

SUMMARY OF TECHNICAL SESSIONS

Monday, June 1, 1987
8:30 A.M. (Regency Ballroom E & F)

Session 1R: REVIEW PAPER
Chairperson: J. L. Shohet

1R THE STATUS OF THE U.S. MAGNETIC FUSION PROGRAM

J. F. Clarke
Associate Director for Fusion Energy
Office of Energy Research
U.S. Department of Energy
Washington, DC

Monday, June 1, 1987
9:30 A.M. (Regency Ballroom A)

Oral Session 1A: FUSION: TOKAMAKS AND STELLARATORS I
Chairperson: Allan Mense

- 1A1-2 Invited Paper
PROGRESS IN TOKAMAK RESEARCH
H.P. Furth, Princeton Plasma Physics Lab., Princeton, NJ.
- 1A3 SUPER HIGH FIELD TOKAMAKS: EXPERIMENTS AND REACTORS
D.R. Cohn and L. Bromberg, M.I.T. Plasma Fusion Center,
Cambridge, MA.
- 1A4 FISSION-DETECTOR DETERMINATION OF D-D TRITON BURN-UP
FRACTION IN AUXILLIARY-HEATED TFTR PLASMAS
H.W. Hendel, D.L. Jassby, C.W. Barnes, F.E. Cecil, E.B.
Nieschmidt, and J.D. Strachan, Princeton U., Princeton,
NJ.
- 1A5 DELAYED NEUTRON COUNTING SYSTEM FOR TFTR PLASMA NEUTRON
SOURCE STRENGTH MEASUREMENTS
T. Saito, H. Hendel, G. Lemunyan, and E.B. Nieschmidt,
Princeton U., Princeton, NJ.
- 1A6-7 Invited Paper
REVIEW OF STELLARATOR RESEARCH WORLD WIDE
J.L. Shohet, U. Wisconsin, Madison, WI.
- 1A8 STABILITY OF TOKAMAK-STELLARATOR HYBRID PLASMAS
W.H. Choe, U. Illinois, Urbana, IL.

Monday, June 1, 1987
9:30 A.M. (Regency Ballroom B)

Oral Session 1B: ELECTRON, ION, AND PLASMA SOURCES I
Chairperson: Bob Gerber

- 1B1 LOW POWER DC ARCJET PLUME SURVEYS USING ELECTROSTATIC
PROBES
L.M. Zana, NASA, Cleveland, OH.
- 1B2 UNIFORMITY STUDIES OF ION BEAM CURRENT DENSITY USING A
KAUFMAN TYPE ION SOURCE
E. Ghanbari, Veeco Instruments Inc., Plainview, NY.
- 1B3 SCALING OF THE GAS-BREAKDOWN, MAGNETICALLY-SHAPED PLASMA
ANODE TO HIGH-POWER ION DIODES
J.B. Greenly, M. Ueda, and D.A. Hammer, Cornell U.,
Ithaca, NY.

- 1B4 DEVELOPMENT OF AN EHD LIQUID LITHIUM ION SOURCE FOR PBFA
II
K.W. Bieg, R.A. Gerber, J.S. Cap, D.C. Rovang, A.L.
Pregenzer, J.R. Woodworth, C.J. Cianciabella, and D.K.
Wiemann, Sandia Nat. Labs., Albuquerque, NM.
- 1B5 THERMAL DESORPTION OF LITHIUM FROM LIF FLASHOVER SOURCES
ON NEREUS
M.A. Sweeney, E.J.T. Burns, J.R. Woodworth, and K.W.
Bieg, Sandia Nat. Labs., Albuquerque, NM.
- 1B6 THE EFFECT OF ANODE TEMPERATURE ON THE PRODUCTION OF
LITHIUM IONS FROM LITHIUM AND LITHIUM NITRATE FILLED
ANODES IN AN APPLIED-B ION DIODE
P.F. McKay, Sandia Nat. Labs., Albuquerque, NM
- 1B7 CHARGE STATE POPULATIONS IN AN XUV STRESSED LITHIUM VAPOR
G.L. Strobel, U. Georgia, Athens, GA.
- 1B8 A LITHIUM ION SOURCE FOR THE PRODUCTION OF ANODE PLASMA
LAYERS IN APPLIED-B ION DIODES
B. Hilko and S.A. Goldstein, GT-Devices, Inc.,
Alexandria, VA.
- 1B9-10 Invited Paper
OPERATION OF THE NEUTRAL BEAM HEATING SYSTEM FOR THE
TOKAMAK FUSION TEST REACTOR
L.R. Grisham and the TFTR Beam Group, Princeton U.,
Princeton, NJ.

Monday, June 1, 1987
9:30 A.M. (Regency Ballroom C)

Oral Session 1C: HIGH POWER MICROWAVE AND
MILLIMETER WAVE GENERATION I
Chairperson: Y. Y. Lau

- 1C1 HIGH POWER, MILLIMETER AND SUBMILLIMETER GYROTRON
OSCILLATORS
S. Spira, K.E. Kreischer, C.Y. Wang, and R.J. Temkin,
Massachusetts Inst. of Tech., Cambridge, MA.
- 1C2 CONTROL OF AN OVERMODED GYROTRON BY AN EXTERNAL SIGNAL
A.H. McCurdy and C.M. Armstrong, Naval Research Lab.,
Washington, DC.
- 1C3-4 Invited Paper
NONLINEAR THEORY OF ORBITRON MASER
S. Ahn, A.K. Ganguly, and H.P. Freund, Naval Research
Lab., Washington, DC.
- 1C5 CROSS SECTIONAL NUMBER DENSITY IN THE PULSED ORBITRON MASER
M. Rader, I. Alexeff, and F. Dyer, U. Tennessee,
Knoxville, TN.
- 1C6 TIME DEPENDENT FREQUENCY SHIFT IN THE ORBITRON MASER
I. Alexeff, F. Dyer, and M. Rader, U. Tennessee,
Knoxville, TN.
- 1C7 PHASE-LOCKING OF RELATIVISTIC MAGNETRONS
J. Benford, B. Harteneck, R. Smith, and H. Sze, Physics
Int. Co., San Leandro, CA.
- 1C8 QUICK EXTRACTION OF MICROWAVE PULSES FROM A CAVITY BY
SUPERCONDUCTIVE POLYCRYSTALLINE BaPb_{1-x}Bi_xO₂ THIN FILM
K. Minami, Niigata U., Niigata City, Japan; K. Saeki,
M. Ohtsuka, and M. Awano, Tokyo Inst. of Tech., Tokyo,
Japan.

1C9 THE THEORY OF THE VACUUM WINDOW FOR LOWER HYBRID HEATING
H. Arai and N. Goto, Tokyo Inst. of Technology, Tokyo,
Japan.

1C10 COMPUTATIONAL AND EXPERIMENTAL HIGH POWER MICROWAVE
WAVEGUIDE AIR BREAKDOWN AT FIVE PRESSURES
D.J. Mayhall, J.H. Yee, R.A. Alvarez, and D.P. Byrne,
Lawrence Livermore Nat. Lab., Livermore, CA.

Monday, June 1, 1987
9:30 A.M. (Regency Ballroom D)

Oral Session 1D: MAGNETOHYDRODYNAMICS I
Chairperson: Richard Verga

- 1D1 A GAS-CORE NUCLEAR SPACE POWER SYSTEM WITH A FISSIONING-
PLASMA DISK MHD GENERATOR
W.E. Lear, Jr., E.T. Dugan, A.M. Jacobs, and G.E. Welch,
U. Florida, Gainesville, FL.
- 1D2 SPACE-BASED CLOSED LOOP MAGNETOPLASMA DYNAMIC (MPD) POWER
GENERATOR DUCT OPERATING IN CONJUNCTION WITH JET COMPRESSOR
M.E. Talaat, U. Maryland, College Park, MD.
- 1D3 ELECTROMAGNETIC SOUNDING USING MHD GENERATORS
H.F. Morrison, W.D. Jackson, C.D. Maxwell, R. Zolinger,
and S.T. Demetriades, HMJ Corp., Chevy Chase, MD.
- 1D4 ANALYSIS OF MHD FLUCTUATIONS IN THE IEE MARK II EXPERIMENTS
OF 1986
B.C. Winkleman, Y.C.L. Wu, and J.T. Lineberry, U.
Tennessee Space Inst., Tullahoma, TN; Z. Ju and Y.
Chanqui, Inst. of Electrical Engineering, Beijing, China.
- 1D5-6 Invited Paper
MAGNETOHYDRODYNAMIC SPACE POWER: AN ASSESSMENT OF ITS
POTENTIAL IN THE STRATEGIC DEFENSE INITIATIVE
G.E. Staats, U.S. Dept. of Energy, Pittsburgh, PA.
- 1D7 EFFECT OF EXTERNAL FLUCTUATION ON NONEQUILIBRIUM MHD POWER
GENERATION
S. Kabashima, Tokyo Inst. of Tech., Yokohama, Japan.
- 1D8 SOME OBSERVATIONS ON ARCING PHENOMENA IN THE MHD CHANNEL
V. Goldfarb, Avco Research Lab., Inc., Everett, MA.
- 1D9 MAGNETOHYDRODYNAMIC HEAT TRANSFER IN TWO-PHASE FLOW WITH
TEMPERATURE-DEPENDENT PROPERTIES
J. Lohrasbi, Mountain States Energy, Butte, MT.

1S3 RADIATION YIELD FROM SHIVA STAR PLASMA FLOW SWITCH DRIVEN
FAST LINER IMPLOSIONS
J.H. Degnan, W.L. Baker, J.D. Beason, C.J. Clouse, K.E.
Hackett, D.J. Hall, P.L. Higgins, J.L. Holmes, J.B.
Kriebel, and D.W. Price, Air Force Weapons Lab., Kirtland
AFB, NM; J.D. Graham and E.A. Lopez, Maxwell Labs. Inc.,
San Diego, CA; M.L. Alme, G. Bird, C. B. Boyer, S.K.
Coffey, D. Conte, J.F. Davis, S. Seiler, and P.J. Turchi,
R&D Assocs., Arlington, VA; J.S. Buff, M. H. Frese, R.E.
Peterkin, and N.F. Roderick, Mission Research Corp.,
Albuquerque, NM.

1S4 SIMULATIONS OF THE AFWL PLASMA FLOW SWITCH EXPERIMENTS
J. Buff, M.H. Frese, R.E. Peterkin Jr., and N.F.
Roderick, Mission Research Corp., Albuquerque, NM.

1S5 MEASUREMENTS OF PLASMA IMPLOSION DRIVEN X-RAY LASER TARGET
CLOSURE
J.L. Porter and T.W. Hussey, Sandia Nat. Labs.,
Albuquerque, NM.

1S6 ANALYTIC MODEL OF AN IMPLoding Z-PINCH PLASMA COLLIDING
INELASTICALLY WITH A THIN-SHELLED CYLINDRICAL TARGET
T.W. Hussey, Sandia Nat. Labs., Albuquerque, NM.

1S7 K-SHELL X-RAY RADIATION FROM EXPLODING COPPER WIRE PLASMAS
GENERATED BY BLACKJACK 5
N. Loter, M. Gersten, J. Rauch, N. Rostoker, and K. Ware,
Maxwell Labs. Inc., San Diego, CA; J. Davis, J. Apruzese,
and K. Whitney, Naval Research Lab., Washington, DC; W.
Thompson, U. California, San Diego, CA.

1S8 HYBRID Z- Θ PINCHES WITH FUSED CAPACITOR BANKS
R. Grandey, M. Gersten, N. Loter, J. Rauch, N. Rostoker,
W. Thompson, and K. Ware, Maxwell Labs. Inc., San Diego,
CA.

