled Laser Systems.- Appen-dixes.- References.

41. Hayashi, Masahito

Quantum Information Theory: Mathematical Foundation, 2nd Edition. (Series: Graduate Texts in Physics)   Dec 2016, 660pp., Hardback (Springer)   ISBN 9783662497234   ¥18,790

This graduate textbook provides a unified view of quantum information theory. Clearly explaining the necessary mathematical basis, it merges key topics from both information-theoretic and quantum- mechanical viewpoints and provides   lucid explanations of the basic results. Thanks to this unified approach, it makes accessible such advanced topics in quantum communication as quantum teleportation, superdense coding, quantum state transmission (quantum error-correction) and quantum encryption. Since the publication of the preceding book Quantum Information: An Introduction, there have been tremendous strides in the field of quantum information. In particular, the following topics – all of which are addressed here – made seen major advances: quantum state discrimination, quantum channel capacity, bipartite and multipartite entanglement, security analysis on quantum communication, reverse Shannon theorem and uncertainty relation. With regard to the analysis of quantum security, the present book employs an improved method for the evaluation of leaked information and identifies a remarkable relation between quantum security and quantum coherence. Taken together, these two improvements allow a better analysis of quantum state transmission. In addition, various types of the newly discovered uncertainty relation are explained. Presenting a wealth of new developments, the book introduces readers to the latest advances and challenges in quantum information. To aid in understanding, each chapter is accompanied by a set of exercises and solutions.

42. Hayashi, M.

A Group Theoretic Approach to Quantum Information. Original Japanese version published by Kyoritsu Shuppan, Tokyo, 2014. Oct 2016, 239pp., Hardback   (Springer)   ISBN 983319452395 ¥10,700

CONTENTS: Foundation of Quantum Theory.- Quantum Channel, Information Quantities, and Their Mathematical Structure.- Quantum Entanglement and Its Quantification.- Group Covariance and Optimal Information Processing.- Quantum Error Correcting Code and Its Application.- Universal Information Processings.

43. Hayashi, M.

Group Representation for Quantum Theory. Original Japanese version published by Kyoritsu Shuppan, Tokyo, 2014.   Oct 2016, 370pp., Hardback (Springer)   ISBN 9783319449043   ¥20,660

CONTENTS: Foundation of Quantum Theory.- Group Representation.- Representations of Lie Group and Lie Algebra (Basics).- Representations of Lie Group and Lie Algebra (Special Case).- Representations of Lie Group and Lie Algebra (General Case).- Bosonic System.- Discretization of Bosonic System.

44. Hietarinta, J. et al.

Discrete Systems and Integrability. (Part of Cambridge Texts in Applied Mathematics) Aug 2016, Paperback   (Cambridge U.P.)
ISBN 9781107669482   ¥8,310

45. Hofmann, R.

The Thermodynamics of Quantum Yang-Mills Theory, 2nd Edition.   June 2016, 580pp., Hardback   (World Scientific)   ISBN 9789813100473   ¥19,950
(Paperback   ISBN 9789813100480   ¥11,300)

This latest edition enhances the material of the first edition with a derivation of the value of the action for each of the Harrington-Shepard calorons/anticalorons that are relevant for the emergence of the thermal ground state. Also included are discussions of the caloron center versus its periphery, the role of the thermal ground state in U(1) wave propagation, photonic particle-wave duality, and calculational intricacies and book-keeping related to one-loop scattering of massless modes in the deconfining phase of an SU(2) Yang-Mills theory. Moreover, a derivation of the temperature-redshift relation of the CMB in deconfining SU(2) Yang-Mills thermodynamics and its application to explaining an apparent early re-ionization of the Universe are given. Finally, a mechanism of mass generation for cosmic neutrinos is proposed.

46. König, W.

The Parabolic Anderson Model Random Walk in Random Potential. (Pathways in Mathematics)   June 2016,   160pp., Hardback (Birkhäuser)   ISBN 9783319335957   ¥14,460

CONTENTS: 1 Background, model and questions.- 2 Tools and concepts.- 3 Moment asymptotics for the total mass.- 4 Some proof techniques.- 5 Almost sure asymptotics for the total mass.- 6 Strong intermittency.- 7 Refined questions.- 8 Time-dependent potentials.

47. Krüger, T. et al.

The Lattice Boltzmann Method: Principles and Practice. (Graduate Texts in Physics)   Oct 2016, 684pp., Hardback   (Springer)   ISBN 9783319446479   ¥15,030

48. Li, Xikui et al. (eds)

Proceedings of the 7th International Conference on Discrete Element Methods. (Springer Proceedings in Physics, Vol 188)   Sept 2016, ca.600pp. Paperback   (Springer)   ISBN 9789811019258   ¥26,300

This book presents the latest advances in Discrete Element Methods (DEM) and technology. It is the proceeding of 7th International Conference on DEM which was held at Dalian University of Technology on August 1 - 4, 2016. The subject of this book are the DEM and related computational techniques such as DDA, FEM/DEM, molecular dynamics, SPH, Meshless methods, etc., which are the main computational methods for modeling discontinua. In comparison to continua which have been already studied for a long time, the research of discontinua is relatively new, but increases dramatically in recent years and has already become an important field. This book will benefit researchers and scientists from the academic fields of physics, engineering and applied mathematics, as well as from industry and national laboratories who are interested in the DEM.

49. Licata, I. (ed)
Beyond Peaceful Coexistence: The Emergence of Space, Time and Quantum.
Mar 2016, 630pp., Hardback (World Scientific)
ISBN 9781783268313 ¥26,200
Featured Contents: The Algebraic Way (Basil Hiley); Fermi Blobs and the Symplectic Camel: A Geometric Picture of Quantum States (Maurice A de Gosson); Space-Time in Quantum Gravity: Does Space-Time have Quantum Properties (Reiner Hedrich); Introduction to the Quantum Theory of Elementary Cycles (Donatello Dolce); Observers and Reality (George Jaroszkiewicz); and others.

50. Nolting, W.
Theoretical Physics 4: Special Theory of Relativity. Oct 2016, 128pp., Hardback (Springer)
ISBN 9783319443706 ¥6,570

51. Ortegón Gallego, F. et al. (eds)
Trends in Differential Equations and Applications. (SEMA SIMAI Springer Series, Volume 8) July 2016, 394pp., Hardback (Springer)
ISBN 9783319320120 ¥20,660
This work collects the most important results presented at the Congress on Differential Equations and Applications/Congress on Applied Mathematics (CEDYA/CMA) in Cádiz (Spain) in 2015. It supports further research in differential equations, numerical analysis, mechanics, control and optimization.

【基本物理学における新地平】
52. Schramm, S. & M. Schäfer (eds)
New Horizons in Fundamental Physics.
(FIAS Interdisciplinary Science Series) Nov 2016, 358pp., Hardback (Springer)
ISBN 9783319441641 ¥20,660
This volume presents the state-of-the-art in selected topics across modern nuclear physics, covering fields of central importance to research and illustrating their connection to many different areas of physics. It describes recent progress in the study of superheavy and exotic nuclei, which is pushing our knowledge to ever heavier elements and neutron-richer isotopes.

53. Rangarajan, R. & M. Sivakumar (eds)
Surveys in Theoretical High Energy Physics 2: Lecture Notes from SERC Schools. Dec 2016, Approx.310 p.(Texts and Readings in Physical Sciences, Volume 15) Hardcove (Springer) ISBN 978-981-10-2590-7 ¥17,850

【微分幾何学と数理物理学・第 2 部】
54. Rudolph, G. & M. Schmidt
Differential Geometry and Mathematical Physics, Part II: Fibre Bundles, Topology and Gauge Fields. (Theoretical and Mathematical Physics) Oct 2016, 790pp., Hardback (Springer)
ISBN 9789402409581 ¥30,620
The book is devoted to the study of the geo-metrical and topological structure of gauge theories. It consists of the following three building blocks: - Geometry and topology of fibre bundles, - Clifford algebras, spin structures and Dirac operators, - Gauge theory.

55. Sirag, Saul-Paul
ADEX Theory: How the ADE Coxeter Graphs Unify Mathematics and Physics.
(Series on Knots and Everything - Vol 57) Jan 2016, 276pp., Hardback (World Scientific) ISBN 9789814656498 ¥15,800
Contents: Introduction; The Octahedral Group; The Octahedral Double Group; The McKay Correspondence; Lie Groups and Lie Algebras; Coxeter's Reflection Groups; Thom – Arnold Catastrophe Structures; ALE Spaces and Gravitational Instantons; Knots and Links and Braids; Twistors and ALE Spaces; TwoDimensional Conformal Field Theories; Elliptic Curves and the Monster Group; Sphere Packing and Error-Correcting Codes; Qubits and Black Holes; The Holographic Principle; Calabi – Yau Spaces and Mirror Symmetry; Heisenberg Algebras; Summary and Outlook; Bibliography; Glossary; Index.

