

LASER AND PARTICLE BEAMS

Volume 11 1993

Cambridge University Press

40 West 20th Street, New York, NY 10011, USA

The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU

10 Stamford Road, Oakleigh, Melbourne 3166, Australia

Laser and Particle Beams

Pulse Power and High Energy Densities

Editor in Chief:

G. H. MILEY
Director, Fusion Studies Laboratory,
University of Illinois,
103 S. Goodwin Ave, Urbana, IL 61801, USA

Emeritus Editor in Chief: HEINRICH HORA

Professor Emeritus
University of New South Wales
Kensington 2033, Australia

Associate Editors:

R. DAUTRAY (for Europe)
Scientific Director, CEA Limeil, B.P. 27
94190 Villeneuve St. Georges, France

A. H. GUENTHER (for Pulse Power)
Scientific Advisor (Lab. Development)
Sandia National Laboratories
Albuquerque, NM 87115

C. YAMANAKA (for Japan)
Director, Institute of Laser Engineering,
Osaka University, Suita,
565 Osaka, Japan

Editorial Board

N. G. Basov (Moscow)
D. Cartwright (Los Alamos)
P. van Devender (Albuquerque)
S. Eliezer (Soreq, Israel)
G. Kessler (Karlsruhe)
M. H. Key (Rutherford Appleton Lab.)
M. Kristiansen (Pulse Power Lab,
Texas Tech)
R. L. McCrory (Rochester)
G. A. Mesyats (Sverdlovsk, Russia)
P. Mulser (Darmstadt)
S. Nakai (Osaka)
K. Niu (Nagatsuta)
A. A. Offenberger (Alberta)
A. M. Prokhorov (Moscow)
B. Ripin (Washington)
D. D. Ryutov (Novosibirsk)
E. Storm (Livermore)
J. P. Wetteau (CEA Limeil)

Laser and Particle Beams is an international journal that covers the generation, and the interaction with matter, of high intensity laser and particle beams. It also covers the physics of systems with high energy densities. Specific fields of interest include nuclear fusion, especially inertial confinement, magnetic confinement, diagnostics, material treatment, laboratory astrophysics, plasmas and spectroscopy at extreme conditions, physical properties of hot dense matter and intense particle beams and optical (laser) beams from the microwave to the X-ray region. The exploration of these fields and their new physics, including nonlinear and nonclassical phenomena, should find a forum in this journal.

As well as publishing original articles the journal also publishes occasional review articles, surveys of research at particular laboratories and reviews of recent books.

©Cambridge University Press 1993

Copying: This journal is registered with the Copyright Clearance Center, 27 Congress St., Salem, MA 01970. Organizations in the USA who are also registered with C.C.C. may therefore copy material (beyond the limits permitted by sections 107 and 108 of US copyright law) subject to payment to C.C.C. of the per copy fee of \$05.00. This consent does not extend to multiple copying for promotional or commercial purposes. Code 5/0263-0346/93/\$5.00 + 00.

ISI Tear Sheet Service, 3501 Market Street, Philadelphia, PA 19104, USA, is authorized to supply single copies of separate articles for private use only.

For all other use, permission must be sought from Cambridge University Press.

Subscriptions: *Laser and Particle Beams* (ISSN 0263-0346) is published quarterly. The subscription price (which includes postage) of Volume 11, 1993 is US \$285 for the US, Mexico, and Canada (UK £144 elsewhere). Individual rates: US \$90 in the US, Mexico, and Canada; UK £53 elsewhere. Single parts cost US \$73 for the US, Mexico, and Canada (UK £39 elsewhere) plus postage. Four parts form a volume. Orders, which must be accompanied by payment, may be sent to a bookseller, subscription agent, or direct to the publishers: Cambridge University Press, Journals Department, 40 West 20th Street, New York, NY 10011-4211, USA; orders outside the US or Canada may be sent to Cambridge University Press, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU, England. Claims for missing issues should be made immediately after receipt of the next issue. POSTMASTER: Send address changes in the US, Mexico, and Canada to *Laser and Particle Beams*, Cambridge University Press, 110 Midland Avenue, Port Chester, NY 10573-9864.

