

CONTENTS OF VOLUME II

PLASMA PHYSICS

Fundamental Plasma Processes

E. ÖZİZMİR and K. İMRE, A generalization of the Bogoliubov theory for a plasma	3
J. COSTE, First order correction to the equilibrium correlation function of the classical plasma, from the kinetic theory. High frequency dielectric constant of the electron gas	6
H. MARGENAU and P. MALLOZZI, Theory of plasma radiation-Mathematical development	9
P. MALLOZZI and H. MARGENAU, Theory of plasma radiation-Physical application	12
B. GLADITZ, On the interaction of a test particle with a quasi plasma	15
C. H. SU, Eigenvalue problem of the Fokker-Planck collision integral	18
C.—S. WU, Kinetic equation for an inhomogeneous plasma in a uniform external magnetic field	20
W. A. JANOS, Approximate solution of the non-linear Vlasov equation by space and time scaling	24
K. HUNGER, R. W. LARENZ and K. H. WILKE, On the significance of the far field portion of the plasma microfield	29
NGUYEN QUANG DONG, Correlation effects in the interaction of electromagnetic waves with plasmas	30
G. ECKER and W. KRÖLL, Problems of the plasma in equilibrium	35
R. DEKEYSER, The partition function of a partially ionized hydrogen plasma	39
P. В. МИТИН, Ионизация цезия при одновременном действии высоких давлений и температур	42
E. И. ВЕЛИХОВ, А. М. ДЫХНЕ, Волна неравновесной ионизации в газе	43
G. VOJTA, Dynamic adiabatic equations of state for partially ionized gases with chemical reactions	44
A. Ф. АЛЕКСАНДРОВ, Нестационарные процессы в плоском слое плазмы	47
J. BENSIMON and N. BODIANSKY, Ionization in a tubular emitter	52

Transport Processes

J. L. DELCROIX, Conductivité électrique des gaz ionisés	56
W. FENEBERG and H. FISSER, Transport properties of a fully ionized hydrogen plasma in a magnetic field	63
R. R. RAMAZASHVILI and N. L. TSINTSADZE, On the theory of transport phenomena in a weakly turbulent plasma	69
A. R. HOCHSTIM, Convergent electric conductivity of plasma	75
G. VOJTA and T. KIRSTEN, General dynamics of Lorentz plasmas in rotating magnetic fields and additional electromagnetic fields	80
E. H. KLEVANS, C.—S. WU and J. R. PRIMACK, High frequency conductivity calculation using the plasma kinetic equation	83
K. OGAWA, Electrical conductivity of a weakly turbulent plasma	87
G. KALMAN and Y. POMEAU, Non-linear function and non-linear conductivity in a plasma	91
D. A. HUCHITAL and E. H. HOLT, Transport phenomena in ionized gases as an initial value problem.	95
B. ZAUDERER, Measurement of electrical transport properties in a shock tube	99
J. M. DOLIQUE, Some extensions of Ohm's law in gases	105
В. И. КОГАН, Ю. Д. ЧАШЕЧКИН, О влиянии примеси многозарядных ионов на температуру дейтериевой плазмы	109
C. F. KNOPP, R. W. LIEBERMANN, W. L. BADE and J. M. YOS, A new determination of the thermal conductivity of nitrogen plasma	112
B. J. STEFANOV and L. P. ZARKOVA, Experimental study of thermal conductivity coefficient of cesium plasma	117
R. CANO and M. MATTIOLI, Diffusion transversale dans une colonne de plasma fortement ionisé.	122
K. GEISSLER, Investigation of the diffusive decay of a plasma contained in a conducting cylinder in the presence of a magnetic field	126
G. ECKER, H. FULLERTON, H. KANNE and T. LEE, Unified plasma sheath theory	129
J. POLMAN, Investigation of transverse plasma diffusion by means of the decay along a magnetic field	133
K. C. ROGERS and N. WOLF, Properties of alkali-metal magnetoplasmas related to „enhanced diffusion”	137