1S9 SOLENOID GAS PUFF SOFT X-RAY SOURCE EXPERIMENTS
R.P. Gupta, M.M. Kekez, J.H.W. Lau, and G.D. Lougheed,
Nat. Research Council Canada, Ontario, Canada.

1S10 THE NEEDLE PLASMA: INFLUENCE OF THE PREIONIZATION ON THE
DYNAMICS OF Z-PINCH MICRO-CHANNEL
M. Labadie de Castilho, B. Etlicher, C. Rouille, and H.
Lamain, Ecole Polytechnique, Palaiseau, France.

1S11 INELASTIC COLLISIONS AND THE ELECTRON ENERGY DISTRIBUTION
FUNCTION
K.G. Whitney and N.R. Pereira, Naval Research Lab.,
Washington, DC.

Monday, June 1, 1987
9:30 A.M. (Potomac Room)

Poster Session 1T: SPACE PLASMAS I

- Monday, June 1, 1987
9:30 A.M. (Potomac Room)
- Poster Session 1S: ULTRAFast Z-PINCHES I
- 1S1 COMPUTATIONAL MODELING OF SOLID LINER IMPLOSIONS
C.J. Clouse, D. Dietz, J.H. Degnan, Air Force Weapons
Lab., Kirtland AFB, NM; M.H. Frese and R.E. Peterkin,
Mission Research Corp., Albuquerque, NM; M.L. Alme,
Research and Development Assocs., Albuquerque, NM.
- 1S2 ENHANCED LOAD CURRENT DELIVERY FROM THE SHIVA STAR VACUUM
INDUCTIVE STORE/PLASMA FLOW SWITCH
D.W. Price, W.L. Baker, J.D. Beason, J.H. Degnan, D.J.
Hall, and J.L. Holmes, Air Force Weapons Lab., Kirtland
AFB, NM; J.D. Graham and E.A. Lopez, Maxwell Labs. Inc.,
San Diego, CA; S. Seiler and P.J. Turchi, R&D Assocs.,
Arlington, VA.

1T1 BIRKELAND'S CURRENT SYSTEM FOR POLAR ELEMENTARY STORMS:
HISTORICAL DOCUMENTATIONS
A. Egeland, U. Oslo, Oslo, Norway.

1T2 PLASMA COSMOLOGY
H. Alfven, U. California, San Diego, La Jolla, CA, and
Royal Inst. of Tech., Stockholm, Sweden.

1T3 TO SHOW THAT THE EXPANSION OF THE UNIVERSE CAN BE ASCRIBED
TO MUTUAL MAGNETIC INDUCTION BETWEEN NEIGHBORING GALAXIES
RATHER THAN TO THE BIG BANG
W.H. Bostick, Stevens Inst. of Tech., Hoboken, NJ.

1T4 ACCELERATION OF CHARGES IN A MAGNETIC PINCH
P.F. Browne, U. Manchester, Manchester, England.

1T5 SUBSTANTIAL EQUILIBRIUM CHARGE SEPARATION IN A SELF-
GRAVITATING PLASMA
E.R. Wollman, Bates College, Lewiston, ME.

1T6 PIC SIMULATIONS OF ELECTRODYNAMIC MODELS FOR ASTROPHYSICAL
JETS
G.R. Gisler, Los Alamos Nat. Lab., Los Alamos, NM; R.V.E.
Lovelace, Cornell U., Ithaca, NY; M.L. Norman, U.
Illinois, Urbana, IL.

Monday, June 1, 1987
2:00 P.M. (Regency Ballroom A)

Oral Session 2A: SOLID-STATE PLASMAS
Chairperson: Michael Stroschio

- 2A1-2 Invited Paper
ELECTRON-HOLE SCATTERING RATES IN SOLID STATE PLASMAS
J. Shah, AT&T Bell Labs., Holmdel, NJ.
- 2A3-4 Invited Paper
CARRIER-CARRIER INTERACTIONS IN SEMICONDUCTOR PLASMAS
D.K. Ferry, Arizona State U., Tempe, AZ; M.A. Osman and
H.L. Grubin, SRA, Inc., Glastonbury, CN.
- 2A5-6 Invited Paper
TWO DIMENSIONAL ELECTRON GASES IN III-V SEMICONDUCTOR
HETEROSTRUCTURES
G.W. Wicks, Cornell U., Ithaca, NY.
- 2A7-8 Invited Paper
TRANSIENT PHENOMENA IN SEMICONDUCTOR PLASMAS
C. Stanton, D. Bailey, and K. Hess, U. Illinois, Urbana,
IL.
- 2A9-10 Invited Paper
OPTICALLY GENERATED SOLID STATE PLASMA FOR PULSED POWER
AND MICROWAVE APPLICATIONS
C.H. Lee, U. Maryland, College Park, MD.
- 2A11 Invited Paper
QUANTUM-WELL SURFACE-PLASMA-WAVE-OSCILLATOR
A.J. Palmer, Hughes Research Lab., Malibu, CA.

Monday, June 1, 1987
2:00 P.M. (Regency Ballroom B)

Oral Session 2B: ULTRAFAST Z-PINCHES II
Chairperson: Larry Jones

- 2B1-2 Invited Paper
THE NON-LTE RADIATION HYDRODYNAMICS OF NEON GAS PUFF
PLASMAS
J. Davis, Naval Research Lab., Washington, DC.
- 2B3 Invited Paper
TWO-DIMENSIONAL SIMULATION OF GAS PUFF IMPLOSIONS ON
CENTRAL TARGETS
N.F. Roderick, U. New Mexico; T.W. Hussey, R.J. Dukart,
and J.L. Porter, Sandia Nat. Labs., Albuquerque, NM.
- 2B4-5 Invited Paper
STUDIES OF AXIAL NON-UNIFORMITIES IN IMPLoding PINCHES
W.W. Hsing, J.L. Porter, B.A. Hammel, D.L. Hanson, M.A.
Palmer, and A. Widman, Sandia Nat. Labs., Albuquerque,
NM.
- 2B6 Invited Paper
MAGNETIC FLUX COMPRESSION BY PLASMA PINCHES: THEORY AND
EXPERIMENTS
F. S. Felber, JAYCOR, San Diego, CA.
- 2B7-8 Invited Paper
HYBRID Z- Θ PINCH
M. Gersten, R. Grandey, N. Loter, J. Rauch, N.
Rostoker, W. Thompson, and K. Ware, Maxwell Labs. Inc.,
San Diego, CA.
- 2B9 Invited Paper
MULTI-MEGAJOULE SOLID LINER IMPLOSION EXPERIMENTS
J.H. Degnan, W.L. Baker, J.D. Beason, C.J. Clouse, D.
Dietz, K.E. Hackett, D.J. Hall, P.L. Higgins, J.L.
Holmes, J.B. Kriebel, and D.W. Price, Air Force Weapons
Lab., Kirtland AFB, NM; J.D. Graham and E.A. Lopez,
Maxwell Labs. Inc., San Diego, CA; M.L. Alme, C. Boyer,
S.K. Coffey, J.F. Davis, S. Seiler, and P.J. Turchi,
R&D Assocs., Arlington, VA; J.S. Buff, M.H. Frese, R.E.
Peterkin, and N.F. Roderick, Mission Research Corp.,
Albuquerque, NM.
- 2B10-11 Invited Paper
STABLE DENSE Z-PINCH FORMED FROM A FROZEN DEUTERIUM FIBER
J.D. Sethian, A.E. Robson; K.A. Gerber, and A.W.
DeSilva, U.S. Naval Research Lab., Washington, DC.

- 2B12 Invited Paper
GAS BAG MODEL FOR SOFT IMPLOSIONS
D. Mosher, P.F. Ottinger, and B.L. Welch, Naval
Research Lab., Washington, DC.

Monday, June 1, 1987
2:00 P.M. (Regency Ballroom C)

Oral Session 2C: INTENSE ELECTRON AND ION BEAMS I
Chairperson: John Maechen

- 2C1 Invited Paper
GENERATION OF MULTI-GW RF POWER PULSES WITH A SWEPT E-BEAM
SWITCH
D.J. Johnson and T.R. Lockner, Sandia Nat. Labs.,
Albuquerque, NM.
- 2C2 Invited Paper
COMPARISON OF MEASURED IMPEDANCE WITH A MODEL OF ANNULAR-
CATHODE DIODES TERMINATING COAXIAL MITLS.
T.W.L. Sanford, J.W. Poukey, T.P. Wright, J. Bailey, C.E.
Heath, and R. Mock, Sandia Nat. Labs., Albuquerque, NM,
and P.W. Spence, J. Fockler, and H. Kishi, Pulse
Sciences, Inc., San Leandro, CA.
- 2C3 Invited Paper
RADIATIVE NEGATIVE MASS INSTABILITIES IN HIGH CURRENT
RECIRCULATING ACCELERATORS
B.B. Godfrey and T.P. Hughes, Mission Research Corp.,
Albuquerque, NM.
- 2C4 Invited Paper
ELECTRON BEAM TRANSPORT IN CURRENT CARRYING CHANNELS
M. Raleigh, M.C. Myers, R.E. Pechacek, D.P. Murphy, and
D.P. Taggart, Naval Research Lab., Washington, DC.
- 2C5 Invited Paper
NUMERICAL SIMULATIONS OF THE OPERATION OF AN ELECTRON-BEAM
PUMPED LASER
M.A. Sweeney, E.L. Patterson, and G.E. Samlin, Sandia
Nat. Labs., Albuquerque, NM.
- 2C6-7 Invited Paper
PURITY OF PULSED ION BEAM EXTRACTED FROM CRYOGENIC DIODE IN
TOKYO INSTITUTE OF TECHNOLOGY
K. Kasuya, K. Horioke, K. Mitobe, H. Sumitani, and the
PICA-3 Group, Tokyo Inst. of Tech., Kanagawa, Japan.
- 2C8 Invited Paper
ION BEAM TRANSPORT AND FINAL FOCUS FOR APEX
C.L. Olson, Sandia Nat. Labs., Albuquerque, NM.
- 2C9 Invited Paper
THEORETICAL ANALYSIS OF INTENSE ION BEAM POST TRANSPORT
FOCUSING FOR INERTIAL CONFINEMENT FUSION
J.J. Watrous, P.F. Ottinger, D. Mosher, and J. Neri,
Naval Research Lab., Washington, DC.
- 2C10 Invited Paper
TRANSPORT OF LOW-ENERGY, HIGH-BRIGHTNESS H⁻ BEAMS
M. Reiser and C.R. Chang, U. Maryland, College Park, MD;
T.P. Wangler and G.H. Neuschaefer, Los Alamos Nat. Lab.,
Los Alamos, NM.

Monday, June 1, 1987
2:00 P.M. (Regency Ballroom D)

Oral Session 2D: SPACE PLASMAS II
Chairperson: Tom Potemra

- 2D1-2 Invited Paper
LABORATORY AND NEAR-SPACE PLASMAS AS A KEY TO THE PLASMA
UNIVERSE
C.-G. Falthammar, The Royal Inst. of Tech., Stockholm,
Sweden.
- 2D3 Invited Paper
BEAM-PLASMA THERMALIZATION OF THE COSMIC MICROWAVE
BACKGROUND RADIATION
W. Peter and A.L. Peratt, Los Alamos Nat. Lab., Los
Alamos, NM.
- 2D4-5 Invited Paper
ELECTRIC FIELDS AND ELECTRIC CURRENTS IN THE PLASMA
UNIVERSE
K.R. Flammar and H. Alfvén, U. California, San Diego, La
Jolla, CA.