Second Class Postage paid at New York, NY and at additional mailing offices.

CONTENTS OF VOLUME 11

TABLE OF CONTENTS LASER AND PARTICLE BEAMS

Vol. 11 1993

NUMBER 1

| | |
|---|-----|
| Preface | 1 |
| D. Xing, K. Ueda, and H. Takuma (Inst. of Laser Sci., Tokyo, Japan): Ionic excimers and alkali dimer triplet-state excimer lasers | 3 |
| H. Yoneda, T. Miura, Y. Yokota, Y. Motoki, A. Sasaki, K. Ueda, and H. Takuma (Inst. of Laser Sci., Tokyo, Japan): Bandwidth effects on laser-plasma interaction with a $\frac{1}{4}$ - μm laser | 15 |
| A. Sasaki, H. Yoneda, K. Ueda, and H. Takuma (Inst. of Laser Sci., Tokyo, Japan): Calculation of atomic excitation processes of X-ray laser plasmas irradiated by short-pulse intense KrF laser pulses | 25 |
| K. Ueda, H. Nishioka, K. Kimura, and H. Takuma (Inst. of Laser Sci., Tokyo, Japan): Advanced techniques of high-efficiency pulse compression for KrF lasers | 31 |
| C.B. Collins, J.J. Carroll, K.N. Taylor, T.W. Sinor, C. Hong, J.D. Standifird, and D.G. Richmond (Univ. of Texas, Dallas, TX): Status and issues in the development of a γ -ray laser. II. Giant resonances for the pumping of nuclei | 43 |
| H. Nishioka, T. Kawasumi, K. Ueda, and H. Takuma (Inst. of Laser Sci., Tokyo, Japan): Measurement of multi-photon absorption and electron avalanche in optical thin films | 55 |
| M.A. Prelas, E.J. Charlson, E.M. Charlson, J.M. Meese, G. Popovici, and T. Stacy (Univ. of Missouri, Columbia, MO): Diamond photovoltaic cells as a first-wall material and energy conversion system for inertial confinement fusion | 65 |
| T. Nishikawa, H. Takabe, and K. Mima (ILE, Osaka, Japan): Line profile modeling for non-LTE partially ionized plasmas based upon average atom model with l -splitting | 81 |
| H. Nishimura, H. Shiraga, T. Endo, H. Takabe, M. Katayama, Y. Oshikane, M. Nakamura, Y. Kato, and S. Nakai (ILE, Osaka, Japan): Radiation-driven cannonball targets for high-convergence implosions | 89 |
| K. Niu (Teikyo Univ., Chiba, Japan): Direct- and indirect-driven reactor targets | 97 |
| H. Daido, Y. Kato, K. Murai, G. Yuan, H. Azuma, H. Shiraga, E. Miura, H. Takabe, S. Nakai (ILE, Osaka, Japan), C.L.S. Lewis, D.M. O'Neill, D. Neely (Queens Univ., Belfast, Northern Ireland), and A. Djaoui (Rutherford Appleton Lab., Oxon, UK): Properties of an exploding foil neon-like germanium soft X-ray laser | 109 |
| H. Takabe, S. Nakamura, and T. Nishikawa (ILE, Osaka, Japan): Non-LTE atomic modeling for laser-produced plasmas | 119 |
| V.A. Bolotin, I.N. Burdonsky, A.L. Velikovich, V.V. Gavrilov, S.M. Goldberg, A. Yu. Goltsov, E.V. Zhuzhukalo, S.V. Zavjalets, V.N. Kondrashov, N.G. Kovalsky, M.I. Pergament (Kurchatov Inst., Moscow, Russia), and M.O. Koshevoi, A.A. Rupasov, A.S. Shikanov (Lebedev Phys. Inst., Moscow, Russia): Experimental testing of thin-shell stable acceleration for ICF schemes with direct and indirect drive | 127 |

