# CAMBRIDGE

#### Principles of Optics

**Electromagnetic Theory of Propagation,** Interference and Diffraction of Light **6th Edition** 

#### Max Born and Emil Wolf

Principles of Optics is one of the classic science books of the 20th century. This

standard reference continues to be invaluable to advanced undergraduates, graduate students and researchers working in any area of optics. The book provides a complete picture of our knowledge of optics as a whole.



870 pp.

1997

£35.00 PR 0 521 63921 2

## Quantum Optics

#### Marlan O. Scully and M. Suhail Zubairy

Quantum optics has witnessed many significant theoretical and experimental developments in recent years. This book provides an in-depth introduction to the subject, emphasising throughout the principles and their applications. 1997

£80.00 HR 0 521 43458 0 648 pp. 0 521 43595 1 £29.95 PB

## **Compact Sources of Ultrashort** Puises

#### Edited by Irl N. Duling, III

This comprehensive volume provides a thorough survey of the many recent innovations in the field of ultrashort pulse generation, and reviews the state of the art in compact, modelocked laser systems.

£60.00 HB 0 521 46192 8 1995 448 nn Cambridge Studies in Modern Optics 18

# **Theoretical Problems in Cavity** Nonlinear Optics

#### Paul Mandel

The scientific and technological importance of lasers has generated great interest in the field of cavity nonlinear optics. This book provides a thorough description of this subject in terms of modern dynamical systems theory. Throughout, the emphasis is on deriving analytical results and highlighting their physical significance.

£40.00 HR 0 521 55385 7 200 pp. 1997 Cambridge Studies in Modern Optics 21

#### ......

# Introduction to Optical Engineering

#### Francis T. S. Yu and Xiangyang Yang

A detailed introduction to modern optical engineering, covering the fundamental concepts as well as practical techniques and applications, including the latest technology in fibre sensors and optical communications.

E27.95 PB 0 521 57493 5	£75.00 £27.95	HB PB	0 521 57366 1 0 521 57493 5	424 pp.	1997
-------------------------	------------------	----------	--------------------------------	---------	------

# The Physics of Laser-Atom Interactions

#### Dieter Suter

Provides a thorough introduction to the interaction of atoms and atomic ions with optical and magnetic fields. A general multilevel formalism is described in detail, and used to discuss optical pumping, two-dimensional spectroscopy and the cooling and trapping of atoms, among other topics.

£65.00 HB 0 521 46239 8 1997 471 pp. Cambridge Studies in Modern Optics 19

Cambridge books are available from good bookshops, alternatively phone UK + 44 (0)1223 325588 to order direct using your credit card, or fax UK +44 (0)1223 325152. For further information, please email Giulia Williams on science@cup.cam.ac.uk or browse our Worldwide Web server http://www.cup.cam.ac.uk

'Cambridge Academic Book Sale - 1 May to 31 July 1998. More than 3,000 titles all at massively reduced prices. Visit our web site at www.cup.cam.ac.uk for more details."



The Edinburgh Building, Cambridge CB2 2RU

# **Excellence in Optics: Cambridge**

## ZEKE Spectroscopy E.W. Schlag

This is the first book to describe ZEKE spectroscopy, a new high resolution spectroscopy of molecular ions, neutral short-lived intermediates, and other species. The author's approach is to use a minimum of equations and large numbers of figures to help the reader toward a basic understanding of the many unique concepts of this new form of spectroscopy and the new spectroscopic information that it provides.

1998 288 pp. 0-521-58128-1 Hardback \$64.95

# All You Wanted to Know About Mathematics but Were Afraid to Ask

Volume 2: Mathematics For Science Students

#### Louis Lyons

This is an excellent tool kit for solving the mathematical problems encountered by undergraduates in physics and engineering. This second book in a two volume work introduces integral and differential calculus, waves, matrices, and eigenvectors. All mathematics needed for an introductory course in the physical sciences is included. 1998 398 pp.

0-521-43466-1	Hardback	\$69.95
0-521-43601-X	Paperback	\$27.95

#### The Mathematica® Primer Kevin R. Coombes, Brian R. Hunt, Ronald L. Lipsman, John E. Osborn, and Garrett J. Stuck

This book is a short, focused introduction to *Mathematica*<sup>®</sup>, the comprehensive software system for doing mathematics. Written for the novice, this engaging book contains an explanation of essential *Mathematica*<sup>®</sup> commands, as well as the rich *Mathematica*<sup>®</sup> interface for preparing polished technical documents. *Mathematica*<sup>®</sup> can be used to graph functions, solve equations, perform statistics tests, and much more. 1998 250 pp.

0-521-63715-5 Paperback \$24.95

#### Optical Pattern Recognition Francis T.S. Yu and Suganda Jutamulia, Editors

This book provides a comprehensive review of optical pattern recognition, covering theoretical aspects as well as details of practical implementations and signal processing techniques. The book gives many examples of working systems that integrate optics, electronics, and computers, and it covers a range of new developments from mathematical theories to novel optical materials. 1998 464 pp.

0-521-46517-6 Hardback \$105.00

#### Quantum Optics Marlan O. Scully and M. Suhail Zubairy

Quantum optics has witnessed significant theoretical and experimental developments in recent years. This book provides an in-depth and wide-ranging introduction to the subject, emphasizing throughout the basic principles and their applications.

1997	500 pp		
0-521-4	43458-0	Hardback	\$79.95
0-521-4	43595-1	Paperback	\$39.95

#### The Art and Science of Optical Design *R. R. Shannon*

The Art and Science of Optical Design is a comprehensive introduction to lens design, covering the fundamental physical principles and key engineering issues. Several practical examples of modern computer-aided lens design are worked out in detail from start to finish. It covers all aspects of optical design, including the use of modern lens design software.