2D6 WHY THE BIG BANG IS WRONG
J. Kierein, Ball Aerospace, Boulder, CO.

2D7 PLASMA MODEL OF THE MICROWAVE BACKGROUND
E.J. Lerner, Lawrenceville, NJ.

2D8 THE INFLUENCE OF A THERMAL PLASMA ON SYNCHROTRON RADIATION
A. Crusius, Max-Planck-Institut fur Radioastronomie,
Bonn, FRG.

2D9-10 Invited Paper
RELATION BETWEEN LABORATORY PULSE POWER AND COSMIC PLASMAS
A. L. Peratt, Los Alamos Nat. Lab., Los Alamos, NM.

Monday, June 1, 1987
2:00 P.M. (Potomac Room)

Poster Session 2W: FUSION: TOKAMAKS AND STELLARATORS II

2W1 NONLINEAR STUDIES OF CURRENT-DRIVEN MODES IN NONCIRCULAR
TOKAMAKS WITH FINITE PRESSURE
J.K. Lee and L.L. Lao, GA Technologies, San Diego, CA.

2W2 A STUDY OF PELLETT FUELING FOR DIII-D
D.P. Schissel and G.L. Jackson, GA Technologies Inc., San
Diego, CA.

2W3 OLIVE - A SMALL, LOW-ASPECT RATIO TOKAMAK
T.P. Crowley, Rensselaer Polytechnic Inst., Troy, NY.

2W4 FUSION IGNITION EXPERIMENT IN A SINGLE-TURN COIL TOKAMAK
R. Carrera, E. Montalvo, and M.N. Rosenbluth, U. Texas,
Austin, TX.

2W5 THE PARALLEL VISCOUS FORCE DENSITY FOR STELLARATOR
TRANSPORT PURPOSES--HIGHER ORDER CORRECTIONS
W.D. D'Haeseleer, W.N.G. Hitchon, and J.L. Shohet, U.
Wisconsin, Madison, WI.

2W6 DETERMINATION OF PARTICLE CONVECTIVE AND DIFFUSIVE
TRANSPORT COEFFICIENTS IN IMS
C.A. Storlie, J.N. Talmadge, D.T. Anderson, F.S.B.
Anderson, R.P. Doerner, P.H. Probert, and J.L. Shohet, U.
Wisconsin, Madison, WI.

2W7 EDGE FLUCTUATIONS IN THE IMS MODULAR STELLARATOR WITH ECR-
PRODUCED PLASMAS
F.S.B. Anderson, D.T. Anderson, R.P. Doerner, P.H.
Probert, J.L. Shohet, C.A. Storlie, and J.N. Talmadge, U.
Wisconsin, Madison, WI.

2W8 LOW VOLTAGE START-UP EXPERIMENTS ON TFTR
C. Neumeyer, M. Bell, D. Mueller, G. Tait, and R.
Woolley, Princeton U., Princeton, NJ.

2W9 PROSPECTS FOR RF WAVE MEASUREMENTS USING PROBES ON TFTR
G.J. Greene, P. Colestock, E. Fredrickson, J. Hosea, D.
Manos, K. McGuire, and J.R. Wilson, Princeton U.,
Princeton, NJ.

2W10 EFFECT OF THE AMBIENT MAGNETIC FIELD ON TOKAMAK-PUMPED
LASERS
D.L. Jassby, Princeton U., Princeton, NJ.

2W11 THE RIDGED WAVEGUIDE COUPLER FOR RF HEATING
H. Arai and N. Goto, Tokyo Inst. of Tech., Tokyo, Japan.

2W12 ANALYSIS AND DESIGN OF A WAVEGUIDE LAUNCHER IN THE ICRF FOR
TOKAMAKS WITH DIVERTORS
N. Lam, O.C. Eldridge, and J.E. Scharer, U. Wisconsin,
Madison, WI.

2W13 ALFVEN WAVE HEATING OF CURRENT-CARRYING PLASMAS
I.J. Donnelly and B.E. Clancy, AAEC Research
Establishment, Menai, NSW, Australia.

Monday, June 1, 1987
2:00 P.M. (Potomac Room)

Poster Session 2X: PLASMA WAVES AND INSTABILITIES

2X1 REFLECTION FROM A SUDDENLY CREATED LOSSY PLASMA HALF-SPACE
D. Kalluri, U. Lowell, Lowell, MA.

2X2 BILINEAR-CONTROL FORMULATION OF PLASMA BOUNDARY-VALUE
PROBLEMS
D. Kalluri and V.R. Goteti, U. Lowell, Lowell, MA.

2X3 EXPERIMENTAL INVESTIGATION OF HEMISPHERICAL ION ACOUSTIC
SOLITONS IN A DOUBLE PLASMA DEVICE
E.G. Zaidman, Naval Research Lab., Washington, DC; N.L.
Oleson, U. South Florida, Tampa, FL.

2X4 SOLITONS IN NONUNIFORM MEDIA NEAR THE ZERO-GROUP-DISPERSION
POINT
H.H. Kuehl and C.Y. Zhang, U. Southern California, Los
Angeles, CA.

2X5 REAL SPACE DIFFUSION IN DRIFT WAVE TURBULENCE
E. Robinson and O. Ishihara, Texas Tech U., Lubbock, TX.

2X6 A VARIATIONAL ANALYSIS OF A CROSS FIELD AMPLIFIER
L.A. Pitale, Villanova U., Villanova, PA.

2X7 RESISTIVE DRIFT INSTABILITY IN TOKAMAKS
A. Hirose, U. Saskatchewan, Saskatchewan, Canada.

2X8 GEOMETRICAL CHARACTERISTICS OF MAGNETIC FLUCTUATIONS IN A
TOKAMAK PLASMA
S.B. Kim and E.J. Powers, U. Texas, Austin, TX.

2X9 MAXIMUM ENTROPY METHOD OF SPECTRAL ESTIMATION AS A
FLUCTUATION DIAGNOSTIC
S.J. Levinson, T. Koh, S.B. Kim, and E.J. Powers, U.
Texas, Austin, TX.

2X10 TWO DIMENSIONAL SIMULATION OF A PLASMA STREAMING ACROSS A
MAGNETIC FIELD
M. Galvez and C. Barnes, Los Alamos Nat. Lab., Los
Alamos, NM.

2X11 PRE-LAPLACE GROWTH BOUNDS FOR PLANE WAVE MODES OF A PLASMA
IN A MAGNETIC FIELD
G. Gnani and F.T. Gratton, U. Buenos Aires, Buenos Aires,
Argentina.

Monday, June 1, 1987
2:00 P.M. (Potomac Room)

Poster Session 2Y: HIGH POWER MICROWAVE AND
MILLIMETER WAVE GENERATION II

2Y1 A VIRCATOR AMPLIFIER
H. Sze, J. Benford, D. Fittinghoff, B. Harteneck, D.
Price, and W. Woo, Physics Int. Co., San Leandro, CA.

2Y2 PRELIMINARY RESULTS FROM A REFLEX DIODE EXPERIMENT ON THE
AURORA INTENSE PULSED RELATIVISTIC ELECTRON BEAM GENERATOR
A. Bromborsky, R.A. Kehs, G.A. Huttlin, S.E. Graybill,
and G.W. Still, Harry Diamond Labs., Adelphi, MD; M.C.
Clark, Sandia Nat. Labs., Albuquerque, NM; R. Bartsch,
H.A. Davis, E. Sherwood, and L. E. Thode, Los Alamos Nat.
Labs., Los Alamos, NM.

2Y3 A CHERENKOV CARM
D.B. McDermott, H. Cao, and N.C. Luhmann, Jr., U.
California, Los Angeles, CA.

2Y4 A FOUR CAVITY, HIGH HARMONIC GYRO-KLYSTRON AMPLIFIER
D.S. Furuno, D.B. McDermott, H. Cao, C.S. Kou, and N.C.
Luhmann, Jr., U. California, Los Angeles, CA; P. Vitello
and K. Ko, SAIC, McLean, VA.

- 2Y5 EXPERIMENTAL DESIGN OF THE UNIVERSITY OF MARYLAND'S HIGH POWER, X-BAND GYROKLYSTRON
W. Lawson, J. Calame, P.E. Latham, M. Read, C.D. Striffler, W. Wang, V.L. Granatstein, and D. Welsh, U. Maryland, College Park, MD.
- 2Y6 EFFICIENCY ENHANCEMENT BY USING DEPRESSED COLLECTOR TECHNIQUES IN DEVICES EMPLOYING GYRATING ELECTRON BEAMS
A. Singh, E.P. Chojnacki, W.W. Destler, D. Goutos, V.L. Granatstein, W. Lawson, and C.D. Striffler, U. Maryland, College Park, MD.
- 2Y7 HIGH POWER B.W.O. EXPERIMENTS
D. Shiffler, G. Kerslick, and J.A. Nation, Cornell U., Ithaca, NY.
- 2Y8 THE PLANAR OROTRON: A TUNABLE, MODERATE POWER, MILLIMETER WAVE SOURCE
E.M. Marshall, P.M. Phillips, and J.E. Walsh, Dartmouth College, Hanover, NH.
- 2Y9 VLASOV EQUILIBRIUM AND STABILITY OF RELATIVISTIC SPACE-CHARGE STREAMS IN A MITE-LINE OSCILLATOR
R. Lemke, Air Force Weapons Lab., Kirtland AFB, NM.
- 2Y10 SCALING OF MILLIMETER-WAVE RADIATION GENERATED BY COUNTERSTREAMING BEAMS IN A PLASMA-FILLED WAVEGUIDE
R.W. Schumacher and J. Santoru, Hughes Research Labs., Malibu, CA.
- 2Y11 MULTI-DIMENSIONAL NUMERICAL SIMULATIONS OF HIGH POWER MICROWAVE GENERATION FROM A BEAM AND FROM A PLASMA
W.E. Hobbs and A.R. Young, Kaman Science Corp., Santa Barbara, CA.

Tuesday, June 2, 1987
8:30 A.M. (Regency Ballroom E & F)

Session 3R: REVIEW PAPER
Chairperson: C. Joshi

3R PLASMA BASED HIGH ENERGY ACCELERATORS

T. C. Katsouleas
University of California, Los Angeles
Los Angeles, California

Tuesday, June 2, 1987
9:30 A.M. (Regency Ballroom A)

Oral Session 3A: PLASMA FOCUS I
Chairperson: Moon-Jhoon Rhee

- 3A1 MACROPARTICLE ACCELERATION FROM A MODIFIED MATHER-TYPE PLASMA GUN
W.S. Hou, T.R. Yeh, M. Wen, C.K. Yeh, and D.J. Shang, Inst. of Nuclear Energy Research, Taiwan, Rep. of China.
- 3A2 X-RAY ANALYSIS OF A DENSE PLASMA FOCUS
F. Venneri and G. Gerdin, U. Illinois, Urbana, IL.
- 3A3 DYNAMIC STABILITY OF A PLASMA FOCUS
G. Gerdin, F. Venneri, and K. Boulais, U. Illinois, Urbana, IL.
- 3A4 TIME-RESOLVED THOMSON SPECTROMETER MEASUREMENT OF PLASMA FOCUS PRODUCED IONS
D.J. Weidman, J.I. Gonzales, and M.J. Rhee, U. Maryland, College Park, MD.