| | |
|---|-----|
| H. Nakashima, M. Shinohara, Y. Wakuta, T. Honda, Y. Nakao (Kyushu Univ. Fukuoka, Japan), and H. Takabe (ILE, Osaka, Japan): Numerical simulation of implosion and burn of <i>D-T</i> ignitor/ $D^3\text{He}$ fuel pellet for $D^3\text{He}$ inertial confinement fusion reactor | 137 |
| A. Caruso and C. Strangio (EURATOM-ENEA, Rome, Italy): Indirect drive for inertial fusion energy | 149 |
| A. Caruso and V.A. Pais (EURATOM-ENEA, Rome, Italy): Effect of the surface finish on the stability of targets imploded by thermal radiation | 157 |
| R. Sigel, H. Baumhacker, G. Brederlow, K. Eidmann, E. Fill, J. Massen, J. Meyer-ter-Vehn, W. Schwanda, Ch. Stöckl, G.D. Tsakiris, R. Volk, S. Witowski, and K.J. Witte (MPI, Garching, Germany): Laser-plasma research at MPQ | 167 |
| M. Aydin (Univ. of New South Wales, Kensington, Australia), and H. Hora (CERN, Geneva, Switzerland): Suppression of stochastic pulsation in laser-plasma interaction by smoothing methods | 177 |
| W.C. Stwalley and J.T. Bahns (Univ. of Iowa, Iowa City, IA): Atomic, molecular and photonic processes in laser-induced plasmas in alkali metal vapors | 185 |
| D.A. Haynes, Jr., R.C. Mancini, and C.F. Hooper, Jr. (Univ. of Florida, Gainesville, FL): Calculations and diagnostic applications of Stark-broadened absorption line profiles for the <i>L</i> -shell ions of argon | 205 |
| I. Gilath, S. Eliezer (SOREQ, Yanev, Israel), and T. Bar-Noy (NRCN, Beer-Sheva, Israel): Hemispherical shock wave decay in laser-matter interaction | 221 |
| M.S. Jovanović (Univ. of Nis, Nis, Yugoslavia), and M.M. Škorić (Vinča Inst. Nucl. Sci., Belgrade, Yugoslavia): Nonstationarity of stimulated Raman scattering in a homogeneous plasma slab | 227 |
| J.A. Sullivan (LANL, Los Alamos, NM): Simplified model for designing large KrF amplifiers | 241 |
| A.P. Fews and M. Savage (Univ. of Bristol, UK), M.J. Lamb (Queens Univ., Belfast, Northern Ireland): A technique to study Rayleigh-Taylor instability by α -particle backlighting | 257 |
| V.M. Bystritskii, A.V. Kharlov, G.A. Mesyats, A.V. Mytnikov, and A.A. Sinebrjukhov (Inst. of Electrophys. Ecaterinburg, Russia): Experiments on generation of a high-power ion beam in a plasma-filled diode | 269 |
| Erratum | 277 |
| Book Reviews by H. Hora | 279 |

NUMBER 2

| | |
|--|-----|
| Preface | 283 |
| Special Section: Selected Papers from the International Atomic Energy Agency (IAEA) ICF Committee Meeting, 15-19, April, 1991, Osaka, Japan | |
| E. Storm, E.M. Campbell, W.J. Hogan, J.D. Lindl (Lawrence Livermore Nat. Lab., Livermore, CA, USA): Nova upgrade program: Ignition and beyond | 291 |
| R.L. McCrory, J.L. Soures, J.P. Knauer, S.A. Letzring, F.J. Marshall, S. Skupsky, W. Seka, C.P. Verdon, D.K. Bradley, R.S. Craxton, J.A. Delettrez, R. Epstein, P. Jaanimagi, R. Keck, T. Kessler, H. Kim, R.L. Kremens, P.W. McKenty, R.W. Short, B. Yaakobi (Univ. Rochester, NY, USA): Short-wavelength-laser requirements for direct-drive ignition and gain | 299 |