56. Stanescu, T.D.
Introduction to Topological Quantum Matter & Quantum Computation. Feb 2017, 392pp., Hardback (Taylor & Francis) ISBN 9781482245936 ¥12,960
Interest in topological quantum states of matter has increased dramatically in the past few years. Many of the researchers engaged in these studies are relatively new to this area; this is the perfect book to provide the background, bringing researchers up to speed and facilitating communication between different disciplines. Key subjects covered include topological insulators, Majorana fermions in semiconductor-superconductor hybrid structures, ultracold atom systems, and potential applications of topological states to quantum computation. The book provides the reader with an accessible picture of the broader field in which these recent developments occurred, and establishes key connections between various themes and points of view. The author emphasizes the intimate links between this area and fundamental aspects of quantum mechanics.

57. Vaid, D. & S. Bilson-Thompson
LQG for the Bewildered: The Self-Dual Approach Revisited. Sept 2016, 138pp., Paperback (Springer) ISBN 9783319431826 ¥15,030

力学・非線形・統計物理学

【波動相互作用の統計物理学】
58. Antenucci, E.
Statistical Physics of Wave Interactions: A Unified Approach to Mode-Locking and Random Lasers. (Springer Theses) Aug 2016, 146pp. Hardback (Springer)
ISBN 9783319412245 ¥18,790
This thesis reveals the utility of pursuing a statistical physics approach in the description of wave interactions in multimode optical systems. To that end, the appropriate Hamiltonian models are derived and their limits of applicability are

discussed. The versatility of the framework allows the characterization of ordered and disordered lasers in open and closed cavities in a unified scheme, from standard mode-locking to random lasers. With the use of replica method and Monte Carlo simulations, the models are categorized on the basis of universal properties, and nontrivial predictions of experimental relevance are obtained. In particular, the approach makes it possible to nonperturbatively treat the interplay between disorder and nonlinearity and to envisage novel and fascinating physical phenomena such as glassy random lasers, providing a novel way to experimentally investigate replica symmetry breaking.

59. Awrejcewicz, J. et al.
Deterministic Chaos in One-Dimensional Continuous Systems. (World Scientific Series on Nonlinear Science Series A - Vol 90) Mar 2016, 462pp., Hardback (World Scientific) ISBN 9789814719698 ¥20,790
This book focuses on the computational analysis of nonlinear vibrations of structural members (beams, plates, panels, shells), where the studied dynamical problems can be reduced to the consideration of one spatial variable and time. The reduction is carried out based on a formal mathematical approach aimed at reducing the problems with infinite dimension to finite ones. The process also includes a transition from governing nonlinear partial differential equations to a set of finite number of ordinary differential equations.

【エントロピーの謎を解く・第 2 版】
60. Ben-Naim, A.
Entropy Demystified: The Second Law Reduced to Plain Common Sense, 2nd Edition. Mar 2016, 230pp., Hardback (World Scientific) ISBN 9789813100114 ¥10,640
(Paperback ISBN 9789813100121 ¥5,320)
In this unique book, the reader is invited to experience the joy of appreciating something which has eluded understanding for many years — entropy and the Second Law of Thermodynamics. The book has a twopronged message: first, that the Second Law is not infinitely incomprehensible as commonly stated in most textbooks on thermodynamics, but can, in fact, be comprehended through sheer common sense; and second, that entropy is not a mysterious quantity that has resisted understanding but a simple, familiar and easily comprehensible concept.

【複雑系の統計物理学】
61. Bertin, E.
Statistical Physics of Complex Systems: A Concise Introduction. Aug 2016, 172pp., Paperback (Springer) ISBN 9783319423388 ¥10,700
This course-tested primer provides graduate students and non-specialists with a basic understanding of the concepts and methods of statistical physics and demonstrates their wide range of applications to interdisciplinary topics in the field of complex system sciences, including selected aspects of theoretical modeling in biology and the social sciences.

62. Bolotin, Y. et al.
Chaos: Concepts, Control and Constructive Use, 2nd Edition. (Series: Understanding Complex Systems) Sept 2016, 273pp., Hardback (Springer) ISBN 9783319424958 ¥18,220

【流体および固体力学】
63. Bullett, S. et al. (eds)
Fluid and Solid Mechanics. (LTCC Advanced Mathematics Series - Vol 2) Mar 2016, 180pp., Hardback ISBN 9781786340252 ¥12,470
(Paperback ISBN 9781786340269 ¥6,320)
Fluid and Solid Mechanics is the second volume of the LTCC Advanced Mathematics Series. This series is the first to provide advanced introductions to mathematical science topics to advanced students of mathematics. Edited by the three joint heads of the London Taught Course Centre for PhD Students in the Mathematical Sciences (LTCC), each book supports readers in broadening their mathematical knowledge outside of their immediate research disciplines while also covering specialized key areas.

【平衡熱力学・第 2 版】
64. de Oliveira, M. J.
Equilibrium Thermodynamics, 2nd Edition. (Graduate Texts in Physics) Oct 2016, 390ppk .81 illus. Hardcover (Springer) ISBN 9783662532058 ¥15,970
This textbook provides an exposition of equilibrium thermodynamics and its applications to several areas of physics with particular attention to phase transitions and critical phenomena. The applications include several areas of condensed matter physics and include also a chapter on thermochemistry.

【古典力学・第 2 版】
65. Deriglazov, A.
Classical Mechanics: Hamiltonian and Lagrangian Formalism, 2nd Edition. Sept 2016, 434pp., Hardback (Springer) ISBN 9783319441467 ¥24,420
CONTENTS: Sketch of Lagrangian Formalism.- Hamilto-nian Formalism.- Canonical Transformations of Two-Dimensional Phase Space.- Properties of Canonical Transformations.- Integral Invariants.- Some Mechanical Problems in a Geometric Setting.- Transformations, Sym-metries and Noether Theorem.- Hamiltonian Formalism for Singular Theories.- Classical and Quantum Relativistic Mechanics of a Spinning Particle.

【複雑系入門】
66. Fieguth, P.
An Introduction to Complex Systems: Society, Ecology, and Nonlinear Dynamics. Oct 2016, 338pp., Hardback (Springer) ISBN 9783319446059 ¥9,390
This undergraduate text explores a variety of large-scale phenomena - global warming, ice ages, water, poverty - and uses these case studies as a motivation to explore nonlinear dynamics, power-law statistics, and complex systems.

【カオス動力学】

67. Goodson, G.R.

Chaotic Dynamics: Fractals, Tilings, and Substitutions. (Part of Cambridge Mathematical Textbooks)   Dec 2016, Hardback   (Cambridge U.P.)
ISBN 9781107112674   ca. ¥12,470

This undergraduate textbook is a rigorous mathematical introduction to dynamical systems and an accessible guide for students transitioning from calculus to advanced mathematics. It has many student-friendly features, such as graded exercises that range from straightforward to more difficult with hints, and includes concrete applications of real analysis and metric space theory to dynamical problems. Proofs are complete and carefully explained, and there is opportunity to practice manipulating algebraic expressions in an applied context of dynamical problems. After presenting a foundation in one-dimensional dynamical systems, the text introduces students to advanced subjects in the latter chapters, such as topological and symbolic dynamics. It includes two-dimensional dynamics, Sharkovsky's theorem, and the theory of substitutions, and takes special care in covering Newton's method. Mathematica code is available online, so that students can see implementation of many of the dynamical aspects of the text.

68. Helrich, C. S.

Analytical Mechanics. (Undergraduate Lecture Notes in Physics)   Oct 2016, 343pp., Paperback (Springer)   ISBN 9783319444901   ¥13,150

69. Ito, Sosuke

Information Thermodynamics on Causal Networks and its Application to Biochemical Signal Transduction. (Springer Theses) Aug 2016, 133pp., Hardback   (Springer)
ISBN 9789811016622   ¥18,790

70. Nilsson, A. & B. Liu

Vibro-Acoustics. Jointly published with Science Press Ltd., Beijing, China. Nov 2016, 3 Vols Set/ca.1100pp., Hardback   (Springer)   ISBN 9783662531389   ¥31,000

This is a set of Three volume books: Vi-bro-Acoustics, Volume 1 Vibro-Acoustics, Volume 2 Vibro-Acoustics, Volume 3 This three-volume book gives a thorough and comprehensive presentation of vibration and acoustic theories.

71. Piazza, R.

Statistical Physics: A prelude and fugue for engineers. (UNITEXT for Physics) Sept 2016, 446pp., Hardback (Springer)
ISBN 9783319445366   ¥13,150

72. Salje, E.K.H. et al. (eds)

Avalanches in Functional Materials and Geophysics. (Understanding Complex Systems) Oct 2016, 323pp., Hardback   (Springer)   ISBN 9783319456102   ¥20,660

This book provides the state-of-the art of the present understanding of avalanche phenomena in both functional materials and geophysics. The main emphasis of the book is analyzing these apparently different problems within the common perspective of out-of-equilibrium phenomena displaying spatial and temporal complexity that occur in a broad range of scales.