- 3A5 TEMPORAL EVOLUTION OF ION ENERGY AND ACCELERATION MECHANISM IN A PLASMA FOCUS
M.J. Rhee and D.J. Weidman, U. Maryland, College Park, MD.
- 3A6 DENSE PLASMA RADIATION SOURCES FOR BLUE-GREEN LASER EXCITATION
J.H. Lee, K.S. Han, and D.D. Venable, Hampton U., Hampton, VA.
- 3A7 STIMULATED ACCELERATION AND CONFINEMENT OF DEUTERONS IN FOCUSED DISCHARGES
A. Bortolotti, F. Mezzetti, and D. Zeng, U. Ferrara, Ferrara, Italy; J. Brzosko, M. Esper, V. Nardi, and C. Powell, Stevens Inst. of Tech., Hoboken, NJ.

Tuesday, June 2, 1987
9:30 A.M. (Regency Ballroom B)

Oral Session 3B: WORKSHOP ON PLASMA DIAGNOSTIC METHODS FOR INDUSTRIAL APPLICATIONS I
Chairperson: Reece Roth

- 3B1-2 Invited Paper
PLASMA DIAGNOSTICS: MOTIVATIONS AND NEW DIRECTIONS
A. Garscadden and B.N. Ganguly, Air Force Wright Aeronautical Labs., Wright-Patterson AFB, OH.
- 3B3-4 Invited Paper
APPLICATION OF FUSION-RELATED ELECTRON TEMPERATURE AND DENSITY DIAGNOSTICS TO PLASMAS OF COMMERCIAL INTEREST
D.A. Rasmussen, Oak Ridge Nat. Lab., Oak Ridge, TN.
- 3B5-6 Invited Paper
DIAGNOSIS OF THREE DIMENSIONAL, TIME VARYING MAGNETIC FIELDS IN PLASMAS
W. Gekelman, U. California, Los Angeles, CA
- 3B7-8 Invited Paper
DIAGNOSIS OF ELECTRICAL NOISE IN ELECTRIC ARC FURNACE OPERATIONS
T.L. Ochs, U.S. Dept. of the Interior, Albany, OR.
- 3B9 COLLISION FREQUENCY MEASUREMENTS ON A TURBULENT PLASMA
P. Spence and J.R. Roth, U. Tennessee, Knoxville, TN.

Tuesday, June 2, 1987
9:30 A.M. (Regency Ballroom C)

Oral Session 3C: FAST OPENING SWITCHES I
Chairperson: Nino Pereira

- 3C1 PLASMA-FILLED DIODE EXPERIMENTS ON PBFA II
T.J. Renk, G.E. Rochau, D.H. McDaniel, W.B. Moore, N. Zuchowski, R. Padilla, and the PBFA-II Accelerator Team, Sandia Nat. Labs., Albuquerque, NM.
- 3C2 ELF1D: A GAS DISCHARGE 1-D MODEL INCLUDING SPACE-CHARGE EFFECTS
A.E. Rodriguez and W.M. Moeny, TETRA Corp., Albuquerque, NM.
- 3C3-4 Invited Paper
PHYSICS OF HIGH POWER OPERATION OF THE PLASMA EROSION OPENING SWITCH
J.M. Neri, J.R. Boller, R.J. Comisso, D.D. Hinshelwood, P.F. Ottinger, B.V. Weber, and F.C. Young, Naval Research Lab., Washington, DC.
- 3C5 LONG CONDUCTION TIME PLASMA EROSION OPENING SWITCH EXPERIMENTS ON PAWN
R.J. Comisso, J.R. Boller, R.D. Ford, P.J. Goodrich, D.D. Hinshelwood, D.A. Jenkins, J.C. Kellogg, W.H. Lupton, J.D. Shipman, Jr., and B.V. Weber, Naval Research Lab., Washington, DC.

- 3C6 REPETITIVELY PULSED OPERATION OF THE PLASMA EROSION OPENING SWITCH
D.D. Hinshelwood, P.J. Goodrich, J.R. Boller, R.J. Comisso, G. Cooperstein, J.M. Neri, P.F. Ottinger, and B. Weber, Naval Research Lab., Washington, DC.
- 3C7 FLUID SIMULATIONS OF CURRENT CONDUCTION IN THE PLASMA EROSION OPENING SWITCH
J.M. Grossmann, D. Mosher, and P.F. Ottinger, Naval Research Lab., Washington, DC.
- 3C8 PARTICLE SIMULATIONS OF ELECTRON FLOW DURING THE OPENING PHASE OF A PEOS
R.I. Lawconnell, J.M. Grossmann, J.M. Neri, and P.F. Ottinger, Naval Research Lab., Washington, DC.
- 3C9-10 Invited Paper
SIMULATED DYNAMICS OF PLASMA EROSION OPENING SWITCHES
R.J. Mason, Los Alamos Nat. Lab., Los Alamos, NM.
- 3S3 ELECTRON PHASE SPACE PARAMETERS SHIFT IN A LONG, LINEAR FREE-ELECTRON LASER
K.T. Nguyen and H.S. Uhm, Naval Surface Weapons Center, Silver Spring, MD.
- 3S4 SELF-CONSISTENT STUDY OF ANHARMONIC SYSTEMS IN PERIODIC FIELDS
K. Hizanidis, S. Riyopoulos and P. Sprangle, U. Maryland, College Park, MD.
- 3S5 LINEAR ANALYSIS OF FEL'S EMPLOYING SHEET BEAMS
P.E. Latham and T.M. Antonsen, Jr., U. Maryland, College Park, MD.
- 3S6 TEST RESULTS FROM THE NRL UBITRON
D.E. Pershing, Mission Research Corp. Alexandria, VA; R.H. Jackson, Naval Research Lab., Washington, DC.
- 3S7 DESIGN OF A SHORT-PERIOD-WIGGLER FREE ELECTRON LASER EXPERIMENT
J.H. Booske, T.M. Antonsen, Jr., D. Bengston, H. Bluem, W.W. Destler, V.L. Granatstein, P.E. Latham, I.D. Mayergoyz, D. Radaack, T. Rosenbury, and C.D. Striffler, U. Maryland, College Park, MD.
- 3S8 DESIGN OF A THIRD HARMONIC UBITRON EXPERIMENT
H. Bluem, J.H. Booske, and V.L. Granatstein, U. Maryland, College Park, MD; R.H. Jackson, Naval Research Lab., Washington, DC.
- 3S9 NUMERICAL STUDY OF RADIATION SIDEBANDS IN A FREE-ELECTRON LASER AMPLIFIER
B. Hafizi, A. Ting, and P. Sprangle, Naval Research Lab., Washington, DC.
- 3S10 STOCHASTIC ELECTRON DETRAPPING CAUSED BY SIDEBANDS IN FREE ELECTRON LASERS
S. Riyopoulos and C.M. Tang, Naval Research Lab., Washington, DC.
- 3S11 A PREBUNCHED FEL
D.B. McDermott, K.Z. Cheng, and N.C. Luhmann, Jr., U. California, Los Angeles, CA.
- 3S12 CONTROLLING THE PLASMA PHASE VELOCITY FOR HIGH ENERGY ACCELERATION IN THE PBWA
A. Ting, P. Sprangle, and E. Esarey, Naval Research Lab., Washington, DC.
- 3S13 SELF-FOCUSING OF RADIATION BEAMS IN PLASMAS
E. Esarey, P. Sprangle, and C.M. Tang, Naval Research Lab., Washington, DC.
- 3S14 ACCELERATION OF PROTONS OR ELECTRONS BY THE COUNTERSTREAMING-ELECTRON-BEAM ACCELERATORS
Y.T. Yan, Los Alamos Nat. Lab., Los Alamos, NM.

Tuesday, June 2, 1987
9:30 A.M. (Regency Ballroom D)

Oral Session 3D: MAGNETOHYDRODYNAMICS II
Chairperson: Joseph Sovie

- 3D1-2 Invited Paper
EFFLUENT INTERACTIONS OF SPACE BASED MHD POWER GENERATION SYSTEMS
J.K. Koester, Space Power, Inc., San Jose, CA.
- 3D3 QUASI-THREE DIMENSIONAL, TIME DEPENDENT MHD SIMULATION OF AN EXPLOSION IN THE GEOMAGNETIC ENVIRONMENT
S.T. Wu, U. Alabama, Huntsville, AL; L.L. Altgilbers, U.S. Army Missile Command, Redstone Arsenal, AL.
- 3D4 A SELF-CONTAINED PV/MHD HYBRID GUN CONCEPT
K.E. Noffsinger and D.W. Cott, MSE Inc., Butte, MT.
- 3D5 ANALYTICAL SOLUTION FOR A COAXIAL PLASMA GUN: WEAK COUPLING LIMIT
D. Dietz, Air Force Weapons Lab., Kirtland AFB, NM.
- 3D6 APPLICATIONS OF MHD ENERGY CONVERSION TO MAGNETIC FUSION REACTORS
B.G. Logan, Lawrence Livermore Nat. Lab., Livermore, CA.
- 3D7 NUMERICAL MODELING OF MICROWAVE SUPERHEATERS FOR FUSION
R.B. Campbell, TRW, Redondo Beach, CA; M.A. Hoffman, U. California, Davis, CA; W.L. Barr and B.G. Logan, Lawrence Livermore Nat. Lab., Livermore, CA.
- 3D8 PERFORMANCE CHARACTERISTICS OF NONEQUILIBRIUM DISK TYPE MHD GENERATORS FOR RANKINE CYCLES USING CESIUM-SEEDED MERCURY VAPOR
Y. Inui, M. Ishikawa, and J. Umoto, Kyoto U., Japan; R.B. Campbell and B.G. Logan, Lawrence Livermore Nat. Lab., Livermore, CA.

Tuesday, June 2, 1987
9:30 A.M. (Potomac Room)

Poster Session 3T: HIGH POWER MICROWAVE AND MILLIMETER WAVE GENERATION III

- 3T1 CYCLOTRON MASER THEORY FOR HIGH POWER CYCOTRON APPLICATIONS
H.S. Uhm, W. Namkung, J.Y. Choe, and V. Ayres, Naval Surface Weapons Center, Silver Spring, MD.
- 3T2 MICROWAVE GENERATION FROM TE₁₁ INTERACTION WITH AXIS-ROTATING ELECTRON BEAMS
V. Ayres, W. Namkung, and J.Y. Choe, Naval Surface Weapons Center, Silver Spring, MD.
- 3T3 EXPERIMENTAL RESULTS WITH A RELATIVISTIC MAGNETRON
W.O. Doggett and T.A. Treado, North Carolina State U., Raleigh, NC; G.E. Thomas, R.S. Smith III, J. Jackson-Ford, and D.J. Jenkins, Varian Assocs., Beverly, MA.
- 3T4 THEORY AND SIMULATION OF CUSPTRON MICROWAVE OSCILLATORS
S.C. Kuo, S.P. Kuo, and K.K. Tiong, Polytechnic U., Farmingdale, NY.
- 3S1 PLASMA WAVE WIGGLERS FOR FREE ELECTRON LASERS
C. Joshi, T. Katsouleas, J.M. Dawson, W.B. Mori, and Y.T. Yan, U. California, Los Angeles, CA; J. Slater, Spectra Technology, Inc., Bellevue, WA.
- 3S2 SIMULATION OF A SUB-MILLIMETER FREE ELECTRON LASER AMPLIFIER WITH A HELICAL QUADRUPOLE WIGGLER
O.C. Eldridge, S-F. Chang, N. Lam, and J.E. Scharer, U. Wisconsin, Madison, WI.