- W.H. Lowdermilk, E.M. Campbell, J.H. Campbell, J.T. Hunt, J.R. Murray, H.T. Powell, R.L. Smith, E. Storm, M.T. Tobin, J.B. Trenholme (Lawrence Livermore Nat. Lab., Livermore, CA, USA): The Nova upgrade facility 307
- J.M. Soures, R.L. McCrory, T.R. Boehly, R.S. Craxton, S.D. Jacobs, J.H. Kelly, T.J. Kessler, J.P. Knauer, R.L. Kremens, S.A. Kumpan, S.A. Letzring, W.D. Seka, R.W. Short, M.D. Skeldon, S. Skupsky, C.P. Verdon (Univ. Rochester, NY, USA): OMEGA upgrade laser for direct-drive target experiments 317
- D.B. Harris, G.R. Allen, R.R. Berggren, D.C. Cartwright, S.J. Czuchlewski, J.F. Figueira, D.E. Hanson, A. Hauer, J.E. Jones, N.A. Kurnit, W.T. Leland, J.M. Mack, T.E. McDonald, J. McLeod, E.A. Rose, M. Sorem, J.A. Sullivan, R.G. Watt (Los Alamos Nat. Lab., NM, USA): Strengths and weaknesses of KrF lasers for inertial confinement fusion applications learned from the AURORA laser 323
- M.H. Key, R. Bailly-Salins, B. Edwards, E.C. Harvey, G.J. Hirst, C.J. Hooker, A.K. Kidd, J.M.D. Lister, I.N. Ross, M.J. Shaw (Rutherford Appleton Lab., Oxfordshire, UK), E.C. Harvey (Excitech Ltd, Oxfordshire, UK): Development of high-performance KrF and Raman laser facilities for inertial confinement fusion and other applications 331
- Y. Owadano, I. Okuda, Y. Matsumoto, I. Matsushima, K. Koyama, T. Tomie, M. Yano (Electrotechnical Lab., Tsukuba, Japan): Performance of the ASHURA KrF laser and its upgrading plan 347
- H. Baumhacker, G. Brederlow, E. Fill, Ch. Schrödter, R. Volk, S. Witkowski, K. J. Witte (Max-Planck-Inst. für Quantenoptik, Germany): Performance of the Asterix IV iodine laser 353
- J.A. Sullivan, G.R. Allen, R.R. Berggren, S.J. Czuchlewski, D.B. Harris, M.E. Jones, B.J. Krohn, N.A. Kurnit, W.T. Leland, C. Mansfield, J. McLeod, A.W. McCown, J.H. Pendergrass, E.A. Rose, L.A. Rosocha, V.A. Thomas (Los Alamos Nat. Lab., NM, USA): KrF amplifier design issues and application to inertial confinement fusion system design 359
- I. Matsushima, Y. Owadano, Y. Matsumoto, I. Okuda, T. Tomie, K. Koyama, R. Staffin, M. Yano (Electrotechnical Lab., Tsukuba, Japan): Beam-smoothing effect in broad-band random-phase irradiation 385
- C. Rubbia (CERN, Geneva, Switzerland): Heavy-ion accelerators for inertial confinement fusion 391
- R.N. Sudan (Cornell Univ., Ithaca, NY, USA): Inertial confinement fusion with magnetically compressed ion rings 415
- J.J. Ramirez, D.L. Cook, J.K. Rice, M.K. Matzen, D.L. Johnson, J.D. Boyes, C.L. Olson, K.R. Prestwich, M.J. Clauser, T.A. Mehlhorn, R.W. Stinnett, G.O. Allshouse (Sandia Nat. Lab., Albuquerque, NM, USA), G.L. Kulcinski, G.A. Moses, R.R. Peterson, R.L. Engelstad (Univ. Wisconsin, USA): Intense light-ion beams provide a robust, common-driver path toward ignition, gain, and commercial fusion energy 423
- J. Irisawa and S. Takano (Nagaoka Univ. of Technology, Japan): Transformer-type accelerator for inertial confinement fusion 431
- J.M. Perlado and J. Sanz (Univ. Politécnica de Madrid, Spain): Neutron damage and activation of the first wall of inertial confinement fusion reactors: Recycling and waste disposal 437
- B.W. Boreham, J.W. Waller (U. Central Queensland, Australia), H. Hora, (CERN, Geneva, Switzerland), L. Cicchitelli, R. Khoda-Baksh, T. Rowlands (U. New South Wales, Kensington, Australia): Application of dense plasma beams to the development of a high-efficiency lateral injection laser amplifier 443

