JOURNAL OF PLASMA PHYSICS

https://doi.org/10.1017/S0022377800024703 Published online by Cambridge University Press

JOURNAL OF PLASMA PHYSICS exists for the publication of experimental and theoretical research papers on plasma physics and its applications.

EDITOR

DR J. P. DOUGHERTY

Department of Applied Mathematics and Theoretical Physics, University of Cambridge, Silver Street, Cambridge, CB3 9EW England

ASSOCIATE EDITORS

PROF. D. BERSHADER

Department of Aeronautics and Astronautics, Stanford University, Stanford, California 94305, *U.S.A.*

PROF. F. D. KAHN

*Department of Astronomy, University of Manchester, Manchester M*13 9*PL, England*

PROF. W. B. THOMPSON

Department of Physics, University of California, La Jolla, California 92037, *U.S.A.*

Authors wishing to have papers published in the JOURNAL should communicate them to any one of the persons named above, choosing one in their own country where possible.

Authors are urged to ensure that their papers are written clearly and attractively, in order that their work will be readily accessible to readers.

Manuscripts should be typed in double spacing on one side of the paper only, with references listed at the end in alphabetical order of authors. Drawings should be done in Indian ink on plain white or transparent paper, and should not be larger than 15 in. by 24 in. Lettering should be shown clearly in pencil for reproduction by the printer, and as far as possible information relating to a figure should be placed in the caption rather than on the figure. A typed list of captions should be provided at the end of the manuscript. Proofs of papers from overseas will usually be despatched to authors by airmail. There is no charge for publication. Authors are entitled to receive 50 offprints of a paper in the JOURNAL free of charge, and additional offprints can be purchased if ordered in advance.

© Cambridge University Press, 1974

For permission to reproduce material from *Journal of Plasma Physics*, please apply to the London or New York office of the Cambridge University Press.

ISI Tear Service, 325 Chestnut Street, Philadelphia, Pennsylvania 19106, U.S.A. is authorized to supply single copies of separate articles for private use only.

JOURNAL OF PLASMA PHYSICS is published once every two months in February, April, June, August, October and December, by Cambridge University Press, P.O. Box 92, London NW1 2DB and 32 East 57th Street, New York, N.Y. 10022.

Three parts form a volume. The subscription price of a volume (which includes postage) is £16.00 net (US $52.00 in the U.S.A. and Canada). Single parts cost £7.00 net (US $21.00 in the U.S.A. and Canada) plus postage.

Copies of the journal for subscribers in the United States of America are sent by air to New York to arrive with minimum delay.

Second class postage paid at New York, N.Y.

https://doi.org/10.1017/S0022377800024703 Published online by Cambridge University Press

JOURNAL OF PLASMA PHYSICS

VOLUME 11
1974

CAMBRIDGE
AT THE UNIVERSITY PRESS
1974

https://doi.org/10.1017/S0022377800024703 Published online by Cambridge University Press

PUBLISHED BY
THE SYNDICS OF THE CAMBRIDGE UNIVERSITY PRESS
Bentley House, 200 Euston Road, London NW1 2DB
American Branch: 32 East 57th Street, New York, N.Y. 10022

Printed in Great Britain at the University Printing House, Cambridge

https://doi.org/10.1017/S0022377800024703 Published online by Cambridge University Press

CONTENTS TO VOLUME 11

PART 1 FEBRUARY 1974

Effect of neutral gas friction and ion viscosity on the Rayleigh–Taylor instability of a stratified plasma in the presence of Hall currents. P. K. BHATIA *page* 1

Extension of Dougherty's model Fokker–Planck equation for a plasma. R. J. PAPA 11

Attenuation of longitudinal electro-acoustic waves in a plasma. R. J. PAPA and P. LINDSTROM 37

Oblique and skew ionizing shock waves with non-unique structure. B. P. LEONARD 51

A note on the application of Whitham's method to nonlinear waves in dispersive media. K. B. DYSTHE 63

Plasma losses through an adiabatic cusp. A. S. KAYE 77

Mass motion and heating in a magnetic neutral point system. P. J. BAUM and A. BRATENAHL 93

Decay instability of circularly polarized waves into circularly polarized and Langmuir waves in a magnetized plasma. K. F. LEE 99

Absorption coefficients of a hydrogen plasma for laser radiation. J. R. STALLCOP 111

Experimental verification of the reciprocity theorem for antennas and electron plasma waves. Y. NAKAMURA and T. ITOH 131

Relaxation oscillations in weak turbulence. The case of nonlinear wave–particle interaction. C. MONTES 141

Transport properties of the three-dimensional guiding-centre plasma. G. VAHALA 159

REVIEWS

Laser interaction and related phenomena, vol. 2, *Edited by H. J. Schwarz and H. Hora* 173