Tuesday, June 2, 1987
9:30 A.M. (Potomac Room)

Poster Session 3S: FREE ELECTRON LASERS AND PLASMA BASED ACCELERATORS

- 3T5 OPTIMIZATION OF THE DESIGN OF CUSPTRON MICROWAVE OSCILLATORS
K.K. Tiong and S.P. Kuo, Polytechnic U., Farmingdale, NY;
W. Namkung, Naval Surface Weapons Center, Silver Spring, MD.
- 3T6 CIRCUIT ANALYSIS OF CUSPTRON WAVEGUIDE
J.Y. Choe, V. Ayres, W. Namkung, and H.S. Uhm, Naval Surface Weapons Center, Silver Spring, MD.
- 3T7 RECENT EXPERIMENTAL RESULTS FROM A CUSPTRON OSCILLATOR WITH A SIX-VANE CIRCUIT
W. Namkung, J.Y. Choe, H.S. Uhm, and V. Ayres, Naval Surface Weapons Center, Silver Spring, MD.
- 3T8 MICROWAVE PROPAGATION THROUGH AN APERTURED COAXIAL WAVEGUIDE
W. Peter and T.J.T. Kwan, Los Alamos Nat. Lab., Los Alamos, NM.
- 3T9 CALIBRATION OF MAGNETIC FIELD SENSORS WITH MULTI-GHz BANDPASS
L.M. Miner, D.E. Voss, and C.D. Cremer, Air Force Weapons Lab., Kirtland AFB, NM.

Tuesday, June 2, 1987
2:00 P.M. (Regency Ballroom A)

Oral Session 4A: MIRROR-DEVICE PLASMAS AND REVERSED FIELD PINCHES
Chairperson: Donald Smith

- 4A1-2 Invited Paper
THE "MIRRORTRON" - AN APPLICATION OF MIRROR PHYSICS PRINCIPLES TO PARTICLE ACCELERATORS
R.F. Post, Lawrence Livermore Nat. Lab., Livermore, CA.
- 4A3 EMISSION SPECTROSCOPY MEASUREMENTS ON AN ECRH NON-AXISYMMETRIC MIRROR PLASMA
K. Junck, M. Brake, T. Goodman, D. Whaley, and W. Getty, U. Michigan, Ann Arbor, MI.
- 4A4 ECRH STUDIES IN THE CONSTANCE B MIRROR
D.L. Smatlak and S.A. Hokin, Massachusetts Inst. of Tech., Cambridge, MA.
- 4A5 MIRROR-BASED NEUTRON SOURCE EXPERIMENT
J. Kesner, J.A. Casey, M.J. Gerver, S.N. Golovato, S.F. Horne, R. Post, and E. Sevellano, Massachusetts Inst. of Tech., Cambridge, MA.
- 4A6 POTENTIAL FORMATION AND STABILIZATION BY RF IN THE TARA TANDEM MIRROR
S.N. Golovato, K. Brau, J. Casey, J. Coleman, W. Guss, G. Hallock, S. Horne, J. Irby, J. Kesner, R. Kumazawa, B. Lane, J. Machuzak, T. Moran, R. Myer, R.S. Post, E. Sevellano, D.K. Smith, J. Sullivan, R. Torti, Y. Yasaka, Y. Yao, and J. Zielinski, Massachusetts Inst. of Tech., Cambridge, MA.
- 4A7 MODE CONTROL WITH PHASED ANTENNA ARRAYS IN THE PHAEDRUS-B TANDEM MIRROR
J.J. Browning, R. Majeski, Y. Yasaka, N. Hershkowitz, and D. Roberts, U. Wisconsin, Madison, WI.
- 4A8-9 Invited Paper
SUMMARY OF RESULTS ON HBTXIB REVERSED FIELD PINCH
A.A. Newton, Culham Lab., Abingdon, Oxon, UK.
- 4A10-11 Invited Paper
SUSTAINED REVERSED FIELD PINCH DISCHARGES IN OHTE WITH A RESISTIVE SHELL
R.J. La Haye, W.D. Bard, P.S. Lee, M.J. Schaffer, T. Tamano, and P.L. Taylor, GA Technologies, Inc., San Diego, CA.

Tuesday, June 2, 1987
2:00 P.M. (Regency Ballroom B)

Oral Session 4B: WORKSHOP ON PLASMA DIAGNOSTIC METHODS FOR INDUSTRIAL APPLICATIONS II
Chairperson: Reece Roth

- 4B1-2 Invited Paper
NSF PROGRAM ACTIVITIES IN INDUSTRIAL PLASMA PROCESSING
L.S. Goldberg, NSF, Washington, DC.
- 4B3-4 Invited Paper
PLASMA MELTING AND REFINING OF METALS: CURRENT PROCESSES AND DIAGNOSTIC NEEDS
R.C. Eschenbach, Retech, Inc., Ukiah, CA.
- 4B5-6 Invited Paper
PARTICLE BEAM PROBES FOR LOW TEMPERATURE PLASMAS
R.L. Hickok, Rensselaer Polytechnic Inst., Troy, NY.
- 4B7-8 Invited Paper
HOLOGRAPHIC INTERFEROMETRY OF HIGH PRESSURE PLASMA JET
M.E. McIlwain, EG&G Idaho, Inc., Idaho Falls, ID.
- 4B9 USE OF WATER VAPOUR FOR THE SPECTROSCOPIC DETERMINATION OF HEAVY PARTICLES TEMPERATURE IN AN H.F. PLASMA
M. Beaulieu, D.V. Gravelle, T. Sakuta, and M.I. Boulos, U. Sherbrooke, Sherbrooke, Canada.
- 4B10 PULSED IONIZATION CHAMBER DIAGNOSTIC STUDIES OF FISSIONING PLASMAS
W.H. Ellis and W.Y. Choi, U. Florida, Gainesville, FL.

Tuesday, June 2, 1987
2:00 P.M. (Regency Ballroom C)

Oral Session 4C: X-RAY LASERS
Chairperson: David Attwood

- 4C1-2 Invited Paper
PROGRESS TOWARDS DEMONSTRATION OF SHORTER WAVELENGTH SOFT X-RAY AMPLIFIERS PUMPED BY THE NOVA LASER
C. Keane, D. Eder, R. London, B.J. MacGowan, D. Matthews, S. Maxon, M. Rosen, and D. Whelan, Lawrence Livermore Nat. Lab., Livermore, CA.
- 4C3-4 Invited Paper
ENGINEERING ASPECTS OF THE PRINCETON X-RAY LASER EXPERIMENTS
L.D. Meixler, Princeton U., Princeton, NJ.
- 4C5-6 Invited Paper
SHORT WAVELENGTH LASING PUMPED BY AUGER DECAY
R.W. Falcone and H.C. Kapteyn, U. California, Berkeley, CA.
- 4C7-8 Invited Paper
LASER-DRIVEN SOFT X-RAY LASING IN NEON-LIKE COPPER IONS ON 3p → 3s TRANSITIONS
T.N. Lee, E.A. McLean, and R.C. Elton, Naval Research Lab., Washington, DC.
- 4C9 LASANT PREPARATION EXPERIMENTS FOR A PULSED-POWER-DRIVEN Na/Ne PHOTOPUMPED X-RAY LASER
V.E. Scherrer, J. Apruzese, J.R. Boller, G.C. Mehlman, D. Mosher, P.F. Ottinger, S.J. Stephanakis and B.L. Welch, Naval Research Lab., Washington, DC.
- 4C10 A NEW METHOD FOR THE CREATION OF HIGH DENSITY, HIGH TEMPERATURE ELONGATED PLASMA
A. Zigler, M. Kishenevsky, E. Yarkoni, and M. Givon, Soreq Nuclear Research Center, Yavne, Israel.
- 4C11 TEMPERATURE AND DENSITY MEASUREMENTS OF A SODIUM FLUORIDE CAPILLARY DISCHARGE PLASMA
B.L. Welch, H.R. Griem, R.J. Comisso and F.C. Young, Naval Research Lab., Washington, DC.

Tuesday June 2, 1987
2:00 P.M. (Regency Ballroom D)

Oral Session 4D: SPACE PLASMAS III
Chairperson: Tony Peratt

4D1 CURRENTS AND FIELDS IN THE DAYSIDE CLEFT IONOSPHERE
A. Egeland and P.E. Sandholt, U. Oslo, Oslo, Norway.

4D2 THE COMBINED RELEASE AND RADIATION EFFECTS SATELLITE (CRRES)
J. Kierein, Ball Aerospace, Boulder, CO.

4D3-4 Invited Paper
MAGNETOSPHERIC POWER FROM PLANETARY SPIN
A.J. Dessler, Rice U., Houston, TX.

4D5-6 Invited Paper
MULTI-SATELLITE OBSERVATIONS OF MAGNETIC FIELDS IN SPACE PLASMAS
T.A. Potemra, L.J. Zanetti, P.F. Bythrow, and R.E. Erlandson, Applied Physics Lab., Johns Hopkins U., Laurel, MD.

4D7 QUASI-STATIC MHD PROCESSES IN EARTH'S MAGNETOSPHERE
H. Voigt, Rice U., Houston, TX.

4D8 PHYSICS OF MAN-MADE EXTENDED MAGNETIC STRUCTURES IN LOW EARTH ORBIT
J.D. Sullivan, B.G. Lane, J.H. Irby, and R.S. Post, Massachusetts Inst. of Tech., Cambridge, MA.

Tuesday, June 2, 1987
2:00 P.M. (Potomac Room)

Poster Session 4W: WORKSHOP ON PLASMA DIAGNOSTIC METHODS FOR INDUSTRIAL APPLICATIONS III

4W1 RECENT ADVANCES IN HEAVY ION BEAM PROBE FLUCTUATION MEASUREMENTS TECHNIQUES
K.A. Connor, T.P. Crowley, S.Y. Erich, and S. Khan, Rensselaer Polytechnic Inst., Troy, NY.

4W2 HEAVY ION BEAM PROBES FOR STELLARATORS
S.C. Aceto, A. Carnevali, K.A. Connor, and J.F. Lewis, Rensselaer Polytechnic Inst., Troy, NY.

4W3 FLUCTUATION STUDIES OF THE EDGE PLASMA ON THE RENTOR TOKAMAK
R.A. Santoro and R.L. Hickok, Rensselaer Polytechnic Inst., Troy, NY.

4W4 THE USE OF SECONDARY EMISSIVE CAPACITIVE PROBES TO DETERMINE PLASMA POTENTIAL--A NEW DIAGNOSTIC TECHNIQUE
N. Hershkowitz, E.Y. Wang, D. Diebold, T. Intrator, R. Majeski, H. Persing, G. Severn, B. Nelson, and Y.J. Wen, U. Wisconsin, Madison, WI.

4W5 VACUUM AND SHEATH POTENTIAL MEASUREMENTS WITH CURRENT BIASED EMISSIVE PROBES
D. Diebold, A. Bailey, T. Intrator, and N. Hershkowitz, U. Wisconsin, Madison, WI.

4W6 AN IN-SITU SPECTROSCOPIC EROSION YIELD MEASUREMENT OF MATERIAL EROSION AND REDEPOSITION IN PLASMA
W.K. Leung, Y. Hirooka, R.W. Conn, D.M. Goebel, and B. Labombard, U. California, Los Angeles, CA.

4W7 OBSERVATIONS OF PERIOD DOUBLING PHENOMENON IN A TOROIDAL PLASMA USING NEUTRAL LITHIUM BEAM PROBE
R. Pal, M.V.V.S. Rao, S.K. Mattoo, A. Kumar, and D. Bora, Inst. for Plasma Research, BHAT, Gandhinagar, India.