| | |
|---|-----|
| H. Yoshida, K. Katakami, Y. Sakagami (Gifu Univ., Japan), H. Azechi, H. Nakarai, S. Nakai (Osaka Univ., Japan): Magnetic suspension of a pellet for inertial confinement fusion | 455 |
| Book Review by H. Hora | 461 |

NUMBER 3

| | |
|--|-----|
| Commentative by H. Hora (Editorial) | 463 |
| Preface | 467 |
| Papers from Specialist Conference on Physics of Nuclear Induced Plasmas and Problems of Nuclear Pumped Lasers, Obninsk, Russia, May 26–28, 1992 | |
| E.P. Magda (Nat. Inst. of Tech. Phys., Russia): Analysis of experimental and theoretical research of nuclear-pumped lasers at the Institute of Technical Physics | 469 |
| P.P. Dyachenko, Yu.B. Dorofeev, E.D. Poletaev, and M.Z. Tarasko (Inst. of Phys. and Power Eng., Russia): Subthreshold diagnostics of He–Cd active medium for direct nuclear-pumped lasers | 477 |
| V.A. Rykov, P.P. Dyachenko, F.V. Mahrov, and Yu.V. Sokolov (Inst. of Phys. and Power Eng., Russia): Ejected electron energy dependence of ionization cross section of He and Ar atoms by fission fragments bombardment | 485 |
| A. Bochkov, V. Kryzhanovsky, O. Lyubimov, E. Magda, and S. Mukhin (Nat. Inst. of Tech. Phys., Russia): Nuclear reactor-pumped laser atomic xenon operated at 2.48 μm | 491 |
| P.P. Dyachenko, V.V. Kalinin, E.A. Seregina, O.D. Shevchuk, G.V. Tichonov (Inst. of Phys. and Power Eng., Russia), O.N. Gilyarov, Yu.I. Krasilov, B.N. Kulikovskiy, and T.L. Novoderyozhkina (Inst. of General and Inorganic Chem., Russian Acad. of Sci., Russia): Inorganic liquid laser doped with neodymium and uranyl | 493 |
| A.A. Mavlyutov, A.I. Mis'kevich, and B.S. Salamakha (Moscow Eng. Phys. Inst., Russia): Nuclear pumping of I ₂ vapor in dense gases | 499 |
| A. Ulrich, B. Busch, W. Krötz, G. Ribitzki, J. Wieser (Tech. Univ. München, Germany), and D.E. Murnick (Rutgers Univ., NJ, USA): Heavy-ion beam pumping as a model for nuclear-pumped lasers | 509 |
| W. Krötz, A. Ulrich, B. Busch, G. Ribitzki, and J. Wieser (Tech. Univ. München, Germany): Third excimer continua in neon and argon | 521 |
| J. Wieser, A. Ulrich, B. Busch, R. Gernhäuser, W. Krötz, G. Ribitzki, M. Salvermoser (Tech. Univ. München, Germany), and D.E. Murnick (Rutgers Univ., NJ, USA): Heavy-ion beam-pumped lasers: Optical gain on the 476.5-nm Ar II transition | 529 |
| D.E. Beller, J.M. Jacobson (Air Force Inst. of Tech., OH, USA), G.H. Miley, M. Petra, and Y. Shaban (Univ. of Illinois, IL, USA): Parametric design study of a nuclear-pumped laser-driven inertial confinement fusion power plant | 537 |
| M. Petra and G.H. Miley (Univ. of Illinois, IL, USA): Nuclear-powered laser beam profile control method | 549 |
| Y.R. Shaban and G.H. Miley (Univ. of Illinois, IL, USA): Practical, visible wavelength nuclear-pumped laser | 559 |
| W.H. Williams and G.H. Miley (Univ. of Illinois, IL, USA): Nuclear-induced XeBr* fluorescence pumping of the atomic iodine laser | 567 |