Coronal expansion and solar wind, by A. J. Hundhausen 173

PART 2 APRIL 1974

Obliquely propagating unstable whistler waves: a computer simulation. S. CUPERMAN and A. STERNLIEB 175

A theoretical investigation of banded chorus. D. NUNN 189

Spatial evolution of finite-amplitude plasma waves in collisionless plasmas. S-T. TSAI 213

https://doi.org/10.1017/S0022377800024703 Published online by Cambridge University Press

Excitation of the plasma and upper hybrid resonances in a warm magnetoplasma by an alternating electric dipole. J. M. Chassériaux *page* 225

'Inner' region solution for the resistive tearing instability including 'parallel' viscosity and compressibility. G. M. Marinoff 253

Phase and signal velocities of eigenwaves in a binary dissipative plasma. M. Kranyš and J. Teichmann 269

Fast-wave interaction with a relativistic electron beam. P. Sprangle 299

Low-frequency surface waves on a bounded warm magneto-active plasma. I. Zhelyazkov and P. Nenovski 311

Fractional harmonics in a plasma. G. J. Lewak and H. J. Lee 325

Lagrangian methods in plasma dynamics. Part 2. Construction of Lagrangians for plasma. J. P. Dougherty 331

Part 3 June 1974

Oscillations of a plasma confined by the magnetic field of a line multipole. D. N. Burghes 347

Kinetic equations for plasmas subjected to a strong time-dependent external field. Part 1. General theory. R. Balescu and J. H. Misguich 357

Kinetic equations for plasmas subjected to a strong time-dependent external field. Part 2. The weak interaction approximation. R. Balescu and J. H. Misguich 377

Wave propagation in a moving plasma. Part 1. Wave propagation normal to the magnetic field and motion of the plasma along the magnetic field. D. N. Srivastava 389

Comparison of quasi-linear predictions with a computer simulation of whistler waves in unstable plasmas. S. Cuperman and L. R. Lyons 397

Athermal neutrons and ions in a fusion plasma. K. A. Brueckner, H. Brysk and R. S. Janda 403

Field line reconnexion and magnetic energy release. T. Yeh 411

Magnetoplasma equilibria with geometry of double-inverse-pinch. T. Yeh 423

A theory for scattering by density fluctuations based on three-wave interaction. K. J. Harker and F. W. Crawford 435

Electron temperature resonances of a plasma column described to full first order in the temperature. R. Koch and P. E. Vandenplas 451

Purely growing electromagnetic modes in high-β plasmas. G. S. Lakhina, B. Buti and G. Nayar 461

Fluctuation levels connected with reactive marginal instabilities. E. Minardi 471

Index to Volume 11 485

https://doi.org/10.1017/S0022377800024703 Published online by Cambridge University Press

JOURNAL OF PLASMA PHYSICS

Volume 11 Part 3 June 1974

CONTENTS

Oscillations of a plasma confined by the magnetic field of a line multipole
D. N. BURGHES *page* 347

Kinetic equations for plasmas subjected to a strong time-dependent external field. Part 1. General theory
R. BALESCU and J. H. MISGUICH 357

Kinetic equations for plasmas subjected to a strong time-dependent external field. Part 2. The weak-interaction approximation
R. BALESCU and J. H. MISGUICH 377

Wave propagation in a moving plasma. Part 1. Wave propagation normal to the magnetic field and motion of the plasma along the magnetic field
D. N. SRIVASTAVA 389

Comparison of quasi-linear predictions with a computer simulation of whistler waves in unstable plasmas
S. CUPERMAN and L. R. LYONS 397

Athermal neutrons and ions in a fusion plasma
K. A. BRUECKNER, H. BRYSK and R. S. JANDA 403

Field line reconnexion and magnetic energy release
T. YEH 411

Magnetoplasma equilibria with geometry of double-inverse-pinch
T. YEH 423

A theory for scattering by density fluctions based on three-wave interaction
K. J. HARKER and F. W. CRAWFORD 435

Electron temperature resonances of a plasma column described to full first order in the temperature
R. KOCH and P. E. VANDENPLAS 451

Purely growing electromagnetic modes in high-β plasmas
G. S. LAKHINA, B. BUTI and G. NAYAR 461

Fluctuation levels connected with reactive marginal instabilities
E. MINARDI 471

INDEX TO VOLUME 11 485

© Cambridge University Press, 1974

CAMBRIDGE UNIVERSITY PRESS

BENTLEY HOUSE, 200 EUSTON ROAD, LONDON NW1 2DB
AMERICAN BRANCH: 32 EAST 57TH STREET, NEW YORK, N.Y. 10022

Annual subscription £32.00 *net in U.K.* (*US* $104.00 *in U.S.A. and Canada*)

Printed in Great Britain at the University Printing House, Cambridge

https://doi.org/10.1017/S0022377800024703 Published online by Cambridge University Press