【大学生のための熱力学教科書】

73. Steane, A.M.

Thermodynamics: A Complete Undergraduaate Course.   Sept 2016, 464pp., Hardback   (Oxford U.P.)   ISBN 9780198788560
¥14,530
(Paperback ISBN 9780198788577   ¥6,700)

The role of thermodynamics in modern physics is not just to provide an approximate treatment of large thermal systems, but, more importantly, to provide an organising set of ideas. Thermodynamics: A complete undergraduate course presents thermodynamics as a self-contained and elegant set of ideas and methods. It unfolds thermodynamics for undergraduate students of physics, chemistry or engineering, beginning at first year level. The book introduces the necessary mathematical methods, assuming almost no prior knowledge, and explains concepts such as entropy and free energy at length, with many examples. This book aims to convey the style and power of thermodynamic reasoning, along with applications such as Joule-Kelvin expansion, the gas turbine, magnetic cooling, solids at high pressure, chemical equilibrium, radiative heat exchange and global warming, to name a few. It mentions but does not pursue statistical mechanics, in order to keep the logic clear.

【アナログおよびデジタル信号処理】

74. Tenoudji, F.C.

Analog and Digital Signal Analysis: From Basics to Applications. (Series: Modern Acoustics and Signal Processing)   Sept 2016, 453pp., Hardback   (Springer)
ISBN 9783319423807   ¥15,970

This book provides comprehensive, graduate-level treatment of analog and digital signal analysis suitable for course use and self-guided learning. This expert text guides the reader from the basics of signal theory through a range of application tools for use in acoustic analysis, geophysics, and data compression.

【巨視的電気力学】

75. Wilcox, W. & C. Thron

Macroscopic Electrodynamics: An Introductory Graduate Treatment.   Jan 2016, 824pp., Hardback   (World Scientific)
ISBN 9789814616614   ¥26,270

Contents: Introduction and Perspectives; Introduction to Electrostatics; Boundary Value Problems in Electrostatics; Electrostatics in Cylindrical and Spherical Coordinates; Multipoles, Electrostatics of Macroscopic Media, Dielectrics; Magnetostatics; Time Varying Fields I; Time Varying Fields II; Plane Electromagnetic Waves and Propagation in Matter; Waveguides and Resonant Cavities; Radiation of Systems and Point Particles; Scattering and Diffraction; Relativistic Formulations of Electrodynamics; Special Topics.

素粒子・核物理学

【南部 陽一郎記念論文集】
76. Brink, L. et al. (eds)
Memorial Volume for Y. Nambu. July 2016, 200pp., Hardback (World Scientific) ISBN 9789813108318 ¥7,980
(Paperback ISBN 9789813108325 ¥4,650)
This book is a volume for all who benefited not only from Nambu's contributions toward understanding the Universe but also his warm and kind persona. It is a great addition to the history of contemporary physics.

77. Brink, L. & K.K. Phua (eds)
60 Years of Yang-Mills Gauge Field Theories: C N Yang's Contributions to Physics. (Proceedings of the Conference on 60 Years of Yang-Mills Gauge Field Theoreis, Nanyang Technological University, Singapore, 25-28 May 2015) June 2016, 550pp., Hardback (World Scientific) ISBN 9789814725545 ¥19,620
The conference celebrated the exceptional achievements using Yang–Mills theory over the years but also many other truly remarkable contributions to different branches of physics from Prof C N Yang. This volume collects the invaluable talks by Prof C N Yang and the invited speakers reviewing these remarkable contributions and their importance for the future of physics.

【加速器の科学と技術・第 8 巻】
78. Chao, A.W. & W. Chou (eds)
Review of Accelerator Science and Technology, Vol 8: Accelerator Applications in Energy and Security. Mar 2016, 300pp., Hardback (World Scientific) ISBN 9789813108899 ¥21,280
This volume makes an effort to provide a review as complete and up to date as possible of this broad and challenging subject. It contains overviews on each of the two topics and a series of articles for in-depth discussions including heavy ion accelerator driven inertial fusion, linear accelerator-based ADS systems, circular accelerator-based ADS systems, accelerator-reactor interface, accelerators for fusion material testing, cargo inspection, proton radiography, compact neutron generators and detectors.

79. Cheng, Y.
Search for Dark Matter Produced in Association with a Higgs Boson Decaying to Two Bottom Quarks at ATLAS. (Springer Theses) Sept 2016, 200pp., Hardback (Springer) ISBN 9783319442174 ¥18,790
This thesis reports on the search for dark matter in data taken with the ATLAS detector at CERN's Large Hadron Collider (LHC).The identification of dark matter and the determination of its properties are among the highest priorities in elementary particle physics and cosmology.

80. Ciullo, G. et al. (eds)
Nuclear Fusion with Polarized Fuel. (Springer Proceedings in Physics, 187) Aug 2016, Hardback (Springer) ISBN 9783319394701 ¥21,600
This book offers a detailed examination of the latest work on the potential of polarized fuel to realize the vision of energy production by nuclear fusion. It brings together contributions from nuclear physicists and fusion physicists with the aims of fostering exchange of information between the two communities, describing the current status in the field, and examining new ideas and projects under development.

81. Crispín Ortuzar, M.
High Jet Multiplicity Physics at the LHC. (Springer Theses) Aug 2016, 212pp., Hardback (Springer) ISBN 9783319434605 ¥18,790
CONTENTS: Introduction.- Theoretical Overview.- The Large Hadron Collider and the ATLAS Experi-ment.- Search for New Phenomena in Events with Large Jet Multiplicities.- Measurement of the Cross Section of Four-jet Events.- Con-clusions.

【核および素粒子物理学の基礎】
82. Donnelly, T.W. et al.
Foundations of Nuclear and Particle Physics. Feb 2017, Hardback (Cambridge U.P.) ISBN 9780521765114 ca. ¥14,130
This textbook brings together nuclear and particle physics, presenting a balanced overview of both fields as well as the interplay between the two. The theoretical as well as the experimental foundations are covered, providing students with a deep understanding of the subject. In-chapter exercises ranging from basic experimental to sophisticated theoretical questions provide an important tool for students to solidify their knowledge. Suitable for upper undergraduate courses in nuclear and particle physics as well as more advanced courses, the book includes road maps guiding instructors on tailoring the content to their course. Online resources including color figures, tables, and a solutions manual complete the teaching package. This textbook will be essential for students preparing for further study or a career in the field who require a solid grasp of both nuclear and particle physics.

【Run 1 実験後のヒッグス粒子、超対称、ダークマター】
83. Dumont, B.
Higgs, Supersymmetry and Dark Matter After Run I of the LHC. (Springer Theses) Oct 2016, 261pp., Hardback (Springer) ISBN 9783319449555 ¥18,790
This work was nominated as an outstanding PhD thesis by the LPSC, Université Grenoble Alpes, France. The LHC Run 1 was a mile-stone in particle physics, leading to the discovery of the Higgs boson, the last missing piece of the so-called "Standard Model" (SM), and to important constraints on new physics, which challenge popular theories like weak-scale supersymmetry.

【スピン物理学に関する第 21 回国際シンポジウム】
84. Gao, Haiyan & Bo-Qiang Ma (eds)
SPIN PHYSICS Selected Papers from The 21st International Symposium on Spin Physics (SPIN2014). Mar 2016, 200pp., Hardback (World Scientific) ISBN 9789813142701 ¥12,970
(Paperback ISBN 9789813109957 $38.00)

This special volume collected important papers written by leading experts, highlighting the latest research findings in various topics of spin phenomena in particle and nuclear physics. The contents are originated from the plenary talks at the latest symposium of the Spin Physics series (SPIN2014) which was held in Beijing, China, October 20 – 24, 2014.

【素粒子と量子場】
85. Kleinert, H.
Particles and Quantum Fields. Apr 2016, 1500pp., Hardback   (World Scientific)   ISBN 9789814740890   ¥27,940
(Paperback   ISBN 9789814740906   ¥9,970)
This is an introductory book on elementary particles and their interactions. It starts out with many-body Schrö dinger theory and second quantization and leads, via its generalization, to relativistic fields of various spins and to gravity. The text begins with the best known quantum field theory so far, the quantum electrodynamics of photon and electrons (QED). It continues by developing the theory of strong interactions between the elementary constituents of matter (quarks). This is possible due to the property called asymptotic freedom. On the way one has to tackle the problem of removing various infinities by renormalization. The present book develops the theory of effective actions which allow to treat quantum phenomena with classical formalism. For example, it derives the observed anomalous power laws of strongly interacting theories from an extremum of the action. Their fluctuations are not based on Gaussian distributions, as in the perturbative treatment of quantum field theories, or in asymptotically-free theories, but on deviations from the average which are much larger and which obey power-like distributions. Readership: Students and researchers in theoretical physics.