Plasma in Magnetic Field

W. H. BOSTICK, G. EMMERT, E. FARBER, L. GRUNBERGER, A. JERMAKIAN, W. PRIOR, J. ZORSKIE, P. CASALE and A. DESHMUKH, Measurement of rotational-velocity and ion-density profiles in plasma vortices	141
Л. И. КРУПНИК, Н. Г. ШУЛИКА, П. А. ДЕМЧЕНКО, Структура плазменных сгустков	145
P. EVRARD, C. LELOUP, J. P. POFFÉ, F. SAND et F. WAELEBROECK, Evolution et interactions de bouffées de plasma contenant du champ magnetique piégé inverse	151
K. RAGALLER, Study on a supersonic plasma jet with axial current	156
I. I. DEMIDENKO, N. S. LOMINO, V. G. PADALKA, B. G. SAFRONOV and K. D. SINELNIKOV, The investigation of the capture mechanism of moving plasma by the transverse magnetic field	161
В. И. ВАСИЛЬЕВ, В. С. КОМЕЛЬКОВ, С. С. ЦЕРЕВИТИНОВ, Прохождение плазменных сгустков через продольные магнитные поля	166
T. K. ALLEN, A. J. COX and I. J. SPALDING, The flow of field-free plasma spears in magnetic guide fields	171
E. MINARDI and F. SANTINI, Information theory and variational properties of a collisionless inhomogeneous plasma with a magnetic field	176
H. D. MIDDENDORF, Decay of force-free and partially force-free current filaments	180
N. D'ANGELO and S. v. GOELER, Experiments with cesium plasmas in a magnetic field with variable curvature	184
H. J. BELITZ and E. KUGLER, Breakdown of an electrodeless ring discharge and the development of the electron density and temperature in a spindle cusp	188
M. R. BARRAULT and J. McCARTAN, Low density behaviour in a theta pinch	192
C. BARTOLI and T. S. GREEN, The Scorpion experiment	198
T. J. FESSENDEN and L. D. SMULLIN, Electron production and loss in a plasma produced by pulsed microwaves at the electron cyclotron resonant frequency	201
D. C. ROBINSON and M. G. RUSBRIDGE, Density fluctuations arising from turbulence in Zeta	204
R. W. WANIEK and G. H. KASAI, Interaction of a plasma flow with a three dimensional magnetic dipole	209
F. J. F. OSBORNE and M. P. BACHYNSKI, Interaction of a dipole magnetic field with a moving plasma	215
N. KAWASHIMA and S. MORI, Laboratory experiments on the interaction of solar plasma stream with geo- magnetic field	220
F. H. HAKIMOW, Plasma in a dipole magnetic field	225
Ю. С. СИГОВ, Структура пограничного слоя между разреженной плазмой и магнитным полем	229

Wave-Plasma Interaction

D. BALFOUR, D. A. HART and J. A. HAYNES, Microwave transmission through a quiescent caesium plasma	235
D. C. SCHRAM and W. J. SCHRADER, Relativistic treatment of electron orbits near cyclotron resonance	239
J. A. TATARONIS and F. W. CRAWFORD, Cyclotron and collision damping of propagation waves in a mag- neto-plasma	244
H. KEVER and G. K. MORIKAWA, Steady non-linear waves in a warm collision-free plasma	248
A. D. PATARAYA, Propagation of waves with finite amplitude in plasma without collisions	253
C. B. WHARTON and J. H. MALMBERG, Cyclotron waves in a collisionless plasma	256
V. ARUNASALAM, M. N. GURNEE, E. B. MESERVEY and R. C. DAVIDSON, Microwave absorption in a hot plasma near the second harmonic of the electron cyclotron frequency	261
F. W. SLUIJTER, Wave propagation through an Epstein profile with a local resonance in the presence of a static magnetic field	264
K. WEINHARDT, Microwave propagation in the overdense magnetoplasma of a hollow-cathode arc discharge	268
P. LEPRINCE, Les ondes des surface dans un guide a plasma	271
J. HEYBEY, Comments on the solution of the linearized Vlasov equation	275
R. W. B. BEST, Landau damping considered as a shift of the Fourier spectrum of the velocity distribution	278
H. DERFLER, Propagation of Bohm and Gross waves and Van Kampen modes	282
K. J. HARKER and G. S. KINO, Resonant frequencies of unbounded one-dimensional nonuniform plasmas	286
S. GRUBER and G. BEKEFI, Measurements of standing electrostatic waves in an inhomogeneous plasma column near electron cyclotron harmonics	290
R. S. HARP, The dispersion characteristics of longitudinal plasma oscillations near cyclotron harmonics	294
J. C. NIHOUL and P. E. VANDENPLAS, Second series of temperature resonances in quasi-static oscillations of a hot asymmetrical plasma slab	303
G. VOJTA and E. KIRSTEN, Theory of wave propagation in partially ionized plasmas with internal relaxation processes	305
R. L. MOORE, A. JIMENEZ and J. R. JOHNSTON, Infinitesimal driven plane waves in a uniform warm viscous plasma with finite electron drift velocity	308
G. G. CLOUTIER and J. TEICHMANN, Some electromagnetic wave properties of plasmas in presence of negative ions	312
I. G. BROWN and C. N. WATSON-MUNRO, Some studies of the attenuation of torsional Alfvén waves in a partly ionized hydrogeneous plasma	317
G. M. SESSLER, Velocity and attenuation of ionic plasma waves in weakly ionized gases	322