| | |
|--|-----|
| G.H. Miley (Univ. of Illinois, IL, USA): Overview of nuclear-pumped lasers | 575 |
| V.N. Belousov and Yu.K. Nizienko (I.V. Kurchatov Inst., Moscow, Russia): Powerful Nd:glass laser with composite active elements incorporating WFR cells and output pulse compressors | 583 |
| R.B. Baksht, S.P. Bugaev, I.M. Datsko, A.A. Kim, B.M. Koval'chuk, V.A. Kokshenev, A.G. Russkikh (High Current Electr. Inst., Tomsk, Russia), and G.A. Mesyats (Office of USSR AN-Ural Branch, Sofy Kovalevskoi, Russia): Experiments with a wire array Z pinch on the inductive storage generator | 587 |
| V.M. Batenin, A.V. Danilov, A.O. Ikonnikov, S.A. Ilchenko, A.T. Kunavin, A.V. Markov, D.V. Sapozhnikov, P.M. Tokar, I.V. Vovk, V.Y. Yakovlev, and V.S. Zhivopistsev (Inst. of High Temp., Moscow, Russia): Observations of two-stream collisional instability due to interaction of monoenergetic relativistic electron beams with gas | 595 |
| Gu Yuan, Wang Yonggang, Fu Sizu, Wu Jiang, Yu Songyu, Wan Binggen, Zhou Guanlin, Wang Xin, Han Guojiang, Zeng Yixin (Shanghai Laser Lab., Shanghai, China) and Ma Minxun (Shanghai Univ., Shanghai, China): Hugoniot measurements of copper to 0.8 TPa by laser-driven shock waves | 611 |
| Book Review by Max Tabak | 617 |

NUMBER 4

Preface

Remaining Papers from the Specialist Conference on Physics of Nuclear Induced Plasmas and Problems of Nuclear Pumped Lasers, Obninsk, Russia, May 26–28, 1992.

| | |
|---|-----|
| P.P. Dyachenko (Inst. of Phys. and Power Eng., Obninsk, Russia): Experimental and theoretical works performed by the Institute of Physics and Power Engineering on the physics of nuclear-induced plasmas | 619 |
| Alexei M. Voinov (All-Russian Sci. Research Inst. of Exp. Phys., Arzamas, Russia): Pulsed nuclear reactors in nuclear-pumped laser research | 635 |
| Sergei P. Melnikov and Anatolii A. Sinyanskii (All-Russian Sci. Research Inst. of Exp. Phys., Arzamas, Russia): Ultimate efficiency of nuclear-pumped gas lasers | 645 |
| A.M. Boichenko, A.V. Karelin, O.V. Sereda, and S.I. Yakovlenko (General Phys. Inst. of the Academy of Sci. of Russia, Moscow, Russia): Kinetics of the active media of nuclear-pumped lasers | 655 |
| Alexei I. Konak, Sergei P. Melnikov, Vladimir V. Porkhaev, and Anatolii A. Sinyanskii (All-Russian Sci. Research Inst. of Exp. Phys., Arzamas, Russia): Nuclear-pumped gas lasers at temperatures up to 800°C | 663 |