86. Meng, Jie et al. (eds)
Nuclear Structure in China 2014. (Proceedings of the 15th National Conference on Nuclear Structure in China 15th National Conference on Nuclear Structure in China Guilin, China, 25   – 28 October 2014)   Mar 2016, 280pp., Hardback   (World Scientific)   ISBN 9789813109629   ¥21,280
This volume is a collection of the contributions to the 15th National Conference on Nuclear Structure in China (NSC2014), held on October 25 – 28, 2014 in Guilin, China and hosted by Guangxi Normal University. It provides an important updated resource in the nuclear physics literature for researchers and graduate students studying nuclear structure and related topics

87. Mousseau, J. A.
First Search for the EMC Effect and Nuclear Shadowing in Neutrino Nuclear Deep Inelastic Scattering at MINERvA. (Springer Theses)   Oct 2016, 906pp., Hardback   (Springer)   ISBN 9783319448404   ¥18,790

【超対称性、超重力、統一理論】
88. Nath, P.
Supersymmetry, Supergravity, and Unification. (Part of Cambridge Monographs on Mathematical Physics)   Nov 2016, Hardback (Cambridge U.P.)   ISBN 9780521197021   ¥15,790
This unique book gives a modern account of particle physics and gravity based on supersymmetry and supergravity, two of the most significant developments in theoretical physics since general relativity. The book begins with a brief overview of the history of unification and then goes into a detailed exposition of both fundamental and phenomenological topics. The topics in fundamental physics include Einstein gravity, Yang–Mills theory, anomalies, the standard model, supersymmetry and supergravity, and the construction of supergravity couplings with matter and gauge fields, as well as computational techniques for SO(10) couplings. The topics of phenomenological interest include implications of supergravity models at colliders, CP violation, and proton stability, as well as topics in cosmology such as inflation, leptogenesis, baryogenesis, and dark matter. The book is intended for graduate students and researchers seeking to master the techniques for building grand unified models.

【LHCでのジェット物理学】
89. Rabbertz, K.
Jet Physics at the LHC: The Strong Force beyond the TeV Scale. (Springer Tracts in Modern Physics, Vol 268)   Sept 2016, 230pp., Hardback   (Springer)   ISBN 9783319421131 ¥24,420
This book reviews the latest experimental results on jet physics from proton-proton collisons at the LHC. Jets allow to determine the strong coupling constant over a wide range of energies up the highest ones possible so far, and to constrain the gluon parton distribution of the proton, both of which are important uncertainties on theory predictions in general and for the Higgs boson in particular.<div>A novel approach in this book is to categorize the examined quantities according to the types of absolute, ratio, or shape measurements and to explain in detail the advantages and differences. Including numerous illustrations and tables the physics message and impact of each observable is clearly elaborated.

90. Rychkov, S.
EPFL Lectures on Conformal Field Theory in D>=3 Dimensions. (SpringerBriefs in Physics) Oct 2016, 64pp., Paperback   (Springer)   ISBN 9783319436258   ¥9,390

91. Schramm, S.
Searching for Dark Matter with the ATLAS Detector. (Springer Theses)   Oct 2016, 287pp., Hardback   (Springer)   ISBN 9783319444529 ¥18,790

92. Schuchmann, S.
Modification of K0s and Lambda(Anti-Lambda) Transverse Momentum Spectra in Pb-Pb Collisions at √sNN = 2.76 TeV with ALICE. (Springer Theses)   Aug 2016, 212pp., Hardback   (Springer) ISBN 9783319434575   ¥18,790

93. Tanaka, Akinori
Superconformal Index on RP2 × S1 and 3D Mirror Symmetry. (Springer Theses)   Aug 2016, 83pp., Hardback   (Springer)   ISBN 9789811013966 ¥15,030

94. Thomas, M.
Beyond Standard Model Collider Phenomenology of Higgs Physics and Supersymmetry. (Springer Theses)   Sept 2016, 118pp., Hardback   (Springer)
ISBN 9783319434513   ¥18,790

95. Thompson, R.C. et al. (eds)
Trapped Charged Particles: A Graduate Textbook with Problems and Solutions. June 2016, 426pp., Hardback   (World Scientific)   ISBN 9781786340115   ¥24,110
(Paperback   ISBN 9781786340122   ¥12,970)
CONTENTS: Particle Dynamics; Penning Traps; RF (Paul) Traps; Non-Neutral Plasmas; Electron-Positron Plasmas; Antihydrogen; Phase-Space Cooling; Rotating Wall; Strong Magnetization; Autoresonance; Laser Cooling; Other Cooling Techniques; Mass Spectroscopy; QED Tests; Coulomb Crystals; Quantum Metrology; Quantum Logic; Trapped Molecules; Highly Charged Ions.

物性物理学

【二次元材料】
96. Avouris, P. et al. (eds)
2D Materials: Properties and Devices. May 2017, Hardback   (Cambridge U.P.)   ISBN 9781107163713   ¥19,120
Learn about the most recent advances in 2D materials with this comprehensive and accessible text. Providing all the necessary materials science and physics background, leading experts discuss the fundamental properties of a wide range of 2D materials, and their potential applications in electronic, optoelectronic and photonic devices. Several important classes of materials are covered, from more established ones such as graphene, hexagonal boron nitride, and transition metal dichalcogenides, to new and emerging materials such as black phosphorus, silicene, and germanene. Readers will gain an in-depth understanding of the electronic structure and optical, thermal, mechanical, vibrational, spin and plasmonic properties of each material, as well as the different techniques that can be used for their synthesis. Presenting a unified perspective on 2D materials, this is an excellent resource for graduate students, researchers and practitioners working in nanotechnology, nanoelectronics, nanophotonics, condensed matter physics, and chemistry.

97. Balluffi, R.W.
Introduction to Elasticity Theory for Crystal Defects 2nd Edition.   June 2016, 500pp., Hardback   (World Scientific)   ISBN 9789814749718   ¥19,120
(Paperback   ISBN 9789814749725   ¥11,300)
Contents: Basic Elements of Linear Elasticity; General Methods for Solving Crystal Defect Elasticity Problems; Green's Functions and Fourier Transforms; Interactions Between Defects and Various Stresses; Elastic Fields and Strain Energies of Point Defects, Line Defects (Dislocations), Planar Defects (Interfaces) and Volume Defects (Inhomogeneities and Inclusions); Interactions of the Various Defects With Imposed Stresses, Image Stresses and Self-Stresses; Interactions Between the Various Defects

【物性物理学のトポロジー的側面】
98. Chamon, C. et al. (eds)
Topological Aspects of Condensed Matter Physics. (Lecture Notes of the Les Houches Summer School: Volume 103, August 2014)   Nov 2016, 209pp., Hardback   (Oxford U.P.)   ISBN 9780198785781   ¥10,060
This book contains lecture notes by world experts on one of the most rapidly growing fields of research in physics. Topological quantum phenomena are being uncovered at unprecedented rates in novel material systems. The consequences are far reaching, from the possibility of carrying currents and performing computations without dissipation of energy, to the possibility of realizing platforms for topological quantum computation. The pedagogical lectures contained in this book are an excellent introduction to this blooming field. The lecture notes are intended for graduate students or advanced undergraduate students in physics and mathematics who want to immerse in this exciting XXI century physics topic.

99. Etgar, L.
Hole Conductor Free Perovskite-based Solar Cells. (SpringerBriefs in Applied Sciences and Technology)   July 2016, 70pp.,   Paperback (Springer)   ISBN 9783319329895   ¥9,390
This book discusses the promising area of perovskite-based solar cells. It places particular emphasis on a highly unique perovskite solar cell structure, focusing on the special properties of hybrid organic-inorganic perovskites. As such, it offers readers sound essentials, serving as building blocks for the future development of this rapidly evolving field.

【準結晶弾性の数学的理論とその応用】
100.   Fan,   Tian-You
Mathematical Theory of Elasticity of Quasicrystals and Its Applications, 2nd Edition. (Springer Series in Materials, Vol 246) Sept 2016, 648pp., Hardback   (Springer)   ISBN 9789811019821   ¥35,700
Presents the theoretical system and methodology of elasticity of solid quasicrystals and soft-matter quasicrystals
Pays special attention on hydrodynamics, the Poisson bracket method and application in deriving the hydrodynamic equations for soft-matter quasicrystals
Provides an in-depth and innovational presentation on the mathematical derivations and solutions
Includes many results in new area such as plasticity, elasto-/hydrodynamics and the fracture theory of quasicrystals

【多層ナノ構造における輸送・第 2 版】
101.   Freericks, J.K.
Transport in Multilayered Nanostructures, 2nd Edition.   Mar 2016, 430pp., Hardback (World Scientific)   ISBN 9781783268573   ¥16,290
CONTENTS: Introduction to Multilayered Nanostructures; Dynamical Mean-Field Theory in the Bulk; Dynamical Mean-Field Theory of a Multilayered Nanostructure; Thouless Energy and Normal-State Transport; Josephson Junctions and Superconducting Transport: Thermal Transport; Many-Body Effects on Capacitance; Nonequilibrium Generalizations for the Steady State; Future Directions; Appendix with over 40 Problems.

102.   Flükiger, R.
MgB2 Superconducting Wires Basics and Application. (World Scientific Series in Applications of Superconductivity and Related Phenomena - Vol 2) June 2016, 350pp., Hardback   (World Scientific)
ISBN 9789814725583   ¥20,790
Contents: Flux Pinning in MgB2 Thin Films and Wires; Densification of Powder Metallurgical Conductors; Fabrication of MgB2 Wires by Means of Various Techniques; Optimization of Superconducting Properties at Low Temperature; MRI Magnets and Their Market; Irradiation Effects on MgB2; High Current Cables; Cooling by He Vapour and by Liquid Hydrogen; Ultrafine; Ultralight Wires for Space Applications; MgB2 Wires for Liquid Hydrogen Level Sensors; Studies in View of Wind Generators.

