Monday, May 23, 1983
8:30 A.M. (Champagne Ballroom)

INTRODUCTORY SESSION

INTRODUCTORY REMARKS
CHANGES AND ADENDA
IEEE FELLOWS AWARDS
IEEE SPECIAL AWARDS

Monday, May 23, 1983
9:30 A.M. (San Antonio Room)

Oral Session 1A - PLASMA HEATING AND CURRENT DRIVE
Session Chairperson - P. Colestock

1A1 PARAMETRIC INSTABILITIES OF ION-CYCLOTRON MODES IN AN INHOMOGENEOUS PLASMA
O.P. Sharma,[1] V.K. Tripathi,[2] and C.S. Liu, University of Maryland, College Park, Maryland
[1]Physics Department, Garhwal University, Pauri, India
[2]Physics Department, Indian Institute of Technology, New Delhi, India

1A2 CURRENT GENERATION BY ELECTRON CYCLOTRON WAVES IN QUASI PERPENDICULAR PROPAGATION
D. Farina, M. Lontano, R. Pozzoli, and S. Razzini, Instituto di Fisica del Plasma CNR-EURATOM, Milano, Italy

1A3 STUDIES OF CURRENT GENERATION BY HIGH FREQUENCY WAVES IN TOROIDAL GEOMETRY
T.M. Antonsen, Jr., University of Maryland, B. Hui and K.R. Chu, Naval Research Laboratory

1A4 EMISSION NEAR THE ELECTRON PLASMA FREQUENCY IN LOW DENSITY OH AND LHCD DISCHARGES
P. Efthimion, G. Taylor, V. Arunasalam, S. Bernabei, D. Boyd, A. Cavallo, T.K. Chu, W. Hooke, J. Hosea, J. Hovey, D. Hwang, F. Jobes, E. Meservey, E. Mazzucato, R. Motley, J. Stevens, H. Toyama, S. von Goeler, and R. Wilson, Princeton University, Princeton, New Jersey

1A5 EFFECTS OF INCREASING ω_{pe}/ω_{ce} ON CERENKOV AND ANOMALOUS DOPPLER RESONANCES AND LOWER HYBRID CURRENT DRIVE
T.K. Chu, S. Bernabei, W. Hooke, F. Jobes, J. Stevens, and S. von Goeler, Princeton University, Princeton, New Jersey

1A6 INVITED PAPER: RF EXPERIMENTS ON THE PLT TOKAMAK
J.R. Wilson, Princeton University, Princeton, New Jersey

1A7 INVITED PAPER; LOWER HYBRID CURRENT DRIVE AND HEATING EXPERIMENTS AT HIGH PLASMA DENSITIES ON ALCATOR C
J.J. Schuss, B. Lloyd, M. Porkolab, Y. Takase, S. Texter, R. Watterson, P. Bonoli, R. Englade, C. Fiore, R. Gandy, R. Granetz, M. Greenwald, D. Gwinn, B. Lipschultz, E. Marmar, S. McCool, D. Pappas, R. Parker, P. Pribyl, J. Rice, J. Terry, S. Wolfe, Plasma Fusion Center, M.I.T., Cambridge, Massachusetts

Monday, May 23, 1983
9:30 A.M. (Chenin Room)

Oral Session 1B - INTENSE ELECTRON AND ION BEAMS
Session Chairperson - A. J. Toepfer

1B1 INVITED PAPER: THE APPLICATION OF THE MAGNETICALLY INSULATED SPLITTER TO HIGH POWER ELECTRON BEAMS
J. Shannon, W. Clark, J. Pearlman, M. Wilkinson, G. Cooperstein,[1] S.A. Goldstein,[2] S.J. Stephanakis,[1] and W.F. Oliphant,[1] A. Wilson, E.M. Waisman,[3] Maxwell Laboratories, Inc., San Diego, California
[1]Naval Research Laboratories, Washington, District of Columbia
[2]Jaycor, Inc., Alexandria, Virginia
[3]S-CUBED, La Jolla, California

1B2 LOW IMPEDANCE RF ACCELERATORS FOR 10 kA ELECTRON BEAMS
S. Humphries Jr. and C.-S. Hwang, University of New Mexico, Albuquerque, New Mexico

1B3 ELECTRON ACCELERATION AND BETATRON CONDITION IN A HIGH CURRENT BETATRON
H. Ishizuka, B. Mandelbaum, A. Fisher, and N. Rostoker, University of California, Irvine, California

1B4 LASER SCATTERING DIAGNOSTICS FOR INTENSE RELATIVISTIC ELECTRON BEAM RESEARCH
O. Willi, H. Davis, and C. Ekdahl, Los Alamos National Laboratory, Los Alamos, New Mexico

