

BOOKSHELF

Books received

Fundamental Physics for Probing and Imaging by Wade Allison, Oxford University Press. Hardback ISBN 9780199203888, £49.95 (\$98.50). Paperback ISBN 9780199203895 £24.95 (\$49.50).

This book is for every physicist who has ever needed to answer the question: what is physics for? Physics has reduced fear and increased safety for society, largely by extending the power to see. The methods used are magnetic resonance, ionizing radiation and sound, with their extensions. The author follows how they are applied by modern technology to "seeing" in clinical medicine, including therapy, and in other spheres of human activity such as archaeology, geophysics, security and navigation. By taking a broad view of the entire field, the book encourages comparisons and underlines the importance of public education. Physics undergraduates and graduates, as well as professional physicists, will find this book of interest.

An Introduction to the Standard Model of Particle Physics (2nd edition) by WN Cottingham and DA Greenwood, Cambridge University Press. Hardback ISBN 9780521852494 £30 (\$65).

The new edition of this introductory graduate textbook provides a concise but accessible introduction to the Standard Model. It has been updated to account for the successes of the theory of strong interactions and the observations on matter–antimatter asymmetry, and includes a coherent presentation of the phenomena

of neutrinos with mass and the theory that describes them. The book clearly develops theoretical concepts, from the electromagnetic and weak interactions of leptons and quarks to the strong interactions of quarks. The mathematical treatments are suitable for graduates in physics, and the text and appendices develop more sophisticated mathematical ideas.

Advanced Quantum Theory (3rd edition) by Michael D Scadron, World Scientific Publishing. Hardback ISBN 9789812700506 £51 (\$88).

This book looks at the techniques that are used in theoretical elementary-particle physics that are extended to other branches of modern physics. The initial application is to non-relativistic scattering graphs encountered in atomic, solid-state and nuclear physics. Then, focusing on relativistic Feynman diagrams and their construction in lowest order, the book also covers relativistic quantum theory based on group theoretical language, scattering theory and finite parts of higher order graphs. Aimed at students and professors of physics, it should also aid the non-specialist in mastering the principles and calculation tools that probe the quantum nature of the fundamental forces.

Conceptions of Cosmos. From Myths to the Accelerating Universe: A History of Cosmology by Helge S Kragh, Oxford University Press. Hardback ISBN 9780199209163 £35 (\$100).

This is a historical account of how natural philosophers and scientists have

endeavoured to understand the universe at large, first in a mythical and later in a scientific context. Starting with the creation stories of ancient Egypt and Mesopotamia, the book covers all of the major events in theoretical and observational cosmology, from Aristotle's cosmos through the Copernican revolution to the discovery of the accelerating universe in the late 1990s. It presents cosmology as a subject including scientific as well as non-scientific dimensions, and tells the story of how it developed into a true science of the heavens. It also offers an integrated account with emphasis on the modern Einsteinian and post-Einsteinian period. This book is suitable for students and professionals in astronomy, physics and history of science.

Statistical Methods in Experimental Physics (2nd edition) by Frederick James, World Scientific Publishing. Hardback ISBN 9789812567956 £33 (\$58). Paperback ISBN 9789812705273 £17 (\$30).

In this second edition many chapters now include considerable new material, especially in areas concerning the theory and practice of confidence intervals, including the important Feldman–Cousins method. Both frequentist and Bayesian methodologies are presented, with a strong emphasis on techniques that are useful to physicists and other scientists in the interpretation of experimental data and comparison with scientific theories. This textbook is suitable for advanced graduate students in the physical sciences, as well as a reference for active researchers.

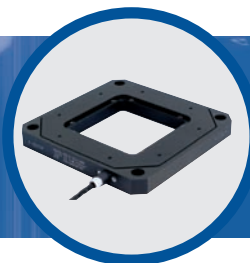
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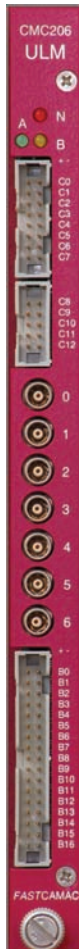


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