【熱力学と物質の状態方程式】
103.   Fortov, V.
Thermodynamics and Equations of State for Matter: From Ideal Gas to Quark-Gluon Plasma. Mar 2016, 550pp., Hardback   (World Scientific)   ISBN 9789814749190   ¥25,770
The monograph presents a comparative analysis of different thermodynamic models of the equations of state. The basic ideological premises of the theoretical methods and the experiment are considered. The principal attention is on the description of states that are of greatest interest for the physics of high energy concentrations which are either already attained or can be reached in the near future in controlled terrestrial conditions, or are realized in astrophysical objects at different stages of their evolution.

【多相ナノ構造体における輸送】
104.   Freericks, J.K.
Transport in Multilayered Nanostructures: The Dynamical Mean-Field Theory Approach, 2nd Edition.   Mar 2016, 430pp., Hardback   (World Scientific)   ISBN 9781783268573   ¥16,290
Over the last 25 years, dynamical mean-field theory (DMFT) has emerged as one of the most powerful new developments in manybody physics. Written by one of the key researchers in the field, this book presents the first comprehensive treatment of this everdeveloping topic. A series of over 50 problems help develop the skills to allow readers to reach the level of being able to contribute to research. This book is suitable for an advanced graduate course in DMFT, and for individualized study by graduate students, postdoctoral fellows and advanced researchers wishing to enter the field.

105.   Gessner, M.
Dynamics and Characterization of Composite Quantum Systems. (Springer Theses)   Oct 2016, 340pp., Hardback   (Springer)
ISBN 9783319444581   ¥26,300
CONTENTS: Introduction.- Background.- Local Detection of Correlations.- From Local Operations to Collective Dephasing: Behavior of Correlations.- Quantum Phase Transition in a Family of Quantum Magnets.- Multidimensional Nonlinear Spectroscopy of Controllable Quantum Systems.- Open Quantum Systems of Identical Particles.- Summary and Conclusions.

106.   Gómez-Ferrer, B.
Resistivity Recovery in Fe and Fe-Cr alloys.
(SpringerBriefs in Applied Sciences and Technology) July 2016, ca.120pp., Paperback
ISBN 9783319388564   ¥9,390
This book covers the Resistivity Recovery (RR) technique, underlying its physical principles, performance and problematic. A concise review on the state of the art is provided, showing the advances in radiation modelling, linking both experimental and theoretical fields.

【グラフェンプラズモニクス入門】
107.   Goncalves, P.A.D. & N.M.R. Peres
An Introduction to Graphene Plasmonics.
June 2016, 452pp., Hardback   (World Scientific)
ISBN 9789814749978   ¥21,280
(Paperback   ISBN 9789814749985   ¥10,810)
CONTENTS: Introduction: Electromagnetic Properties of Solids in a Nutshell; Surface Plasmon – Polaritons at Dielectric – Metal Interfaces; Graphene Surface Plasmons; Excitation of Graphene Surface Plasmons; Launching Plasmons Using a Metallic Antenna; Plasmonics in Periodic Arrays of Graphene Ribbons; Plasmons in Graphene Nanostructures and in One-dimensional Channels; Excitation of Surface Plasmon – Polaritons Using Dielectric Gratings; Excitation of Plasmons by an Emitting Dipole: Concluding Remarks; Appendices.

【結晶学と表面構造】
108.   Hermann, K.
Crystallography and Surface Structure An Introduction for Surface Scientists and Nanoscientists. Sept 2016, 430pp., Hardback (Wiley)   ISBN 9783527339709   ¥27,440
The book gives an introduction to crystallography and surface structures, covering theoretical, experimental as well as computational approaches to this fascinating field of solid-state physics. The goal is to provide students and researchers with the fundamental knowledge necessary to understand the interplay between atomic arrangements in the bulk crystal and the effects at surfaces and interfaces. This knowledge is important for many experimental and theoretical studies of physical as well as chemical phenomena at surfaces. The book deals with the subject at an introductory level and is combined with pen-and-paper as well as computer-based exercises.

【ヘリウムイオン顕微鏡】
109.   Hlawacek, G. & A. Gölzhäuser
Helium Ion Microscopy. (Series: NanoScience and Technology)   Sept 2016, 633pp., Hardback (Springer)   ISBN 9783319419886   ¥35,700
This book covers the fundamentals of the technique Helium ion microscopy including the gas field ion source, column and contrast formation. It also provides first hand information on nano-fabrication and high resolution imaging. Relevant theoretical models and the existing software packages are discussed in an extra section. The structure of the book allows the novice to get acquainted with the specifics of the technique needed to understand the more applied chapters in the second half of the volume. The expert reader will find a complete reference of the technique covering all important applications in several chapters written by the leading experts in the field. The fundamental part allows the regular HIM user to deepen his understanding of the method. A foreword by Bill Ward covering the historical developments leading the existing tool complements the content.

【カーボン量子ドット】
110.　　Jelinek, R.
Carbon Quantum Dots: Synthesis, Properties and Applications.
(Carbon Nanostructures) Nov 2016, 200pp., Hardback　(Springer) ISBN 9783319439099 ¥9,390
CONTENTS: Introduction.- Carbon Dot Synthesis.- Char-acterization and Phyisical Properties of C-Dots.- Biological Applications of Carbon Dots.- Bio-imaging Applications of Carbon Dots.- Carbon Dots in Sensing Applications.- Materials Science Applications of Carbon Dots.- Carbon Dot-containing composite Materials.- Conclusions and future outlook.

111.　　Lecoq, P. et al.
Inorganic Scintillators for Detector Systems: Physical Principles and Crystal Engineering, 2nd Edition. (Particle Acceleration and Detection) Jan 2017, 4120p., Hardback (Springer)　ISBN 9783319455211　¥17,850
This second edition features new chapters highlighting advances in our understanding of the behavior and properties of scintilla-tors, and the discovery of new families of materials with light yield and excellent energy resolution very close to the theoretical limit.

【超伝導への新しいアプローチ】
112.　　Malik, G.P.
Superconductivity: A New Approach Based on The Bethe-Salpeler Equation in the Mean-Field Approximation. (Series on Directions in Condensed Matter Physics - Vol 21) Feb 2016, 248pp., Hardback　(World Scientific) ISBN 9789814733076　¥14,130
The monograph includes topics that are usually not covered in any one text on superconductivity, e.g., BCS-BEC crossover physics, the longstanding puzzle posed by SrTiO3, and heavyfermion superconductors — all of which are still imperfectly understood and therefore continue to avidly engage theoreticians. It suggests that addressing the Tcs, Δs and other properties (e.g., number densities of charge carriers) of high-Tc SCs via GBCSEs incorporating chemical potential may lead to tangible clues about raising their Tcs.

【相関系における共鳴X線散乱】
113.　　Murakami, Y. & S. Ishihara (eds)
Resonant X-Ray Scattering in Correlated Systems. (Springer Tracts in Modern Physics, Volume 269)　Oct 2016, 245pp., Hardback (Springer)
ISBN 9783662532256　¥24,420
The research and its outcomes presented here is devoted to the use of x-ray scattering to study correlated electron systems and magnetism. Different x-ray based methods are provided to analyze three dimensional electron systems and the structure of transi-tion-metal oxides. Finally the observation of multipole orderings with x-ray diffraction is shown.

【アルカリドープフルライドにおけう超伝導の Ab Initio 法による研究】
114.　　Nomura, Yusuke

Ab Initio Studies on Superconductivity in Alkali-Doped Fullerides. (Springer Theses)
Aug 2016, 143pp., Hardback　(Springer)　ISBN 9789811014413　¥18,790
This book covers high-transition temperature (Tc) s-wave superconductivity and the neighboring Mott insulating phase in alkali-doped fullerides. The author presents (1) a unified theoretical description of the phase diagram and (2) a nonempirical calculation of Tc. For these purposes, the author employs an extension of the DFT+DMFT (density-functional theory + dynamical mean-field theory). He constructs a realistic electron–phonon-coupled Hamiltonian with a newly formulated downfolding method. The Hamiltonian is analyzed by means of the extended DMFT. A notable aspect of the approach is that it requires only the crystal structure as a priori knowledge. Remarkably, the nonempirical calculation achieves for the first time a quantitative reproduction of the experimental phase diagram including the superconductivity and the Mott phase. The calculated Tc agrees well with the experimental data, with the difference within 10 K. The book provides details of the computational scheme, which can also be applied to other superconductors and other phonon-related topics. The author clearly describes a superconducting mechanism where the Coulomb and electron-–phonon interactions show an unusual cooperation in the superconductivity thanks to the Jahn–Teller nature of the phonons.