1B5 LARGE AREA ELECTRON BEAM DIODE DEVELOPMENT
H. Helava, C.M. Gilman, R.M. Stringfield, T. Young, Physics International Company, San Leandro, California

1B6 EMITTER DOMINANCE IN A RING-SHAPED REB DIODE
E.M. Waisman, S-Cubed, La Jolla, California

1B7 RADIAL DYNAMICS OF AN ANNULAR REB PLASMA
A. Wilson, P.G. Steen, and E.M. Waisman, S-Cubed, La Jolla, California

1B8 INSTABILITY OF A MAGNETICALLY DIFFUSE PLASMA ANNULUS
P.G. Steen and A. Wilson, S-Cubed, La Jolla, California

1B9 LAMINAR FLOW FOR THE PLANAR CHARGE NEUTRALIZED ELECTRON BEAM DIODE
E.M. Waisman and D.E. Parks, S-Cubed, La Jolla, California

1B10 ION IMPLANTATION FOR MATERIAL MODIFICATION
M.D. Nahemow, Westinghouse Electric Research and Development Center, Pittsburgh, Pennsylvania

Monday, May 23, 1983
9:30 A.M. (Gamay Room)

Oral Session 1C - MAGNETOFLUID DYNAMICS
Session Chairperson - S. Way

1C1 DYNAMO ACTION IN A REVERSED FIELD PINCH
T. Yamagishi, GA Technologies Inc., San Diego, California

1C2 BLADED ROTOR FOR AN ACCELERATOR-MHD SYNCHRONOUS GENERATOR
P. Majumdar and K. Denno, New Jersey Institute of Technology, Newark, New Jersey

1C3 CONCEPTUAL DESIGN PRINCIPLES FOR THE MHD-INDUCTION GENERATOR
M. Islam and K. Denno, New Jersey Institute of Technology, Newark, New Jersey

1C4 DISTRIBUTION OF ELECTRIC FAULT CURRENTS IN MHD FARADAY GENERATORS
S.P. Kuo, E. Levi, and C.C. Liu, Polytechnic Institute of New York, Farmingdale, New York

1C5 A TWO-DIMENSIONAL MODEL FOR ANALYZING ELECTROMAGNETIC BEHAVIOR OF MHD GENERATORS
G.L. Nelson, Mountain States Energy, Inc. Butte, Montana

1C6 OSCILLATORY MHD FLOW PAST AN IMPULSIVELY STARTED POROUS PLATE
S.T. Revankar, Department of Engineering Physics, McMaster University, Hamilton, Ontario, Canada

1C7 EXPERIMENTAL STUDIES OF MHD POWER GENERATION AND DC TO AC INVERSION AT THE CDIF
L.C. Farrar, J.K. Koester,[1] R.J. Ferraro,[2] and E.R. Ray,[3] Mountain States Energy Inc., Butte, Montana
[1]Stanford University, Stanford, California
[2]Electric Power Research Institute, Palo Alto, California
[3]Westinghouse Electric Corporation, Pittsburgh, Pennsylvania

1C8 COAL COMBUSTION TECHNOLOGY FOR ADVANCED CYCLES
W.E. Young and J.A. Dilmore, Westinghouse R&D Center, Pittsburgh, Pennsylvania

1C9 RESULTS OF COMBUSTION DRIVEN INFLOW DISK GENERATOR EXPERIMENTS
T. Nakamura, W.E. Lear, and Y. Fang, Stanford University, Stanford, California

Monday, May 23, 1983
9:30 A.M. (San Diego Room)

Oral Session 1D - SPECIAL SESSION
Session Chairperson - I. Alexeff

Papers Presented by Newly Elected Fellow - 30 minutes each

1D1 INVITED TALK: APPLICATION OF DIGITAL TIME SERIES ANALYSIS TO PLASMA FLUCTUATION DIAGNOSTICS
E.J. Powers, Department of Electrical Engineering, University of Texas at Austin, Austin, Texas

1D2 INVITED TALK: THE ION-RING COMPACT TOROID CONCEPT -- ITS DEVELOPMENT AND OUTLOOK
H.H. Fleischmann, Cornell University

1D3 INVITED TALK: ADVANCES IN LASER FUSION RESEARCH
C. Yamanaka, Institute of Laser Engineering, Osaka University, Osaka, Japan

1D4 INVITED TALK: ONE-QUARTER OF A CENTURY ALONG WITH PLASMA SCIENCE
T. Sekiguchi, Department of Electrical Engineering, University of Tokyo, Tokyo, Japan