F. W. CRAWFORD and R. J. KUHLE, Some results on electrostatic sound wave propagation	326
W. D. JONES and I. ALEXEFF, A study of the properties of ionic sound waves	330
G. B. RIGHETTI, F. MAGISTRELLI, L. ENRIQUES and A. BOSCHI, Experiments on the propagation of electroacoustic waves	335
H. H. KUEHL and G. E. STEWART, Excitation of waves in waveguides partially filled with warm plasma in infinite magnetostatic fields	339
J. G. LOMINADZE and K. N. STEPANOV, Excitation of low frequency oscillations in magneto-active plasma	343
P. J. BARRETT, Plasma density waves in low pressure positive columns	348
L. C. WOODS, P. F. LITTLE and H. G. JONES, Electroacoustic waves in plasma columns	351
M. IANNUZZI and F. MAGISTRELLI, Experiments on microwave-plasma interaction	357
P. R. BELL, G. G. KELLEY, N. H. LAZAR and R. F. STRATTON, Ion cyclotron harmonic spectrum generated in an energetic ion plasma	361
M. PORKOLAB and G. S. KINO, Experimental measurements of electrostatic ion cyclotron waves	365
W. H. GLEEN, D. R. WHITEHOUSE and S. C. BROWN, Ion-cyclotron oscillations in a plasma	370
H. SCHLÜTER and M. E. OAKES, Electrodeless ring discharges at the hybrid ion-electron resonance	374
E. E. ABRAHAM and F. W. CRAWFORD, Comparison of experimental and theoretical results on beam-plasma interaction	377
S. V. YADAVALLI, Noise excitation of instabilities in beam-plasma systems	381
A. VERMEER, H. J. HOPMAN, T. MATTITI and J. KISTEMAKER, Survey of instabilities in a beam-plasma experiment	386
W. HERRMANN, Investigation of a beam plasma: the energy loss of the beam and the stability of the system	394
H. M. SKARSGARD, A. R. STRILCHUK and W. W. ZUZAK, Wave-plasma interactions involving intense runaway electron streams	399
J. R. APEL and A. M. STONE, Experiments on wave interactions between plasma and an electron stream in magnetic field	405
M. PERULLI, C. ETIEVANT and E. LUTAUD, Interactions of two counterstreaming ion beams in the "EOS" experiment	409
I. A. SNOWDEN, Spatial Landau damping in stationary and moving plasma streams	416
P. F. LITTLE and B. E. AVIS, Collisionless interactions in interstreaming plasmas	420
Ts. D. LOLADZE, Transformation of waves on the interface of two media in plasma	424
P. K. МАЗИТОВ, А. М. ФРИДМАН, Затухание плазменных колебаний в магнитном поле	427
V. E. GOLANT, A. P. ZHILINSKY, I. Ph. LIVENTZEVA and I. E. SAKHAROV, Microwave radiation from a beam-plasma system in a magnetic field	429
J. KRACÍK, Acceleration of plasma clusters	433
Н. А. ХИЖНЯК, А. А. КАЛМЫКОВ, В. А. НАБОКА, С. А. ТРУБЧАНИНОВ, Взаимодействие плазменных сгустков с аксиально-симметричными магнитными полями	437
H. PREIBISCH, Messung der Beschleunigungswirkung elektromagnetischer Wechselfelder auf Ladungsträger	443
I. R. GEKKER, E. Ja. HOLZ, B. P. KONONOV, K. A. SARKSIAN, V. A. SILIN and L. E. TSOPP, Interaction of plasma bunches with a high-power microwave	445
W. BIEGER and H. TUCZEK, Production of a high velocity collisionless plasma pulse	450
K. SAUER and G. WALLIS, Optical mixing at the hybrid frequency and the gyro-harmonics	453
В. А. ЛИПЕРОВСКИЙ, В. Н. ЦЫТОВИЧ, О взаимодействии с плазмой излучения оптических квантовых генераторов	456
A. YARIV, Parametric amplification and frequency conversion in magneto-plasmas	462
E. C. DuFORT and Z. A. KAPRIELIAN, Harmonic generation by a wave incident on a plasma half space	465
L. PEKÁREK, Dispersion of ionization waves in neon-hydrogen mixtures	468
A. GAILITIS, L. M. GORBUNOV, L. M. KOVRISHNICH, V. V. PUSTOVALOV, V. P. SILIN and V. N. TSYTOVICH, Elementary processes of interaction of charged particles with plasma and the nonlinear equations of weakly-turbulent plasma	471
В. Н. ЦЫТОВИЧ, Некоторые вопросы статического ускорения частиц в турбулентной плазме	477
И. А. КОВАН, Л. Л. КОЗОРОВИЦКИЙ, В. Д. РУСАНОВ, В. П. СМИРНОВ, А. В. ТИТОВ, Турбулентный нагрев плазмы в тороидальных ловушках и исследование косых магнито-звуковых волн большой амплитуды	481
N. P. GIORGADZE, E. M. KHIRSELI and N. L. TSINTSADZE, On decay of waves in magneto-active plasma	487