4W8 INNER-SHELL RADIATION FOR ION BEAM DIAGNOSTICS
E.J.T. Burns, J.E. Bailey, R.J. Dukart, and T.A. Mehlhorn, Sandia Nat. Labs., Albuquerque, NM.

4W9 SIMPLE X-RAY CAMERA SYSTEM
C.S. Chia, M.J. Rhee, D.J. Weidman, and D.I. Yang, U. Maryland, College Park, MD; R.F. Schneider, Naval Surface Weapons Center, Silver Spring, MD.

4W10 TIME-RESOLVING THOMSON SPECTROMETER
D.J. Weidman and M.J. Rhee, U. Maryland, College Park, MD.

4W11 FAR-INFRARED INTERFEROMETRY AND SCATTERING MEASUREMENTS ON THE TEXT TOKAMAK
S.K. Kim, D.L. Brower, W.A. Peebles, and N.C. Luhmann, Jr., U. California, Los Angeles, CA.

4W12 TOMOGRAPHIC RECONSTRUCTION OF DENSITY CONTOURS IN THE MICRATOR TOKAMAK
J. Howard, E.J. Doyle, W.A. Peebles, and N.C. Luhmann, Jr., U. California, Los Angeles, CA; S.F. Gull, St. John's College, Cambridge, England.

4W13 CHARGE LOSS FROM A FREELY MOVING PROJECTILE AS IT PASSES THROUGH A LOW DENSITY DIFFUSION PLASMA
C.S. MacLachy, Acadia U., Wolfville, Canada.

4W14 COMPLEX DIAGNOSTICS OF DUST-LADEN PLASMA JETS
M.F. Zhukov, V.P. Lyagushkin, and O.P. Solonenko, Inst. of Thermophysics, Novosibirsk, USSR.

Tuesday, June 2, 1987
2:00 P.M. (Potomac Room)

Poster Session 4X: FAST OPENING SWITCHES II

4X1 CROSSATRON MODULATOR SWITCH: FROM LABORATORY EXPERIMENTS TO PRODUCTION TUBES
R.W. Schumacher, R.M. Watkins, H.E. Gallagher, and R.J. Harvey, Hughes Research Labs., Malibu, CA; M.L. Tracey and J.A. Christensen, Hughes Electron Dynamics Div., Torrance, CA.

4X2 COMPUTER SIMULATION OF THE REFLEX SWITCH
J.L. Geary, J.J. Ambrosiano, R.E. Terry, and N.R. Pereira, Berkeley Research Assocs., Springfield, VA.

4X3 FIELD EMISSION CONTROLLED PLASMA OPENING SWITCH
F. Schwirzke, Naval Postgraduate School, Monterey, CA.

4X4 THEORETICAL ANALYSIS OF PEOS EXPERIMENTS
P.F. Ottinger, R.J. Comisso, J.M. Grossmann, D.D. Hinshelwood, D. Mosher, J.M. Neri, and B.V. Weber, Naval Research Lab., Washington, DC.

Tuesday, June 2, 1987
2:00 P.M. (Potomac Room)

Poster Session 4Y: ELECTRON, ION, AND PLASMA SOURCES II

4Y1 A STUDY ON AN ELECTRON BEAM PROFILE OF THE DUOPLASMATRON SOURCE
M.E. Abd El Aziz, M.M. Abd El Baki, and K.A. Sharshar, Atomic Energy Authority, Cairo, Egypt.

4Y2 EXTRACTION AND FOCUSING OF AN ELECTRON BEAM EXTRACTED FROM THE DUOPLASMATRON SOURCE
M.E. Abd El Aziz, M.M. Abd El Baki, and K.A. Sharshar, Atomic Energy Authority, Cairo, Egypt.

4Y3 NEUTRALIZATION OF TFTR NEUTRAL BEAMS
G.M. Gammel, J.H. Kamperschroer, L.R. Grisham, H.W. Kugel, R.A. Langley, A.L. Roquemore, and M.D. Williams, Princeton U., Princeton, NJ.

4Y4 PLASMA-ANODE e-GUN
J. Santoru, R.W. Schumacher, A.J. Palmer, R.J. Harvey, F.A. Dolezal, and D.J. Gregoire, Hughes Research Labs., Malibu, CA.

4Y5 SOLID DISCHARGE HEAVY ION FUSION SOURCE STUDIES
G.F. Kiuttu, K.O. Busby, and R.D. Brown, Mission Research Corp., Albuquerque, NM; R.J. Adler, Pulse Sciences, Inc., Agoura Hills, CA.

- 4Y6 LITHIUM PLASMA GENERATION BY RESONANT LASER LIGHT
K. Horioka, Y. Hashidate, A. Kurosawa, H. Yoneda, and K. Kasuya, Tokyo Inst. of Tech., Kanagawa, Japan.
- 4Y7 ELECTROHYDRODYNAMICALLY-DRIVEN LIQUID-LITHIUM ION SOURCE FOR INERTIAL CONFINEMENT FUSION
A.L. Pregonzer, Sandia Nat. Labs., Albuquerque, NM, and D.R. Kingham, VG IONEX, Burgess Hill, UK.
- 4Y8 SURFACE DISCHARGES FOR SOFT X-RAY PREIONIZATION IN LIGHT-ION FUSION ACCELERATORS
J.R. Woodworth and W.H. Jaramillo, Sandia Nat. Labs., Albuquerque, NM.

- 5A9 THE MAGNETIC VAPOR SHIELDING (MVS) MECHANISM FOR PROTECTION OF COMPONENTS SUBJECTED TO HIGH HEAT FLUX
J.G. Gilligan and D. Hahn, North Carolina State U., Raleigh, NC.
- 5A10 COMPUTATIONAL MODELING OF THE RECONNECTION GUN
J.R. Freeman, Sandia Nat. Labs., Albuquerque, NM.

Wednesday, June 3, 1987
9:30 A.M. (Regency Ballroom B)

Oral Session 5B: FREE ELECTRON LASERS
Chairperson: Cha-Mei Tang

Wednesday, June 3, 1987
8:30 A.M. (Regency Ballroom E & F)

Session 5R: REVIEW PAPER
Chairperson: D. M. Benenson

5R CHEMICAL AND PHYSICAL REACTIONS
UNDER THERMAL PLASMAS CONDITIONS

P. Fauchais
A. Vardelle
M. Vardelle
J. F. Coudert
University of Limoges
Limoges, France

Wednesday, June 3, 1987
9:30 A.M. (Regency Ballroom A)

Oral Session 5A: ELECTROMAGNETIC LAUNCHERS I
Chairperson: J. V. Parker

- 5A1 EXPERIMENTAL RESULTS FROM THE EMET RAIL LAUNCHER
F.D. Witherspoon, R.L. Burton, S.Y. Wang, H.W. Bloomberg, S.A. Goldstein, and D.A. Tidman, GT-Devices, Inc., Alexandria, VA.
- 5A2 RAILGUN BORE MATERIAL TEST RESULTS
S.Y. Wang, R.L. Burton, F.D. Witherspoon, H.W. Bloomberg, S.A. Goldstein, D.A. Tidman, and N.K. Winsor, GT-Devices, Inc., Alexandria, VA.
- 5A3-4 Invited Paper
ARMATURE OPTIONS FOR HYPERVELOCITY RAILGUNS
J.H. Batteh and L.D. Thornhill, Science Applications Int. Corp., Marietta, GA; J.L. Brown, Air Force Armament Lab., Eglin AFB, FL.
- 5A5 PARTITION FUNCTIONS FOR RAILGUN PLASMA ARMATURES
G.E. Rolader and J.H. Batteh, Science Applications Int. Corp., Marietta, GA; P. Desai, Georgia Tech., Atlanta, GA.
- 5A6 BORE EROSION DUE TO PLASMA ARMATURES IN EM LAUNCHERS
R.F. Askew, Auburn U., Auburn, AL; J.L. Brown and D.B. Jensen, U.S. Air Force Armament Lab., Eglin AFB, FL.
- 5A7 DETERMINATION OF CURRENT DISTRIBUTION IN EM GUN ARMATURE BY LEAST SQUARE FITTING OF BDOT COIL VOLTAGE
K.K. Cobb, Air Force Armament Lab., Eglin AFB, FL.
- 5A8 THE IMPORTANCE OF HIGH INJECTION VELOCITY TO REDUCE PLASMA ARMATURE GROWTH AND DRAG IN HYPERVELOCITY RAILGUNS
R.S. Hawke, W.R. Dixon, S-W. Kang, R.C. McCallen, and A.R. Susoeff, Lawrence Livermore Nat. Lab., Livermore, CA; J.R. Asay and M. Shaninpoor, Sandia Nat. Labs., Albuquerque, NM.

- 5B1-2 Invited Paper
RADIATION FOCUSING, GUIDING AND STEERING IN THE FREE ELECTRON LASER
P. Sprangle and C.M. Tang, Naval Research Lab., Washington, DC; A. Ting, Berkeley Scholars, Inc., Springfield, VA.
- 5B3 SIMULATION OF 3-D RADIATION PULSES IN FEL AMPLIFIERS DRIVEN BY ULTRA-HIGH CURRENT RF LINACS
C.M. Tang and P. Sprangle, Naval Research Lab., Washington, DC.
- 5B4 HIGH EFFICIENCY OPERATION OF FREE ELECTRON LASER AMPLIFIERS
H.P. Freund and A.K. Ganguly, Naval Research Lab., Washington, DC.
- 5B5 SIDEBAND SUPPRESSION IN A HIGH-EXTRACTION FREE ELECTRON LASER
L.C. Steinhauer and D.C. Quimby, Spectra Technology, Inc., Bellevue, WA.
- 5B6 EFFECTS OF PARTICLE LOADING ON FEL SIMULATIONS
W.P. Marable, C.M. Tang and P. Sprangle, Naval Research Lab., Washington, DC.
- 5B7-8 Invited Paper
RECENT RESULTS OF ELF EXPERIMENTS AT 2 MM WAVELENGTH
A.L. Throop and ELF Project Team, Lawrence Livermore Nat. Lab., Livermore, CA.
- 5B9 STABLE SINGLE-MODE OPERATION OF A 30-GHz FREE ELECTRON LASER
R.J. Harvey and F.A. Dolezal, Hughes Research Labs., Malibu, CA.
- 5B10 SPACE-HARMONIC COUPLINGS WITHIN FEL BRAGG-REFLECTORS: SLOW-WAVE INTERACTIONS AND BLAZING EFFECTS
A.J. Palmer, Hughes Research Labs., Malibu, CA.

Wednesday, June 3, 1987
9:30 A.M. (Regency Ballroom C)

Oral Session 5C: PLASMA CHEMISTRY AND PROCESSING I
Chairperson: Richard Munz

- 5C1-2 Invited Paper
SPACE-TIME RESOLVED GLOW DISCHARGE ELECTRIC FIELDS
R.A. Gottscho, AT&T Bell Labs., Murray Hill, NJ.
- 5C3 A PARAMETRIC STUDY OF SPUTTERING USING A MODIFIED MONTE CARLO CALCULATION
M. Abou Mandour, M. Nagy, and M. Abdel Latif, Alexandria U., Alexandria, Egypt.
- 5C4 COMPARISON OF EXPERIMENTAL MEASUREMENTS AND THEORETICAL MODELING OF LOW PRESSURE MICROWAVE DISCHARGES
M. Dahimene, L. Mahoney, J. Hopwood, J. Salbert, D. Reinhard, and J. Asmussen, Michigan State U., East Lansing, MI.
- 5C5 A LARGE VOLUME, METAL ION PLASMA SYSTEM FOR PLASMA DEPOSITED COATINGS AND ION SURFACE MODIFICATION
P. Kidd and K. Miller, TRW, Redondo Beach, CA.