115.　　Park, N. et al. (eds)
Organic-Inorganic Halide Perovskite Photovoltaics: From Fundamentals to Device Architectures. Aug 2016, 500pp., Hardback　(Springer)　ISBN 9783319351124 ¥28,180

【グラフェンおよびカーボンナノチューブ入門】
116.　　Proctor, J.E. et al.
An Introduction to Graphene and Carbon Nanotubes. Dec 2016, 226pp., Hardback　(CRC Pr.)　Hardback　ISBN 978-1-4987-5179-7: £57.99
This book introduces the reader to the science of graphene and carbon nanotubes. The reader will gain the basic scientific knowledge to critically evaluate the claims made in the literature and in the public arena about the physical properties and potential for applications of graphene and carbon nanotubes. In addition, the book uses these simple systems as excellent models to demonstrate important concepts in solid state physics and materials chemistry to the reader. The book is co-authored by one of the leaders in public engagement at the National Graphene Institute at Manchester University, which was founded in honour of the Nobel Laureate Sir Andre Geim.

117.　　Yates, J.G. & P. Lettieri
Fluidized Bed Reactors: Processes and Operating Conditions. (Particle Technology Series, Vol 26)　Aug 2016, 221pp., Hardback (Springer)　ISBN 9783319395913　¥20,660

【ナノワイヤ】

118.　Zhang, A. et al.

Nanowires: Building Blocks for Nanoscience and Nanotechnology.
(NanoScience and Technology) Aug 2016, 322pp., Hardback　(Springer)　ISBN 9783319419794
¥20,660

This book provides a comprehensive summary of nanowire research in the past decade, from the nanowire synthesis, characterization, assembly, to the device applications. In particular, the developments of complex/modulated nanowire structures, the assembly of hierarchical nanowire arrays, and the applications in the fields of nanoelectronics, nanophotonics, quantum devices, nano-enabled energy, and nano-bio interfaces, are focused. Moreover, novel nanowire building blocks for the future/emerging nanoscience and nanotechnology are also discussed.<div>Semiconducting nanowires represent one of the most interesting research directions in nanoscience and nanotechnology, with capabilities of realizing structural and functional complexity through rational design and synthesis. The exquisite control of chemical composition, morphology, structure, doping and assembly, as well as incorporation with other materials, offer a variety of nanoscale building blocks with unique properties.

原子・分子・化学物理学

119.　Festanti, A.

Measurement of the D0 Meson Production in Pb–Pb and p–Pb Collisions: A Study Performed with the ALICE Experiment at the LHC. (Springer Theses)　Aug 2016, 190pp., Hardback　(Springer)　ISBN 9783319434544
¥18,790

120.　Howard, C.

Measuring, Interpreting and Translating Electron Quasiparticle - Phonon Interactions on the Surfaces of the Topological Insulators Bismuth Selenide and Bismuth Telluride. (Springer Theses)　Oct 2016, 112pp., Hardback　(Springer)
ISBN 9783319447223　¥18,790

【分子機械の機能発現機構】

121.　Kinoshita, M.

Mechanisms of Functional Expression of Molecular Machines. (SpringerBriefs in Molecular Science)　July 2016, ca.100pp., Paperback (Springer)　ISBN 9789811014840　¥9,390
CONTENTS: Introduction.- Importance of Translational, Configurational Entropy of Water.- Molecular Machines.- Concluding Remarks: Mechanism of Functional Expression Common in the Molecular Machines.

【レーザーフラグメンテーションと液中粒子】

122.　Lau, M.

Laser Fragmentation and Melting of Particle.
(MatWerk) June 2016, 254pp., Paperback
(Springer)　ISBN 9783658141707　¥12,290

CONTENTS: Improved Experimental Design for Laser Irradiation of Particles in Liquids.- Laser Fragmentation of Particles in Liquids.- Laser Melting of Particles.- Key Figures for Laser Irradiation of Particles.

123.　Lewenstein, M. et al.

Ultracold Atoms in Optical Lattices: Simulating Quantum Many-body Systems.
Sept 2016, 496pp., New in paperback　(Oxford U.P.)
ISBN 9780198785804　¥7,820

【多光子過程の分光法の進歩・第 23 巻】

124.　Lin, Sheng Hsien et al. (eds)

Advances in Multi-Photon Processes and Spectroscopy, Vol 23. May 2016, 300pp., Hardback　(World Scientific)　ISBN 9789814749756
¥19,120
CONTENTS: Control of Radiationless Transitions by Light; Optimal Control Approaches for Aligning/orienting Linear Molecules; Femtosecond Laser-induced Coulomb Explosion Imaging; Development of Ultrashort Pulse Lasers in the Visible Ultrafast and Application to Spectroscopy Ranges; Nonlinear Optical Properties in Molecular Systems with Non-zero Permanent Dipole Moments in Four-Waving Mixing under Stochastic Considerations

【低温プラズマ物理学の理論】

125.　Nguyen-Kuok, S.

Theory of Low-Temperature Plasma Physics. (Springer Series on Atomic, Optical, and Plasma Physics, Volume 95) Dec 2016, 400pp., Hardback　(Springer)　ISBN 9783319437194
¥24,420

This book offers the reader an overview of the basic approaches to the theoretical description of low-temperature plasmas, covering numerical methods, mathematical models and modeling techniques.

126.　Pinheiro, F.

Multi-species Systems in Optical Lattices: From Orbital Physics in Excited Bands to Effects of Disorder. (Springer Theses)　Sept 2016, 116pp., Hardback　(Springer)
ISBN 9783319434636　¥18,790
CONTENTS: Introduction.- Optical Lattices, Excited Bands and All That.- General Properties of the Bosonic System in the p and in the d Bands.- Confined p-Orbital Bosons.- Beyond the Mean-field Approximation: Effective Pseudo-spin Hamiltonians Via Exchange Interaction.- Effects of Disorder in Multi-species Systems.

【ボース・アインシュタイン凝縮の普遍的テーマ】

127.　Proukakis, N.P. et al. (eds)

Universal Themes of Bose-Einstein Condensation. Apr 2017, Hardback　(Cambridge U.P.)　ISBN 9781107085695　¥16,630
Following an explosion of research on Bose–Einstein condensation (BEC) ignited by demonstration of the effect by 2001 Nobel prize winners Cornell, Wieman and Ketterle, this book surveys the field of BEC studies. Written by experts in the field, it focuses on Bose–Einstein condensation as a universal phenomenon, covering topics such as cold atoms, magnetic

and optical condensates in solids, liquid helium and field theory. Summarising general theoretical concepts and the research to date - including novel experimental realisations in previously inaccessible systems and their theoretical interpretation - it is an excellent resource for researchers and students in theoretical and experimental physics who wish to learn of the general themes of BEC in different subfields.

128.　　Rawitscher, G. et al.
A Practical Guide to Spectral Computational Methods. June 2016, 194pp., Paperback　(Springer)　ISBN 9783319427027 ¥13,150

【太陽電池の物理学・第 3 版】
129.　　Würfel, P.
Physics of Solar Cells From Basic Principles to Advanced Concepts, 3rd Edition. Aug 2016, 288pp., Paperback　(Wiley) ISBN 9783527413126　¥15,800
The new edition of this highly regarded textbook provides a detailed overview of the most important characterization techniques for solar cells and a discussion of their advantages and disadvantages.　It describes in detail all aspects of solar cell function, the physics behind every single step, as well as all the issues to be considered when improving solar cells and their efficiency. The text is now complete with examples of how the appropriate characterization techniques enable the distinction between several potential limitation factors, describing how quantities that have been introduced theoretically in earlier chapters become experimentally accessible. With exercises after each chapter to reinforce the newly acquired knowledge and requiring no more than standard physics knowledge, this book enables students and professionals to understand the factors driving conversion efficiency and to apply this to their own solar cell development.

光学とその応用

【オプトエレクトロニクス用半導体】
130.　　Balkan, N. & A. Erol
Semiconductors for Optoelectronics: Basics and Applications. Original Turkish edition published by Seçkin Yayıncılık Sanayi ve Ticaret A.Ş., Ankara, 2013.　Sept 2016, 270pp., Hardback　(Springer)　ISBN 9783319449340 ¥14,460
CONTENTS: Metals, Semiconductors and Insulators.- Electrical Conduction , Charge Carriers, Concept of Mobility.- Electronic Band Structure of Solids.- Intrinsic and Doped Semiconductors.- Conductivity in Semiconductors.- Semiconductor p-n Junctions -Solar Cells.- Photo Detectors.- Light-Emitting Diodes and Semiconductor Lasers.

131.　　Bateman, H.
The Mathematical Analysis of Electrical and Optical Wave-Motion: On the Basis of Maxwell's Equations. Oct 2016, 170pp., Paperback　(Cambridge U.P.)
ISBN 9781316626122　¥6,310

【量子プラズモニクス】
132.　　Bozhevolnyi, S. et al. (eds)
Quantum Plasmonics. Dec 2016 380 p.250 illus., 120 illus.in color.(Springer Series in Solid-State Sciences, Volume 185) Hardcover　(Springer)
ISBN 9783319458199　¥28,180
CONTENTS: Waveguide Quantum Electrodynamics.- Quantum Emitters for Plasmonics.- New Materials for Quantum Plasmonics.- Collective Strong Coupling.- Lasing in Plasmonic Structures.- Quantum Effects in Nanogaps.