Plasma Radiation

H. DREICER, Line shape measurements on electron cyclotron harmonics emitted by a laboratory plasma ..	491
R. CROCI and E. CANOBBIO, On the radiation emitted at the harmonics of the gyrofrequency by an electron spiralling in a plasma	496
E. RÄUCHLE, The radiation of a rotating, charged particle in a plasmon field with an external magnetic field ..	500
H. IKEGAMI and F. W. CRAWFORD, Noise radiation from a warm magnetoplasma	503
A. J. LICHTENBERG, S. SESNIC and A. W. TRIVELPIECE, Absolute intensity of synchrotron radiation spectrum from a hot electron plasma	508
T. J. M. BOYD, Microwave emission from plasmas at harmonics of the electron cyclotron frequency	512

E. CANOBBIO, T. CONSOLI, G. ICHTCHENKO, F. PARLANGE et NGUYEN TRONG KHOI, Influence des parametres physiques sur le rayonnement électronique d'un plasma dans un champ magnetique	516
W. HESS and E. RÄUCHLE, Experimental investigation of the microwave emission of a low pressure discharge in a magnetic field	521
S. TANAKA and K. TAKAYAMA, Microwave radiation near electron cyclotron harmonic frequencies	525
K. MITANI, H. KUBO, Y. TERUMICHI, T. IDEHARA and I. TAKAHASHI, Negative absorption of microwave radiation in a partially ionized xenon plasma in magnetic field	530
S. TANAKA, T. HONZAWA and K. TAKAYAMA, Negative conductivity in partially ionized gases	534
Y. MIDZUNO, K. SUZUKI and Y. TERASHIMA, Remarks on negative absorption phenomena in partially ionized gases	538
R. W. WANIEK, R. T. GRANNAN and D. G. SWANSON, High power microwave emission from a plasma discharge	542
R. W. GOULD, Noise radiation and scattering from a cylindrical plasma column	546
H. R. GRIEM, Plasma polarization shifts of ion lines	551
V. O. JENSEN, On the possibility of detecting microinstabilities by their polarizing effect on spectral lines	553
A. M. NAQVI, Transition probabilities in multiply ionized atoms of lithium, beryllium, boron and carbon iso-electronic sequences	558
L. HERMAN, NGUYEN-HOE, H. W. DRAWIN, B. PETROPOULOS et C. DEUTSCH, Deplacement et intensité des composantes des raies l'atome d'hydrogene soumis à un champ électrique et un champ magnetique exterieur uniformes	562
E. K. MASCHKE and D. VOSLAMBER, Stark broadening of hydrogen lines in strong magnetic fields	568
L. AGNEW and C. SUMMERS, Quantitative spectroscopy of cesium plasmas	574
C. М. ГРИДНЕВА и Г. А. КАСАБОВ, Силы осцилляторов и профили спектральных линий цезия в плазме	581
M. CADART, T. CONSOLI, L. DUPAS, J. LEROY et F. PARLANGE, Mesure des caracteristiques du plasma obtenu avec un accelerateur à ondes progressives amorties et accumulé entre deux structures symetriques	585
J. CHAPELLE et F. CABANNES, Spectre d'absorption et d'emission continu d'un jet de plasma d'argon entre 60 et 30.000 cm ⁻¹	589
K. MURAKAWA, M. YAMAMOTO and S. HASHIMOTO, Spectroscopic investigation of an argon plasma jet	594
P. BOGEN and J. SCHLÜTER, Comparison of the absolute intensity of a high-temperature plasma in the visible and in the soft X-ray regions	596
N. J. PEACOCK, R. D. COWAN and G. A. SAWYER, Theta-pinch sources of vacuum ultraviolet radiation ..	599
B. А. АБРАМОВ и В. И. КОГАН, К теории радиационных потерь неравновесной плазмы	603
W. RIEDMÜLLER and M. SALVAT, Determination of electron temperature by means of the line reversal method	607