- 5C6-7 Invited Paper
ELECTRICAL ASPECTS OF PLASMA/PARTICLE INTERACTIONS
G.L. Rogoff, GTE Labs. Inc., Waltham, MA.
- 5C8 A STUDY OF THE EFFECTS OF OPERATING CONDITIONS ON THE FLOW, TEMPERATURE AND SPECIES FIELDS OF A NEW DESIGNED PLASMA CHEMICAL REACTOR
G-Y. Zhao, J. Mostaghimi, and M.I. Boulos, U. Sherbrooke, Sherbrooke, Canada.
- 5C9 THERMAL PLASMA SYNTHESIS OF ALUMINUM NITRIDE
S. Ashish and E. Kasra, State U. of New York, Buffalo, NY.
- 5C10 HIGH PRESSURE, HIGH TEMPERATURE MICROWAVE DISCHARGES FOR APPLICATION IN PLASMA CHEMISTRY
L.L. Frasch, S. Whitehair, and J. Asmussen, Michigan State U., East Lansing, MI.

Wednesday, June 3, 1987
9:30 A.M. (Regency Ballroom D)

Oral Session 5D: ARC TECHNOLOGY AND GASEOUS ELECTRONICS I
Chairperson: Mark J. Kushner

- 5D1 NON-LTE TEMPERATURES IN ARGON ARCS AT VARIOUS PRESSURES
T.L. Eddy and A. Sedghinasab, Georgia Tech, Atlanta, GA.
- 5D2 THE ONSET AND DEVELOPMENT OF ARC CONSTRICTION IN FULLY AND WEAKLY IONIZED GAS DISCHARGES
S.P. Kuo, S.C. Kuo, E. Levi, and E.E. Kunhardt, Polytechnic U., Farmingdale, NY.
- 5D3 AN INVESTIGATION OF OVERVOLTAGE EFFECTS ON A GAS-BLOWN SPARK GAP
M.S. Mazzola and G.M. Molen, Old Dominion U., Norfolk, VA.
- 5D4 INFLUENCE OF GAS TYPE AND PRESSURE ON ELECTRODE EROSION IN HIGH ENERGY, HIGH CURRENT SWITCHING
A.L. Donaldson, D. Garcia, K. Zinsmeyer, and M. Kristiansen, Texas Tech U., Lubbock, TX.

- 5D5-6 Invited Paper
FAST PULSED HOLLOW CATHODE DISCHARGES
G. Schaefer, Polytechnic U., Farmingdale, NY.
- 5D7 THE EFFECT OF TRANSVERSE MAGNETIC FIELDS ON GLOW DISCHARGES IN ELECTRONEGATIVE GASES
K.H. Schoenbach, T.J. Powers, S.T. Ko, and V.K. Lakdawala, Old Dominion U., Norfolk, VA.

Wednesday, June 3, 1987
9:30 A.M. (Potomac Room)

Poster Session 5S: INTENSE ELECTRON AND ION BEAMS II

- 5S1 EMITTANCE GROWTH AND TRANSVERSE MOTION DAMPING OF THE ATA ELECTRON BEAM WITH A SMALL DIAMETER LASER ION CHANNEL
K.W. Struve, G.J. Caporaso, A.G. Cole, and J.T. Weir, Lawrence Livermore Nat. Lab., Livermore, CA.
- 5S2 EMITTANCE METER FOR TIME-RESOLVED INTENSE RELATIVISTIC ELECTRON BEAM PROPAGATION STUDIES
R.F. Schneider, H.I. Cordova, M.J. Rheet, and J.R. Smith, Naval Surface Weapons Center, Silver Spring, MD.
- 5S3 EMITTANCE OSCILLATIONS IN A MISMATCHED ELECTRON BEAM
J.R. Smith, W. Namkung, K.T. Nguyen, R.F. Schneider, and H.S. Uhm, Naval Surface Weapons Center, Silver Spring, MD.
- 5S4 BEAM HEAD EROSION
R.A. Stark and H.S. Uhm, Naval Surface Weapons Center, Silver Spring, MD; M. Lampe, Naval Research Lab., Washington, DC.

- 5S5 INTERACTION OF AN INTENSE RELATIVISTIC ELECTRON BEAM WITH FULL DENSITY AIR
D.P. Murphy, R.E. Pechacek, M. Raleigh, W.F. Oliphant, and R.A. Meger, Naval Research Lab., Washington, DC.
- 5S6 AN INTENSE BEAM SYSTEM WITH NO APPLIED MAGNETIC FIELD
X. Zhang, R.L. Yao, and C.D. Striffler, U. Maryland, College Park, MD.
- 5S7 INTENSE BEAM PROPAGATION AND COLLECTIVE ION ACCELERATION IN A LOCALIZED PLASMA SOURCE-VACUUM SYSTEM
R.L. Yao, C.D. Striffler, and J. Guillory, U. Maryland, College Park, MD.
- 5S8 ELECTRON DYNAMICS IN AN e-BEAM RING DIODE
J. Ambrosiano, Berkeley Research Assocs., Springfield, VA; R. Terry, Naval Research Lab., Washington, DC.
- 5S9 THE LPX FACILITY
J.W. Ginn, D.N. Hendricks, M.C. Clark, and M.T. Buttram, Sandia Nat. Labs., Albuquerque, NM.
- 5S10 INTERACTION OF A ROTATING PROTON BEAM WITH A MAGNETIZED PLASMA
E. Schamiloglu, J.B. Greenly, and D.A. Hammer, Cornell U., Ithaca, NY.
- 5S11 ELECTRON COLLECTOR AND ION SPECIES EXPERIMENTS ON THE LION EXTRACTOR ION DIODE
G. Rondeau, J.B. Greenly, D.A. Hammer, K. Horioka, and D.D. Meyerhofer, Cornell U., Ithaca, NY.
- 5S12 IMPEDANCE CHARACTERISTICS OF THE Bz DIODE ON THE LION ACCELERATOR
D.D. Meyerhofer, K. Horioka, B. Kusse, G. Rondeau, and C. Struckman, Cornell U., Ithaca, NY.
- 5S13 SPECTROSCOPIC MEASUREMENTS OF ANODE PLASMA WITH CRYOGENIC PULSED ION SOURCES
H. Yoneda, T. Urata, K. Ohbayashi, Y. Kim, K. Horioka, and K. Kasuya, Tokyo Inst. of Tech., Kanagawa, Japan.
- 5S14 TRANSPORT MEASUREMENTS IN A TWO-STAGE PROTON LINEAR INDUCTION ACCELERATOR
G.S. Kerslick, Cz. Golkowski, J.D. Ivers, I.S. Roth, and J.A. Nation, Cornell U., Ithaca, NY.

Wednesday, June 3, 1987
9:30 A.M. (Potomac Room)

Poster Session 5T: BASIC PLASMA PHENOMENA AND LASER-PLASMA INTERACTIONS I

- 5T1 LARGE ELECTRIC FIELDS IN A MAGNETIZED PLASMA SHEATH; LONG-LIVED VORTICES
K. Theilhaber and C.K. Birdsall, U. California, Berkeley, CA.
- 5T2 POTENTIAL DROP AND TRANSPORT IN A BOUNDED PLASMA INCLUDING SECONDARY ELECTRON EMISSION AND ION REFLECTION AT THE COLLECTOR
L.A. Schwager and C.K. Birdsall, U. California, Berkeley, CA.
- 5T3 ANALYTICAL AND NUMERICAL STUDY OF ANOMALOUS FRICTION IN A PLASMA TURBULENCE
W. Ho and O. Ishihara, Texas Tech U., Lubbock, TX.
- 5T4 SINGLE PARTICLE INTERPRETATION OF AC HELICITY INJECTION
P.M. Bellan, Caltech, Pasadena, CA.
- 5T5 PLASMA DISPERSION THEORY FOR A NEUTRAL PLASMA COLUMN IN A GROUNDED WAVEGUIDE
H.S. Uhm, K.T. Nguyen, R.F. Schneider, and J.R. Smith, Naval Surface Weapons Center, Silver Spring, MD.
- 5T6 PROPAGATION IN AND BREAKDOWN PROPERTIES OF NEUTRAL AND IONIZED MEDIA BY HIGH-POWER, SHORT BURST RF RADIATION
H.L. Rappaport, P.E. Latham, and C.D. Striffler, U. Maryland, College Park, MD.

5T7 COLLISIONAL MAGNETIC PUMPING
M. Laroussi and J.R. Roth, U. Tennessee, Knoxville, TN.

Wednesday, June 3, 1987
2:00 P.M. (Regency Ballroom A)

5T8 OBSERVATION OF STEEPENING IN ELECTRON PLASMA WAVES DRIVEN
BY STIMULATED RAMAN BACKSCATTERING
D. Umstadter, R. Williams, C. Clayton, and C. Joshi, U.
California, Los Angeles, CA.

Oral Session 6A: ELECTROMAGNETIC LAUNCHERS II
Chairperson: Ron Hawke

5T9 EXPERIMENTAL STUDY ON THERMAL-SMOOTHING EFFECT IN UV-LASER
PRODUCED PLASMA
K. Koyama, I. Matsushima, M. Tanimoto, and M. Yano,
Electrotechnical Lab., Tsukuba Science City, Ibaraki,
Japan; I. Ueno, Tokyo U., Tokyo, Japan.

6A1 MEASUREMENT OF VISCOUS DRAG ON A HIGH VELOCITY PLASMA
ARMATURE
J.V. Parker, Los Alamos Nat., Lab., Los Alamos, NM.

6A2 STRUCTURE OF PLASMA ARMATURE OF A RAILGUN
G.A. Shvetsov, Yu.L. Bashkatov, I.A. Stadnichenko, and
A.G. Anisimov, Lavrentyev Inst. of Hydrodynamics,
Novosibirsk, USSR.

6A3 MEASURING BRIGHTNESS TEMPERATURE OF PLASMA ARMATURE OF
RAILGUN
G.A. Shvetsov and I.A. Stadnichenko, Lavrentyev Inst. of
Hydrodynamics, Novosibirsk, USSR.

Wednesday, June 3, 1987
9:30 A.M. (Potomac Room)

Poster Session 5W: SPHEROMAKS, REVERSED FIELD PINCHES,
AND ALTERNATE CONCEPTS

5W1 STUDIES OF THE IMPEDANCE AND ENERGY EFFICIENCY OF COAXIAL
MAGNETIZED PLASMA SOURCES USED FOR SPHEROMAK FORMATION AND
SUSTAINMENT
C.W. Barnes, T.R. Jarboe, I. Henins, H.W. Hoida, P.
Klingner, S.O. Knox, and B.L. Wright, Los Alamos Nat.
Lab., Los Alamos, NM.

5W2 IMPURITY RADIATION ON SUSTAINED CTX SPHEROMAKS
J.C. Fernandez, I. Henins, C.W. Barnes, and G.J. Marklin,
Los Alamos Nat. Lab., Los Alamos, NM.

5W3 DOPPLER ION TEMPERATURE MEASUREMENTS ON THE CTX SPHEROMAK
S.O. Knox and H.W. Hoida, Los Alamos Nat. Lab., Los
Alamos, NM.

5W4 GENERATION OF COMPACT TORUS CONFIGURATION BY ROTATING
MAGNETIC FIELDS
M. Kuhnappel, A. Stampa, R. Tabersky, and H. Tuzcek, U.
Essen, Essen, F.R. Germany.