【ゲーテとニュートンの色彩理論】
133.　　Duck, M.J. & M. Petry
Goethe's "Exposure of Newton's Theory of Light and Colour. Mar 2016, 250pp., Hardback (World Scientific)　ISBN 9781783268474　¥9,140 (Paperback　ISBN 9781783265886　¥4,650)
Johann Wolfgang von Goethe, although best known for his literary work, was also a keen and outspoken natural scientist. In the second polemic part of Zur Farbenlehre (Theory of Colours), for example, Goethe attacked Isaac Newton's groundbreaking revelation that light is heterogeneous and not immutable, as was previously thought. This polemic was unanimously rejected by the physicists of the day, and has often been omitted from compendia of Goethe's works. Indeed, although Goethe repeated all of Newton's key experiments, he was never able to achieve the same results. Many reasons have been proposed for this, ranging from the psychological to accusations of incapability — Goethe simply did not understand the experiments. Yet Goethe was never to be dissuaded from this passionate conviction.

134.　　Espinoza, F.
Wave Motion as Inquiry: The Physics and Applications of Light and Sound. Oct 2016, 136pp., Hardback　(Springer)
ISBN 9783319457567　¥9,390

【高強度レーザー場のプラズモニクス】
135.　　Fedeli, L.
High Field Plasmonics. (Springer Theses)　Sept 2016, 174pp., Hardback　(Springer)　ISBN 9783319442891　¥18,790
CONTENTS: High Intensity Laser-Plasma Interaction and High Field Plasmonics.- Numerical Tools.- Electron Acceleration with Grating Targets.- Foam Targets for Enhanced Ion Acceleration.- Numerical Exploration of High Field Plasmonics in Different Scenarios.

136.　　Grote, N. & H. Venghaus (eds)
Fibre Optic Communication: Key Devices, 2nd Edition. (Springer Series in Optical Sciences, Volume 161)　Sept 2016, 790pp., Hardback (Springer)　ISBN 9783319423654　¥43,030
The book gives an in-depth description of key devices of current and next generation fibre optic communication networks. Devices treated include semiconductor lasers, optical amplifiers, modulators, wave-length filters and other passives, detectors, all-optical switches, but relevant properties of optical fibres and network aspects are included as well.

【半導体ナノレーザー】
137.　　Gu, Qing & Y. Fainman
Semiconductor Nanolasers. March 2017, Hardback　(Cambridge U.P.)
ISBN 9781107110489　¥25,770
This unique resource explains the fundamental physics of semiconductor nanolasers, and provides detailed insights into their design, fabrication, characterization, and applications. Topics covered range from the theoretical treatment of the underlying physics of nanoscale phenomena, such as temperature dependent quantum effects and active medium selection, to practical design aspects, including the multi-physics cavity design that extends beyond pure electromagnetic consideration, thermal management and performance optimization, and nanoscale device fabrication and characterization techniques. The authors also discuss technological applications of semiconductor nanolasers in areas such as photonic integrated circuits and sensing. Providing a comprehensive overview of the field, detailed design and analysis procedures, a thorough investigation of important applications, and insights into future trends, this is essential reading for graduate students, researchers, and professionals in optoelectronics, applied photonics, physics, nanotechnology, and materials science.

【オプトエレクトロニクス半導体の分光分析】
138.　　Jimenez,　J. & J. W. Tomm
Spectroscopic Analysis of Optoelectronic Semiconductors. (Springer Series in Optical Sciences, Vol 202)　Aug 2016, 307pp., Hardback (Springer)　ISBN 9783319423470　¥20,660
This book deals with standard spectroscopic techniques which can be used to analyze semiconductor samples or devices, in both, bulk, micrometer and submicrometer scale. The book aims helping experimental physicists and engineers to choose the right analytical spectroscopic technique in order to get specific information about their specific demands. For this purpose, the techniques including technical details such as apparatus and probed sample region are described. More important, also the expected outcome from experiments is provided. This involves also the link to theory, that is not subject of this book, and the link to current experimental results in the literature which are presented in a review-like style. Many special spectroscopic techniques are introduced and their relationship to the standard techniques is revealed. Thus the book works also as a type of guide or reference book for people researching in optical spectroscopy of semiconductors.

【光源の色彩品質】
139.　　Khanh, T.Q. et al.
Color Quality of Semiconductor and Conventional Light Sources. Dec 2016, 376pp., Hardback　(Wiley)　ISBN 9783527341665　¥31,600
Meeting the need for a reliable publication on the topic and reflecting recent breakthroughs in the field, this is a comprehensive overview of color quality of solid-state light sources (LED-OLED and laser) and conventional lamps, providing academic researchers with an in-depth review of the current state while supporting lighting professionals in understanding, evaluating and optimizing illumination in their daily work.

【非線形光学の原理と応用】
140.　　Li, C.
Nonlinear Optics: Principles and Applications. Dec 2016, 300pp., Hardback (Springer)　ISBN 9789811014871　¥28,180

CONTENTS: Introduction to Nonlinear Optics- Polarization Theory for Nonlinear Optical Medium- Optical Three-Wave Coupling Processes- Optical Four-Wave Coupling Processes- Optical Kerr Effect and Self-Focusing- Stimulated Scattering of Light- Nonlinear Absorption and Refraction- Optical Bistability and Its Instability- Light Pulse Transmission in Fiber and Optical Soliton.

141.　　Lin, P. D.
Advanced Geometrical Optics. (Progress in Optical Science and Photonics, Volume 4)　Sept 2016, 460pp., Hardback　(Springer)
ISBN 9789811022982　¥28,180
This book computes the first- and second-or-der derivative matrices of skew ray and optical path length, while also providing an important mathematical tool for automatic optical design. This book consists of three parts.

【シリコン製発光ダイオードおよびレーザー】
142.　　Ohtsu, Motoichi
Silicon Light-Emitting Diodes and Lasers: Photon Breeding Devices using Dressed Photons. (Series: Nano-Optics and Nanophotonics)
Aug 2016, 192pp., Hardback　(Springer)
ISBN 9783319420127　¥20,660
This book focuses on a novel phenomenon named photon breeding. It is applied to realizing light-emitting diodes and lasers made of indirect-transition-type silicon bulk crystals in which the light-emission principle is based on dressed photons. After presenting physical pictures of dressed photons and dressed-photon phonons, the principle of light emission by using dressed-photon phonons is reviewed. A novel phenomenon named photon breeding is also reviewed. Next, the fabrication and operation of light emitting diodes and lasers are described The role of coherent phonons in these devices is discussed. Finally, light-emitting diodes using other relevant crystals are described and other relevant devices are also reviewed.

143.　　Raynaud, D.
Studies on Binocular Vision: Optics, Vision and Perspective from the Thirteenth to the Seventeenth Centuries. (Archimedes, Volume 47) Sept 2016, 254pp., Hardback　(Springer)
ISBN 9783319427201　¥16,910
Contents: 1.Perspectiva Naturalis/Artificialis.- Part I.Errors.- 2.Knowledge and Beliefs Regarding Linear Perspective.- 3.Understanding Errors in Perspective.- 4.Fact and Fiction Regarding Masaccio's Trinity Fresco.- Part II.Theory.- 5.Ibn al-Haytham on Binocular Vision.- 6.The Legacy of Ibn al-Haytham.- 7.The Rejection of the Two-Point Perspective System.- Part III.Sifting the Hypotheses.

144.　　Romano, A. & R. Cavaliere
Geometric Optics: Theory and Design of Astronomical Optical Systems Using Mathematica®. (Modeling and Simulation in Science, Engineering and Technology)　Oct 2016, 300pp., Hardback (Springer)　ISBN 9783319437316　¥20,660

天文学・宇宙物理学

【天体物理学と宇宙論 – 第 26 回ソルベイ会議】
157.　　Blandford, R. et al. (eds)
Astrophysics and Cosmology. (Proceedings of the 26th Solvay Conference on Physics, Brussels, Belgium, 9-11 October 2014)　May 2016, 380pp., Hardback　(World Scientific)　ISBN 9789814759175 ¥16,290
CONTENTS: Opening Session (M Henneaux). Neutron Stars (E van den Heuvel). Black Holes (S Tremaine). Cosmic Dawn (M Zaldarriaga). Dark Matter (S White). Microwave Background (G Efstathiou). Closing Session (R Blandford).

【太陽風における乱流】
158.　　Bruno, R. & V. Carbone
Turbulence in the Solar Wind. (Lecture Notes in Physics, Volume 928) Nov 2016, ca.250pp., Paperback　(Springer)　ISBN 9783319434391 ¥8,450
CONTENTS: Introduction.- Equations and Phenomenol-ogy.- Early Observations of MHD Turbu-lence.- Early Observations of MHD Turbu-lence.- Turbulence studied via Elsässer vari-ables.- Compressive Turbulence.- A Natural-Wind Tunnel.- SolarWind Heating by the Tur-bulent Energy Cascade.- Conclusions and Remarks.