Monday, May 23, 1983
9:30 A.M. (Grand Ballroom)

Poster Session 1P - PLASMA DIAGNOSTICS

1P1 THE USE OF FISSION FOILS FOR PLASMA NEUTRON DIAGNOSTICS
E.B. Nieschmidt,[1] J.A. Isaacson,[2] and L.E. Samuelson, Princeton Plasma Physics Laboratory, Princeton University, Princeton, New Jersey
[1]On leave from EG&G Idaho, Inc., Idaho National Engineering Laboratory
[2]Department of Chemical Engineering, Princeton University

1P2 CURRENT PROFILE DIAGNOSTIC DEVELOPMENT ON TEXT USING THE ZEEMAN EFFECT
D.M. Thomas, J.F. Baur, E.S. Ensberg, and W.P. West, GA Technologies Inc., San Diego, California

1P3 STUDY OF SELF-FOCUSING ELECTRON BEAMS BY THE SPECTROSCOPIC METHOD
P.S.P. Wei, Boeing Aerospace Company, Seattle, Washington

1P4 A PACKAGED PYROMETER FOR HIGH TEMPERATURE GASES
P.H. Paul and S.A. Self, Stanford University, Stanford, California

1P5 STUDIES OF LASER-AIDED PLASMA DIAGNOSTICS
M. Akazaki and Laser-Aided Plasma Diagnostics Group, Kyushu University, Japan

1P6 SPECTROSCOPIC DETERMINATION OF ELECTRON TEMPERATURE OF ARGON PLASMA
V.V. Agashe and S.S. Tongaonkar, Department of Physics, University of Poona, Pune, India

1P7 ELECTRON TEMPERATURE DETERMINATION IN LTE AND NON-LTE PLASMAS
T.L. Eddy, Georgia Institute of Technology, Atlanta, Georgia

1P8 HIGH REPETITION THOMSON SCATTERING PROFILE MEASUREMENTS USING A NONIMAGING TECHNIQUE
A. Zigler, INESCO, Inc., La Jolla, California

1P9 A TWENTY CHANNEL IMAGING FIR INTERFEROMETER AND POLARIMETER
P. Young, W.A. Peebles, N.C. Luhmann Jr., D.B. Rutledge,[1] D.P. Neikirk,[1] and P. Tong,[1], UCLA, Los Angeles, California
[1]Cal Tech

1P10 TOKAMAK PLASMA DENSITY FLUCTUATION STUDIES USING A MULTICHANNEL SCATTERING APPARATUS
H. Park, W.A. Peebles, N.C. Luhmann Jr., and R.J. Taylor, University of California, Los Angeles, California

1P11 FAR FORWARD SCATTERING IN THE FAR-INFRARED
B.W. James, C.X. Yu, W.A. Peebles, and N.C. Luhmann Jr., University of California, Los Angeles, California

Monday, May 23, 1983
9:30 A.M. (Grand Ballroom)

Poster Session 1Q - PLASMA WAVES, INSTABILITIES, AND ANTENNAS (EXPERIMENT)

1Q1 SLOT ANTENNAS FOR ICRF HEATING
B.L. Koester, R.R. Parker, and B.D. Blackwell, Plasma Fusion Center, Massachusetts Institute of Technology, Cambridge, Massachusetts

1Q2 ELECTRIC AND MAGNETIC EXCITATION OF ICRF WAVES: EIGENMODES AND WAVE PACKETS
G.J. Greene and R.W. Gould, California Institute of Technology, Pasadena, California

1Q3 MEASUREMENTS OF THE EFFECT OF TOKAMAK MAGNETIC FIELD HELICITY ON LOWER HYBRID RESONANCE CONES
P.M. Bellan, Caltech, Pasadena, California

1Q4 HOT ELECTRON PRODUCTION IN MICROWAVE-PLASMA INTERACTION EXPERIMENT
Y. Nishida, M. Shimizu, and M. Yoshizumi, Department of Electrical Engineering, Utsunomiya University, Utsunomiya, Tochigi, Japan

1Q5 MEASUREMENTS OF HIGH FREQUENCY FLUCTUATIONS IN EBT
D.A. Rasmussen and D.B. Batchelor, Oak Ridge National Laboratory, Oak Ridge, Tennessee

1Q6 AXIAL PROFILES OF ELECTROSTATIC POTENTIAL AND ELECTRON NUMBER DENSITY IN A CLASSICAL PENNING DISCHARGE
R.J. Pastel, P.D. Spence, and J.R. Roth,[1] Department of Engineering Science and Mechanics, University of Tennessee, Knoxville, Tennessee
[1]Department of Physics