Stability Problems

Б. Б. КАДОМЦЕВ, Неустойчивость плазмы	610
S. GRUBER, Low frequency electrostatic wave instabilities involving ions and electrons	621
L. S. HALL and W. HECKROTTE, Electrostatic instabilities of a plasma with magnetically supported velocity-space anisotropy at high density	624
C. MANUS et G. SPEISS, Etude de certaines instabilités électrostatiques produites dans un faisceau de plasma de synthese	629
A. В. НЕДОСПАСОВ и С. С. СОБОЛЕВ, Положительный столб гелиевого разряда в сильном магнитном поле	633
H. S. ROBERTSON and L. C. HAWKINS, Instability of a bounded cylindrical plasma in a uniform axial magnetic field	640
C. С. МОЙСЕЕВ, Применение асимптотических методов в теории устойчивости и трансформации волн в магнитной гидродинамике	645
L. GOLD, Stream instabilities in magneto-ionic plasmas	649
М. В. НЕЗЛИН и А. М. СОЛНЦЕВ, О неустойчивости плазменного пучка в продольном магнитном поле	653
М. В. НЕЗЛИН, Г. И. САПОЖНИКОВ и А. М. СОЛНЦЕВ, Продольные электронные колебания в ограниченном электронном пучке, проходящем через разреженный газ	658
A. А. ГАЛЕЕВ, А. М. ИСКОЛЬДСКИЙ, В. Н. ЛУКЪЯНОВ, В. Е. НЕСТЕРИХИН и А. Г. ПОНОМАРЕНКО, Исследование „шланговой” неустойчивости в плазме, движущейся вдоль магнитного поля	663
C. W. HARTMAN and R. H. MUNGER, Low-temperature plasma column confinement by magnetic fields with shear	667
J. K. PERCUS and G. J. YEVICK, Supercollective modes of one-dimensional systems	671
Н. С. БУЧЕЛЬНИКОВА, Исследование дрейфовой неустойчивости в калиевой плазме	671
Е. П. ВЕЛИХОВ, А. М. ДЫХНЕ и И. Я. ШИПУК, Ионизационная неустойчивость плазмы с горячими электронами	675
H. DOUCET, Instabilité électrostatique ionique dans un cylindre de plasma de cesium	681