【古典および量子宇宙論】
159.　　Calcagni, G.
Classical and Quantum Cosmology.
(Graduate Texts in Physics)　Dec 2016, 750pp., Hardback　(Springer)　ISBN 9783319411255 ¥15,030
CONTENTS: Introduction.- Hot big bang model.- Cosmo-logical perturbations.- Cosmic microwave background.- Inflation.- Big bang problem.- Cosmological constant problem.- The prob-lem of quantum gravity.- Canonical quantum gravity.- Canonical quantum cosmology.- Cosmology of quantum gravities.- String the-ory.- String cosmology.- Perspective.

160.　　Cunningham, C.
Studies of Pallas in the Early Nineteenth Century: Historical Studies in Asteroid Research, 2nd Edition. Dec 2016, 490pp., Hardback　(Springer)　ISBN 9783319328461 ¥25,360
CONTENTS: Chapter 1 A Disturbing Inclination.- Chapter 2 The Great Probability Debate.- Chapter 3 The Gold Medal.- Chapter 4 The Gauss Ana-gram.- Chapter 5 Hypothetical Planets.- Chapter 6 New Planets: The Transition from 1745 to 1804.- Chapter 7 The Olbers Letters.- Chapter 8 The Gauss Letters.-Chapter 9 The Harding Letters.- Chapter 10 Herschel's Asteroids.- Chapter 11 Scientific Papers.

【今日の惑星ロボティクス】
161.　　Gao, Yang
Contemporary Planetary Robotics: An Approach Toward Autonomous Systems.
Aug 2016, 432pp., Hardback　(Wiley)　ISBN 9783527413256　¥34,090
Filling the gap for readers from both academia and industry wishing to pursue their studies and/or careers in this emerging field, this is a one-stop tour of the history, evolution, key systems, and technologies of planetary robotics. The book provides a comprehensive introduction to the R&D aspects, ranging from robotic vision, surface rover locomotion, navigation, and remote/semi/autonomous operation, to sample acquisition/preparation, and subsurface mobility. It equally offers a systematic overview of major planetary robotic systems, covering the rovers, manipulators, samplers and drillers. It also includes a chronicle to explain the evolution of robotics within planetary missions since the Surveyor 3 mission in the 1960s.　The definitive reference on autonomous robotics and an important contribution to current and future programs run by such space agencies as ESA and NASA.

【MATLAB による宇宙論】
162.　　Green, D.
Cosmology with MATLAB (With Companion Media Pack).　July 2016, 280pp., Hardback (World Scientific)　ISBN 9789813108394　¥12,970 (Paperback　ISBN 9789813108400　¥6,320)
CONTENTS: Introduction; From the Big Bang; Fnflation and Big Bang Issues; Fluctuations to Perturbations; The Cosmic Microwave Background; Large Scale Structure; The Higgs Boson and Inflation; APPENDICES: MATLAB Tools; Formulae and Constants; Symbol and Acronym Tables; MATLAB Scripts.

163.　　Heinzel, P. & L. Fletcher (eds)
Solar and Stellar Flares: Observations, Simulations, and Synergies. Originally published in Solar Physics, Vol 290, Issue 12. Nov 2016, ca.320pp., Hardback　(Springer) ISBN 9789402409345　¥30,060
This volume is a collection of research articles on the subject of solar flares and flares on other cool stars, which are currently extensively studied using new ground- and space-based instruments, together with highly sophisticated numerical simulations.

【精密宇宙論】
164.　　Jones, B.J.T.
Precision Cosmology: The First Half Million Years. May 2017, Hardback　(Cambridge U.P.) ISBN 9780521554336　¥15,790
Cosmology seeks to characterise our Universe in terms of models based on well-understood and tested physics. Today we know our Universe with a precision that once would have been unthinkable. This book develops the entire mathematical, physical and statistical framework within which this has been achieved. It tells the story of how we arrive at our profound conclusions, starting from the early twentieth century and following developments up to the latest data analysis of big astronomical datasets. It provides an enlightening description of the mathematical, physical and statistical basis for understanding and interpreting the results of key space- and ground-based data. Subjects covered include general relativity, cosmological models, the inhomogeneous Universe, physics of the cosmic background radiation, and methods and results of data analysis. Extensive online supplementary notes, exercises, teaching materials, and exercises in Python make this the perfect companion for researchers, teachers and students in physics, mathematics, and astrophysics.

165.   Karttunen, H. et al.
Fundamental Astronomy, 6th Edition.   Sept 2016, 494pp., Hardback   (Springer)
ISBN 9783662530443   ¥11,270

【円盤の振動】
166.   Kato, Shoji
Oscillations of Disks. (Astrophysics and Space Science Library, Vol 437)   Sept 2016, 266pp., Hardback   (Springer)   ISBN 9784431562061   ¥20,660
This book presents the current state of research on disk oscillation theory, focusing on relativistic disks and tidally deformed disks. Since the launch of the Rossi X-ray Timing Explorer (RXTE) in 1996, many high-frequency quasiperiodic oscillations (HFQPOs) have been observed in X-ray binaries. Subsequently, similar quasi-periodic oscillations have been found in such relativistic objects as microquasars, ultra-luminous X-ray sources, and galactic nuclei. One of the most promising explanations of their origin is based on oscillations in relativistic disks, and a new field called discoseismology is currently developing. After reviewing observational aspects, the book presents the basic characteristics of disk oscillations, especially focusing on those in relativistic disks.

167.   Kosso, P.
What Goes Up... Gravity and Scientific Method. Mar 2017, Hardback   (Cambridge U.P.)
ISBN 9781107129856   ¥8,310

168.   López Coto, R.
Very-high-energy Gamma-ray Observations of Pulsar Wind Nebulae and Cataclysmic Variable Stars with MAGIC and Development of Trigger Systems for IACTs. (Springer Theses)   Oct 2016, 208pp., Hardback (Springer)   ISBN 9783319447506   ¥18,790

169.   Martins, C.J.A.P.
Defect Evolution in Cosmology and Condensed Matter: Quantitative Analysis with the Velocity-Dependent One-Scale Model. (SpringerBriefs in Physics) Sept 2016, 118pp., Paperback   (Springer)
ISBN 9783319445519   ¥9,390

【重力、天体物理学、宇宙論】
170.   Melnikov, V. & Jong-Ping Hsu (eds)
Gravitation, Astrophysics, and Cosmology. (Proceedings of the Twelfth Asia-Pacific International Conference on Gravitation, Astrophysics, and Cosmology Moscow, 28 Jun – 5 July 2015)   Feb 2016, 400pp., Hardback   (World Scientific)   ISBN 9789814759809   ¥24,610
The ICGAC-12 aimed to serve as a common platform around the Asia-Pacific region for the exchange and communication among all researchers in the fields of gravitation, astrophysics and cosmology. The scope covered in the conference includes dark matter, dark energy, experimental study of gravity, black holes, quantum Yang-Mills gravity, GR extension, variation of constants, fundamental physics space projects, relativistic astrophysics, white dwarfs, neutron stars, and gamma ray bursts.

【一般相対性論の百年・全 2 巻】
171.   Ni, Wei-Tou (eds)
One Hundred Years of General Relativity: From Genesis and Empirical Foundations to Gravitational Waves, Cosmology and Quantum Gravity. Sept 2016, 2 Vols/1100pp., Hardback   (World Scientific)   ISBN 9789814635127   ¥41,240
The aim of this two-volume title is to give a   comprehensive review of one hundred years of development of general relativity and its scientific influences. This unique title provides a broad introduction and review to the fascinating and profound subject of general relativity, its historical development, its important theoretical consequences, gravitational wave detection and application to astrophysics and cosmology.

172.   Orchiston, W.
John Tebbutt: Rebuilding and Strengthening the Foundations of Australian Astronomy. (Historical & Cultural Astronomy)   Oct 2016, 465pp., Hardback (Springer)   ISBN 9783319445205   ¥28,180

173.   Poggiani, R.
Optical, Infrared and Radio Astronomy: From Techniques to Observation. (UNITEXT for Physics)   Oct 2016, ca.200pp., Hardcover (Springer)   ISBN 9783319447315   ¥14,460

【宇宙論入門・第 2 版】
174.   Ryden, B.
Introduction to Cosmology, 2nd Edition. Feb 2017, Hardback   (Cambridge U.P.)
ISBN 9781107154834   ¥8,310
This second edition of Introduction to Cosmology is an exciting update of an award-winning textbook. It is aimed primarily at advanced undergraduate students in physics and astronomy, but is also useful as a supplementary text at higher levels. It explains modern cosmological concepts, such as dark energy, in the context of the Big Bang theory. Its clear, lucid writing style, with a wealth of useful everyday analogies, makes it exceptionally engaging. Emphasis is placed on the links between theoretical concepts of cosmology and the observable properties of the universe, building deeper physical insights in the reader. The second edition includes recent observational results, fuller descriptions of special and general relativity, expanded discussions of dark energy, and a new chapter on baryonic matter that makes up stars and galaxies. It is an ideal textbook for the era of precision cosmology in the accelerating universe.

175.   Schreiber, C.
A Statistical and Multi-wavelength Study of Star Formation in Galaxies. (Springer Theses)
Sept 2016, 218pp., Hardback   (Springer)
ISBN 9783319442921   ¥18,790