5W5 EXPERIMENTAL OBSERVATION OF HOT ELECTRON RING ON MM-2
MIRROR DEVICE
B. Gu, W. S. Guan, S. Q. Chen, D. G. Cheng, S. Y. Duan,
T. H. Su, Z. K. Shang, Southwestern Inst. of Physics,
Leshan, Sichuan, P. R. China.

5W6 ACCELERATION OF A COMPACT TORUS
C.W. Hartman, J.L. Eddleman, and J.H. Hammer, Lawrence
Livermore Nat. Lab., Livermore, CA; B. Kusse, Cornell U.,
Ithaca, NY.

5W7 NUMERICAL MODELING OF THE PLASMA RING ACCELERATION
EXPERIMENT
J.L. Eddleman, J.H. Hammer, and C.W. Hartman, Lawrence
Livermore Nat. Lab., Livermore, CA.

5W8 HIGH DENSITY Z PINCH FORMED FROM A SOLID DEUTERIUM FIBER
J.E. Hammel and D.W. Scudder, Los Alamos Nat. Lab., Los
Alamos, NM.

5W9 OPERATION OF AN RFP WITH A THIN, SEGMENTED SHELL
P. Schmid and S. Robertson, U. Colorado, Boulder, CO.

5W10 EXPERIMENTAL TESTS OF A LARGE NONCIRCULAR RFP
J.S. Sarff, A.F. Almagri, S. Assadi, R.N. Dexter, S.C.
Prager, and J.C. Sprott, U. Wisconsin, Madison, WI.

5W11 INTRODUCTION TO FUSION ENERGY
J.R. Roth, U. Tennessee, Knoxville, TN.

Wednesday, June 3, 1987
2:00 P.M. (Regency Ballroom B)

Oral Session 6B: ARC TECHNOLOGY AND GASEOUS ELECTRONICS II
Chairperson: Karl Schoenbach

6B1-2 Invited Paper
THE TECHNOLOGICAL POTENTIAL OF PLASMA PHYSICS
K.-U. Riemann, Ruhr U., Bochum, FRG.

6B3 STREAMER PROPAGATION IN SF₆
S.K. Dhali and A.K. Pal, Southern Illinois U.,
Carbondale, IL.

6B4 MONTE CARLO SIMULATION OF ELECTRON MOTION IN CROSSED RF AND
MAGNETIC FIELDS
Y.M. Li and L.C. Pitchford, GTE Labs. Inc., Waltham, MA.

6B5 THEORETICAL AND EXPERIMENTAL STUDY OF PREMATURE TERMINATION
MECHANISMS OF KrF EXCIMER FLUORESCENCE PULSES FROM KrF
LASER MIXTURES PUMPED BY A MULTIMICROSECOND LONGITUDINAL
DISCHARGE
H. Kumagai and M. Obara, Keio U., Kanagawa, Japan.

6B6 SELF-SUSTAINED, HIGH CURRENT DENSITY, HIGH PRESSURE DIFFUSE
DISCHARGE CHARACTERISTICS
R.B. Piejak, GTE Labs. Inc., Waltham, MA.

Wednesday, June 3, 1987
2:00 P.M. (Regency Ballroom C)

Oral Session 6C: BASIC PLASMA PHENOMENA AND
LASER-PLASMA INTERACTIONS II
Chairperson: Paul M. Bellan

- 6C1 NONLINEAR CURRENT SYSTEMS AND INSTABILITIES IN MAGNETIZED PLASMAS
R.L. Stenzel and J.M. Urrutia, U. California, Los Angeles, CA.
- 6C2 TEARING OF A THIN ELECTRON CURRENT SHEET INTO MAGNETIC ISLANDS AND THEIR SUBSEQUENT COALESCENCE
H. Pfister, W. Gekelman, R.L. Stenzel, and L. Xu, U. California, Los Angeles, CA.
- 6C3 PLASMOID PROPAGATION IN A TRANSVERSE-MAGNETIC FIELD AND IN A MAGNETIZED PLASMA
J. Song, R. Hong, F.J. Wessel, A. Fisher, and N. Rostoker, U. California, Irvine, CA.
- 6C4 LASER ENHANCED ATTACHMENT IN DIFFUSE DISCHARGES
M. Giesselmann, B. Pashale, and M. Kristiansen, Texas Tech U., Lubbock, TX; G. Schaefer, Polytechnic U., Farmingdale, NY.
- 6C5 MULTIPULSE PRE-BREAKDOWN PHENOMENA IN LIQUID DIELECTRICS
I. Alexeff, T.V. Blalock, A.L. Wintenberg, J.V. Foust, and M.O. Pace, U. Tennessee, Knoxville, TN.
- 6C6-7 Invited Paper
MODELING PLASMA DISCHARGES
M.A. Lieberman, C.G. Goedde, L. Gu, A.J. Lichtenberg, G. Misium, and A. Wendt, U. California, Berkeley, CA.
- 6C8-9 Invited Paper
LOCALIZED RF-FIELDS IN PLASMAS
T. Ohnuma, Tohoku U., Sendai, Japan.
- 6C10 TRANSIENT COMPRESSION PRODUCED IN A CRYSTAL BY LASER IRRADIATION
R.R. Whitlock, Naval Research Lab., Washington, DC; J.S. Wark, Lab. for Laser Energetics, Rochester, NY; A. Hauer, Los Alamos Nat. Lab., Los Alamos, NM; J.E. Swain and P.J. Solone, Lawrence Livermore Nat. Lab., Livermore, CA.
- 6C11 MODELING LASER ABLATION AND FRAGMENTATION OF RENAL AND BILIARY STONES
S.J. Gitomer and R.D. Jones, Los Alamos Nat. Lab., Los Alamos, NM.
- 6C12 SUPRATHERMAL ELECTRON TRANSPORT AND SELF-GENERATED MAGNETIC FIELD IN LASER-TARGET INTERACTION
K. Kim and W-H. Choe, U. Illinois, Urbana, IL.

Wednesday, June 3, 1987
2:00 P.M. (Potomac Room)

Poster Session 6X: PLASMA FOCUS II

- 6X1 X-RAY MEASUREMENTS IN A DENSE PLASMA FOCUS DEVICE
C.M. Luo, J.R. Liu, B. Yang, J.F. Xiong, and T.C. Yang, Tsinghua U., Beijing, China.
- 6X2 KINEMATICS AND STRUCTURE OF A PLASMA FOCUS CURRENT SHEATH
L. Bilbao, H. Bruzzone, and H. Kelly, PRIFIP, FCEN-UBA/CONICET, Buenos Aires, Argentina.
- 6X3 A SIMPLE MODEL TO DESCRIBE THE PRECURSOR GENERATED IN PLASMA FOCUS DISCHARGES
L. Bilbao, G. Garcia, and H. Kelly, PRIFIP, FCEN-UBA/CONICET, Buenos Aires, Argentina.

- 6X4 RESULTS OF THE AFWL DEFLAGRATION GUN EXPERIMENTS
K.E. Hackett, W.L. Baker, J.D. Beason, C.J. Clouse, J.H. Degnan, D. Dietz, D.J. Hall, P. L. Higgins, J.L. Holmes, W.F. McCullough, D.W. Price, and P.M. Ranon, Air Force Weapons Lab., Kirtland AFB, NM; J.D. Graham, E.A. Lopez, Maxwell Labs., Inc., San Diego, CA; J.S. Buff, M.H. Frese, R.E. Peterkin, N.F. Roderick, Mission Research Corp., Albuquerque, NM.
- 6X5 MAGNETIC FIELD COMPRESSION USING PINCH-PLASMA
K. Koyama, M. Tanimoto, Y. Matsumoto, Electrotechnical Lab., Tsukuba Science City, Ibaraki, Japan; I. Ueno, Tokyo U., Tokyo, Japan.
- 6X6 STRONGLY TURBULENT IONIZING SHOCK WAVE AS THE MECHANISM FOR THE FIRST NEUTRON EMISSION IN THE DENSE PLASMA FOCUS DISCHARGE
T. Kobata, U. Tokyo, Tokyo, Japan.
- 6X7 NEUTRON YIELD AND ITS SCALING LAW ON THE REPETITIVE DENSE PLASMA FOCUS POWERED BY A LONG-LASTING CURRENT
H. Asai, Hitachi Ltd., Ibaraki, Japan; I. Ueno, U. Tokyo, Tokyo, Japan; M. Tanimoto, Electrotechnical Lab., Ibaraki, Japan; K. Nakajima, U. Maryland, College Park, MD.
- 6X8 CONDITIONS OF PLASMA FOCUS
K.H. Chung, Seoul Nat. U., Seoul, Korea; S.R. In, Korea Advanced Energy Research Inst., Choong-Nam, Korea.
- 6X9 STABILITY CRITERION FOR LOCAL CONVECTIVE MODES IN PLASMAS ACCELERATED BY MAGNETIC FIELDS
J. Gratton, F.T. Gratton, and A.G. Gonzalez, U. Buenos Aires, Buenos Aires, Argentina.
- 6X10 ION EMISSION FROM A SMALL PF-MACHINE OPERATED WITH HIGHER REPETITION RATE
M. Sadowski, Sz. Brandt, J. Kucinski, E. Rydygier, and J. Zebrowski, Inst. for Nuclear Studies, Swierk, Poland.

Wednesday, June 3, 1987
2:00 P.M. (Potomac Room)

Poster Session 6Y: PLASMA CHEMISTRY AND PROCESSING II

- 6Y1 CORRELATION OF ELECTRON ENERGY DISTRIBUTION FUNCTION TO MECHANICAL PROPERTIES OF THIN POLYMER FILMS PREPARED BY PLASMA POLYMERIZATION
P.V. Narayanan, Penfield, NY.
- 6Y2 A LOW POWER, COMPACT, 2.5 cm, EFFICIENT MICROWAVE ION SOURCE
L. Mahoney, M. Dahimene, and J. Asmussen, Michigan State U., East Lansing, MI.
- 6Y3 MEASUREMENTS OF TRANSIENT SHEATHS AND RF AFFECTED PLASMA POTENTIAL
M.H. Cho, N. Hershkowitz, and T. Intrator, U. Wisconsin, Madison, WI.
- 6Y4 TOROIDAL dc PLASMA DISCHARGE FOR MATERIALS PROCESSING
J. Gahl, J. Lowell, M. Kristiansen, M. Hagler, and O. Ishihara, Texas Tech U., Lubbock, TX.
- 6Y5 A STATISTICAL ANALYSIS OF POLYSILICON ETCHING IN A CHLORINE-ARGON PLASMA
L.A. Tully and J.L. Shohet, U. Wisconsin, Madison, WI; J.A. Graham and R. Kopitzke, Hewlett-Packard Co., Fort Collins, CO.
- 6Y6 THEORY OF PLASMA ION IMPLANTATION FOR HARDENING METALS
J.R. Roth, U. Tennessee, Knoxville, TN.
- 6Y7 SHEATH PHYSICS AND MATERIALS SCIENCE RESULTS FROM RECENT PLASMA SOURCE ION IMPLANTATION EXPERIMENTS
J.R. Conrad, J.L. Radtke, R.A. Dodd, and F.J. Worzala, U. Wisconsin, Madison, WI.
- 6Y8 ELECTRON BEAM INDUCED ENHANCEMENT OF GASEOUS COMBUSTION REACTIONS
R.M. Gilgenbach, S.W. Bidwell, R. A. Bosch, M.L. Brake, J.E. Tucker, and T. Repetti, U. Michigan, Ann Arbor, MI.