Regular Papers

| | |
|---|-----|
| V.A. Burtsev (Efremov Sci. Research Inst. of Electrophysical Apparatus, St. Petersburg, Russia), S.Y. Gus'kov, V.B. Rozanov (Lebedev Physical Inst., Moscow, Russia), D.V. Il'in, A.A. Levkovsky, V.E. Sherman, Y.N. Starbunov (Inst. of Machine Building of St. Petersburg, Russia), and N.V. Zmitrenko (Keldysh Inst. of Applied Mathematics, Moscow, Russia): Mathematical modeling of the thermonuclear burning in DHe ³ targets with D-T ignition | 669 |
| Nikolai E. Tsapenko (Moscow, Russia): Plane electromagnetic waves in heterogeneous medium under approximation regarding relative rate of change of wave resistance | 679 |

| | |
|---|-----|
| J.-M. Doliue, and M. Khodja (Univ. of Joseph Fourier-Grenoble, France): Nonlinear electron beam guiding by a reduced-density channel | 685 |
| R.W. John and W. Brunner (Max-Born-Inst., Berlin, Germany): Resonance line reabsorption in a laser-produced plasma showing specific deviations from axial symmetry | 697 |
| G.E. Remnev (Nuclear Phys. Inst., Tomsk, Russia), and V.A. Shulov (Aviation Inst., Moscow, Russia): Application of high-power ion beams for technology | 707 |
| M.M. Basko (Max-Planck Inst., Garching, Germany): Simple spherical D-T targets for heavy-ion beam fusion | 733 |
| M.M. Basko, S.V. Molodtsov, M.V. Sokolovskii, and B. Yu. Sharkov (Inst. Theoretical and Experimental Phys., Moscow, Russia): Hydrodynamic efficiency of energy transfer in experimental targets illuminated with heavy-ion beams | 751 |
| S. Kawata, T. Sato, T. Teramoto, E. Bandoh, Y. Masubichi, and I. Takahashi (Nagaoka Univ. of Tech., Nagaoka, Japan): Radiation effect on pellet implosion and Rayleigh-Taylor instability in light-ion beam inertial confinement fusion | 757 |
| Index | 769 |

ESSENTIAL READING FROM CAMBRIDGE

Photodissociation Dynamics

Reinhard Schinke
*Cambridge Monographs on Atomic,
Molecular and Chemical Physics 1*

1993 400 pp.
38368-4 Hardcover \$89.95

The Ideas of Particle Physics

An Introduction for Scientists
Second Edition

G.D. Coughlan and J.E. Dodd

1991 256 pp.
38506-7 Hardcover \$64.95
38677-2 Paper \$29.95

Statistics for Nuclear and Particle Physicists

L. Lyons

1989 240 pp. 37934-2 Paper \$29.95

Diffraction Effect in Semiclassical Scattering

H.M. Nussenzveig
*Montroll Memorial Lecture Series in
Mathematical Physics 1*

1992 251 pp.
38318-8 Hardcover \$59.95

Particle Field Holography

Chandra S. Vikram
*Cambridge Studies in Modern
Optics 11*

1992 280 pp.
41127-0 Hardcover \$79.95

Quantum Measurement

*V.B. Braginsky and
F. Ya. Khalili*

1992 205 pp.
41928-X Hardcover \$39.95

Newton to Einstein: The Trail of Light

An Excursion to the Wave-Particle
Duality and the Special Theory of
Relativity

Ralph Baierlein

1992 345 pp.
41171-8 Hardcover \$34.95

Ultrafast Fiber Switching Devices and Systems

Mohammed Islam
*Cambridge Studies in Modern
Optics 12*

1992 224 pp.
43191-3 Hardcover \$49.95

Available in bookstores or from

**CAMBRIDGE
UNIVERSITY PRESS**

40 West 20th Street,
New York, NY 10011-4211
Call toll free 800-872-7423.
MasterCard/VISA accepted.
Prices subject to change.