1997	628 pp	•	
0-521-	45414-X	Hardback	\$100.00
0-521-	58868-5	Paperback	\$44.95

Available in bookstores or from



#### Information for Contributors

- 1. Manuscripts must be written in English. All manuscripts will be referred to acknowledged experts in the subject. Only those receiving favorable recommendations from the referees will be accepted for publication. Manuscripts may be sent to any Board member, any Associate Editor, or the Editor.
- 2. Manuscripts should be double spaced, on one side of good grade paper, allowing a reasonable left-hand margin. An original and two copies should be submitted with the author's full postal address, phone and/or fax numbers, position, and affiliations. Authors are urged to send in their final manuscripts on disks as well as on hard copy.
- 3. The title and section headings should highlight the significant points. A short abstract should precede the main text.
- 4. One copy of photographs, prints, or transparencies of good quality and unmarked should be submitted. Where lines or lettering are to appear on the photograph, an additional print should be supplied appropriately marked. Each should have, lightly written on the back, the author's name, the figure number, and an indication of which is the top of the picture.
- 5. One copy of each line diagram should be submitted at approximately twice final size and unlettered. Diagrams must be drawn in indian ink on plain white or transparent paper. A second copy should be supplied with lettering included. The author's name and the figure number should be written on this copy.
- 6. Tables should be typewritten on separate sheets. Avoid, where possible, very wide tables.
- 7. References and footnotes should be cited according to the Harvard (Author/date) system, also known as the "British form." In the text, author and year are cited in parentheses, e.g. "... was found by McCarthy (1980, 1980a) ..." or "(Emmett *et al.* 1972)". Full references are listed in alphabetic order at the end of the paper. References are not numbered. An example of a reference list is:

DEUTSCH, C. & KLARSFELD, S. 1973 Phys. Rev. A 7, 2081. NICHOLSON, D.R. 1983 Plasma Theory (John Wiley, New York). Oomura, H. et al. 1982a Res. Rep. ILE, ILE-8207p. Oomura, H. et al. 1982b Trans. Ans. 43, 617.

Note that the year of publication appears after the author's name. If possible, all authors names should be listed in preference to "*et al.*" If one author or team is referred to more than once in any year, the letters *a*, *b*, etc., should be added after the year to distinguish the individual references.

8. Correction to proofs should be restricted to printers' errors only. Authors are entitled to 25 offprints of their article free of charge. Additional offprints may be purchased if they are ordered on the form sent with the proofs.

ISSN 0263-0364 © 1998 Cambridge University Press Printed in the United States of America

Cambridge University Press 40 West 20th Street, New York, NY 10011, USA The Edinburgh Building, Shaftesbury Road, Cambridge CB22RU 10 Stamford Road, Oakleigh, Melbourne 3166, Australia

# LASER AND PARTICLE BEAMS

**Pulse Power and High Energy Densities** 

Volume 16, Number 3, 1998

S. Humphries, Jr. (Univ. New Mexico, Albuquerque, New Mexico, USA) and C. Ekdahl (Los Alamos Nat. Lab., Los Alamos, New Mexico, USA): Finite-element simulation code for high-power magnetohydrodynamics 405

V.N. Rai, M. Shukla and H.C. Pant (Centre for Advanced Tech., Indore, India): Some studies on picosecond laser produced plasma expanding across a uniform external magnetic field 431

**A.B. Kukushkin and V.A. Rantsev-Kartinov (Inst. of Nuclear Fusion, Moscow, Russia):** Dense Z-pinch plasma as a dynamical percolating network: From laboratory plasmas to a magnetoplasma universe 445

K. Bendib, A. Bendib and A. Sid (Lab. de Physique des Milieux Ionises, Inst. de Physique, Algiers, Algeria): Weibel instability analysis in laser-produced plasmas 473

M. Khan and S. Sarkar (Centre for Plasma Studies, Jadavpur Univ., Calcutta, India) and r. Desai and H.C. Pant (Centre for Advanced Tech., Indore, India): Modification of stimulated Brillouin scattering due to magnetic anisotropy in laser-plasma interaction 491

Alexandre Pozwolski (Education Nationale, Paris, France): Synchrotron acceleration of transparent charged macroparticles by a laser beam 503

Ziming He, Mark A. Prelas, Jon M. Meese and Li-Te Lin (Univ. of Missouri, Columbia, Missouri, USA): Microwave excitation and applications of an elliptical excimer lamp 509

**W.F. Ermolovich, G.N. Remizov, Y.A. Romanov, N.A. Ryabikina, R.M. Shagaliev, L.L. Vakhlamova, V.V. Vatulin, O.A. Vinokurov (Russian Federal Nuclear Center-VNIIEF, Arzamas, Russia), K.-H. Kang, J.A. Maruhn (Inst. für Theoretische Physik, Universität Frankfurt, Frankfurt, Germany) and R. Bock (Gesellschaft für Schwerionenforschung, Darmstadt, Germany): Studies on radiation generation and symmetrization in two-sided irradiated heavy-ion beam Hohlraums 525** 

Howard E. Brandt (U.S. Army Research Lab., Adelphi, Maryland, USA): Conference Summary: "Intense microwave pulses IV" Conference 2843 of SPIE 1996 international symposium on optical science, engineering, and instrumentation. Denver, Colorado, August 4-9, 1996 533

Book Review: by S. Nakai 537

Book Review: by Keith Burnett 538