M. BERNARD, G. BRIFFOD, R. FRANK et J. WEISSE, Anisotropie des vitesses dans une decharge à champ électrique radial	685
E. H. KLEVANS and J. R. PRIMACK, Collision-induced high frequency instability in a fully ionized plasma ..	690
I. S. BAIKOV, L. S. BOGDANKEVICH and A. A. RUCHADSE, On the influence of a radial electric field and of the admixture of cold plasma on the spectrum of drift waves in a plasma	694
W. B. ARD, R. A. DANDL and R. F. STETSON, Observation of a mirror-like instability in a hot electron plasma	699
W. B. KUNKEL and J. U. GUILLORY, Interchange stabilization by incomplete line-tying	702
K. B. ABRAMOVA, V. P. VALITSKY, YU. V. VANDAKUROV, N. A. ZLATIN and B. P. PEREGOOD, Magnetohydrodynamic instabilities in electrical explosion	706
H. LASHINSKY, Nonlinear mechanics of universal plasma instabilities	710
F. W. CRAWFORD and J. A. TATARONIS, Cyclotron harmonic plasma wave instabilities	715
W. KNAUER and R. L. POESCHEL, The diocotron effect in plasmas and gas discharges	719
J. G. CORDEY and D. L. MORSE, Experimental investigation of the electron cyclotron resonance instability ..	725
M. BERNARD, G. BRIFFOD, R. FRANK et J. WEISSE, Emission au voisinage de la fréquence cyclotronique des électrons	728
YU. N. DNESTROVSKY and D. P. KOSTOMAROV, Investigation of nonhomogeneous plasma stability by numerical methods	733
K. SCHINDLER, A variational principle for one-dimensional plasmas	736
J. IRVING, W. M. DEUCHARS, A. S. V. MCKENZIE, D. E. KIDD and A. C. C. WARNOCK, Stability studies of a first half-cycle preheated theta pinch plasma	739

Chock Waves

C. T. CHANG, Remarks concerning the rate of thermal ionization of hydrogen behind a strong shock	742
R. JOHNSEN and L. REHDER, Shock tube measurements of the electrical conductivity of krypton	746
W. MAKIOS, Microwave investigations on T-tube shock waves with a 4 mm interferometer of extremely high space resolution	750
H. BRINKSCHULTE, Interferometric measurements on T-tubes	755
T. I. McLAREN and R. M. HOBSON, Initial ionization processes in shock heated argon	759
J. N. FOX and R. M. HOBSON, Microwave cavity measurements on ionization in shock heated argon	763
S. TAKEDA, T. TSUKISHIMA and A. FUNAHASHI, Microwave measurements of shock produced plasmas ..	767
P. J. WHELAN, R. A. NODWELL and P. R. SMY, Double probe measurements of precursor ionisation	771
J. CZECH and R. THEENHAUS, Measurements of temperature and density of driver and shock heated plasma in an electromagnetic shock tube	774
H. SCHMIDT and H. J. KAEPPELER, Investigation of plasma-magnetic shock waves with a Mach-Zehnder interferometer	777
D. D. MILLAR and C. N. WATSON-MUNRO, Experimental studies of $J \times B$ ionizing fronts propagation over the pressure range 10 to 800 millitorr.....	783
T. V. BAZHENOVA, YU. S. LOBASTOV and YU. S. SAYASOV, Ionization structure of shock waves in air at $M \leq 12$	787
С. П. ЗАГОРОДНИКОВ, Г. Е. СМОЛКИН и Г. В. ШОЛИН, Ионизационная ударная волна в разреженной плазме	791
L. M. BIBERMAN and I. T. IAKUBOV, On the theory of ionizational relaxation behind shock waves	797
R. I. SOLOUKHIN, The stream structure and bow waves in electromagnetic shock tubes	800
E. REBHAN, Interaction of shock waves with electromagnetic fields	804
O. K. MAWARDI and R. B. BLOCK, Instability of electromagnetically driven shock	806
K. BOCHENEK, Analysis of shock waves actual problems and trends	809
J. G. SKIFSTAD, Interaction of a shock wave and an arc discharge	812
L. ROTHHARDT, On current passage through shockwave plasmas via wire electrodes in the inductive hydrodynamic shock tube	816
J. W. M. PAUL, M. J. PARKINSON, J. SHEFFIELD and L. S. HOLMES, Experimental observations of collisionless shock waves in a magnetized plasma	819
P. VALENTIN et J. C. LEBOUCHER, Phenomenes precursors d'ondes de chok intenses dans l'argon	826
J. SZABO and I. ABONYI, Classification of small amplitude waves, surfaces of weak discontinuity and shock waves in ideal magnetohydrodynamic media	830
Ю. А. КОЛЕСНИКОВ, Н. В. ФИЛИППОВ и Т. И. ФИЛИППОВА, Динамика плазменной оболочки нецилиндрического Z-пинча на стадии, предшествующей кумуляции	833

AUTHOR INDEX	839
---------------------------	-----