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.
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.* **A7**, 2081.
NICHOLSON, D. R. 1983 *Plasma Theory* (John Wiley, New York).
OOMURA, H. *et al.* 1982 *Res. Rep ILE*, ILE-8207p.
OOMURA, H. *et al.* 1982a *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.

Cambridge University Press
40 West 20th Street, New York, NY 10011, USA
The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU
10 Stamford Road, Oakleigh, Melbourne 3166, Australia

Contents continued from back cover

M.M. Basko, S.V. Molodtsov, M.V. Sokolovskii, and B. Yu. Sharkov (Inst. Theoretical and Experimental Phys., Moscow, Russia): Hydrodynamic efficiency of energy transfer in experimental targets illuminated with heavy-ion beams 751

S. Kawata, T. Sato, T. Teramoto, E. Bandoh, Y. Masubichi, and I. Takahashi (Nagaoka Univ. of Tech., Nagaoka, Japan): Radiation effect on pellet implosion and Rayleigh-Taylor instability in light-ion beam inertial confinement fusion 757

Index 769

LASER AND PARTICLE BEAMS

Pulse Power and High Energy Densities

Volume 11, Number 4, 1993

Preface

Remaining Papers from the Specialist Conference on Physics of Nuclear Induced Plasmas and Problems of Nuclear Pumped Lasers, Obninsk, Russia, May 26–28, 1992.

P.P. Dyachenko (Inst. of Phys. and Power Eng., Obninsk, Russia): Experimental and theoretical works performed by the Institute of Physics and Power Engineering on the physics of nuclear-induced plasmas 619

Alexei M. Voinov (All-Russian Sci. Research Inst. of Exp. Phys., Arzamas, Russia): Pulsed nuclear reactors in nuclear-pumped laser research 635

Sergei P. Melnikov and Anatolii A. Sinyanskii (All-Russian Sci. Research Inst. of Exp. Phys., Arzamas, Russia): Ultimate efficiency of nuclear-pumped gas lasers 645

A.M. Boichenko, A.V. Karelin, O.V. Sereda, and S.I. Yakovlenko (General Phys. Inst. of the Academy of Sci. of Russia, Moscow, Russia): Kinetics of the active media of nuclear-pumped lasers 655

Alexei I. Konak, Sergei P. Melnikov, Vladimir V. Porkhaev, and Anatolii A. Sinyanskii (All-Russian Sci. Research Inst. of Exp. Phys., Arzamas, Russia): Nuclear-pumped gas lasers at temperatures up to 800°C 663

Regular Papers

V.A. Burtsev (Efremov Sci. Research Inst. of Electrophysical Apparatus, St. Petersburg, Russia), S.Y. Gus'kov, V.B. Rozanov (Lebedev Physical Inst., Moscow, Russia), D.V. Il'in, A.A. Levkovsky, V.E. Sherman, Y.N. Starbunov (Inst. of Machine Building of St. Petersburg, Russia), and N.V. Zmitrenko (Keldysh Inst. of Applied Mathematics, Moscow, Russia): Mathematical modeling of the thermonuclear burning in DHe^3 targets with D-T ignition 669

Nikolai E. Tsapenko (Moscow, Russia): Plane electromagnetic waves in heterogeneous medium under approximation regarding relative rate of change of wave resistance 679

J.-M. Dolique, and M. Khodja (Univ. of Joseph Fourier-Grenoble, France): Nonlinear electron beam guiding by a reduced-density channel 685

R.W. John and W. Brunner (Max-Born-Inst., Berlin, Germany): Resonance line reabsorption in a laser-produced plasma showing specific deviations from axial symmetry 697

G.E. Remnev (Nuclear Phys. Inst., Tomsk, Russia), and V.A. Shulov (Aviation Inst., Moscow, Russia): Application of high-power ion beams for technology 707

M.M. Basko (Max-Planck Inst., Garching, Germany): Simple spherical D-T targets for heavy-ion beam fusion 733

Contents continued on inside back cover

ISSN 0263-0364

© 1993 Cambridge University Press

Printed in the United States of America