1Q7 LONGITUDINAL PROFILES OF ELECTROSTATIC POTENTIAL AND ELECTRON NUMBER DENSITY IN A MODIFIED PENNING DISCHARGE
B.I. Finkelstein, P.H Dehkordi, and J.R. Roth,[1] Department of Electrical Engineering, University of Tennessee, Knoxville, Tennessee
[1]Department of Physics

1Q8 REFLECTION OF ION ACOUSTIC SOLITON AT BOUNDARIES
Y. Nishida, T. Nagasawa, and Y. Ohshima, Department of Electrical Engineering, Ustunomiya University, Utsunomiya, Tochigi, Japan

1Q9 ON THE DIFFRACTION OF LINEAR AND NONLINEAR ION-ACOUSTIC WAVES
J.M. Bulson, E.F. Gabl, and K.E. Lonngren, The University of Iowa, Iowa City, Iowa

1Q10 TWO DIMENSIONAL ION-ACOUSTIC SOLITON RESONANT INTERACTION EXPERIMENTS
E.F. Gabl, J.M. Bulson, M. Khazei, and K.E. Lonngren, The University of Iowa, Iowa City, Iowa

1Q11 EXPERIMENTAL OBSERVATIONS OF SELF-SIMILAR PLASMA EXPANSIONS
C. Chan, N. Hershkowitz, A. Ferreira, S.T. Chun, T. Intrator, B. Nelson, A. Gillette, and K.E. Lonngren,[1] Nuclear Engineering Department, University of Wisconsin, Madison, Wisconsin
[1]Department of Electrical and Computer Engineering, University of Iowa, Iowa City, Iowa

1Q12 ABSOLUTE POWER SCALING MEASUREMENTS OF ELECTROMAGNETIC RADIATION AT $2\omega_{UH}$ GENERATED BY STEADY STATE COLLIDING ELECTRON BEAMS
T. Intrator, N. Hershkowitz, C. Chan, D. Diebold,[1] and E.L. Caraway, Nuclear Engineering Department, University of Wisconsin, Madison, Wisconsin
[1]Department of Physics, University of Wisconsin, Madison, Wisconsin

Monday May 23, 1983
9:30 A.M. (Grand Ballroom)

Poster Session 1R - MIRRORS AND EBT

1R1 MAGNET ALIGNMENT IN MFTF-B
K.I. Thomassen, D.E. Baldwin, and G.T. Yamaguchi, Lawrence Livermore National Laboratory, University of California, Livermore, California

1R2 HEATING AND PUMPING STUDIES IN THE END CELLS OF TANDEM-MIRROR REACTORS
R.S. Devoto, University of California, Lawrence Livermore National Laboratory, Livermore, California

1R3 CONFINEMENT OF ALPHA PARTICLES IN BUMPY TORI
M.A. Iskra, T.K. Samec, R.L. Miller,[1] and T. Kammash,[2] TRW Energy Research Center, Redondo Beach, California
[1]AMPC Inc.
[2]University of Michigan

1R4 PRELIMINARY NEUTRAL DENSITY MEASUREMENTS IN EBT USING A DIAGNOSTIC NEUTRAL BEAM
J.C. Glowienka, W.A. Davis, and D.W. Swain, Oak Ridge National Laboratory, Oak Ridge, Tennessee

1R5 OPERATION OF A PULSED MIRROR EXPERIMENT WITH ECH STARTUP
W.D. Getty, R.M. Gilgenbach, J. Booske, P.S. Jacobs, and D.G. Michelini, University of Michigan, Ann Arbor, Michigan

1R6 STABILITY OF A MAGNETIC CUSP
A. Sleeper, D. Baker, S. Garner, and P. Parks, GA Technologies Inc., San Diego, California

1R7 EFFECT OF SYNCHROTRON RADIATION ON THE ADVANCED FUELED FIELD-REVERSED MIRROR
S.K. Ho and C.K. Choi, Fusion Studies Lab., University of Illinois, Urbana, Illinois

Monday, May 23, 1983
9:30 A.M. (Grand Ballroom)

Poster Session 1S - HIGH POWER MICROWAVE GENERATION

1S1 STUDIES OF GAIN, FEEDBACK, AND EFFICIENCY ENHANCEMENT IN A MILLIMETER-WAVE FREE-ELECTRON LASER
S.H. Gold, W.M. Black, V.L. Granatstein, H.P. Freund,[1] P.C. Efthimion,[2] and A.K. Kinkead, Naval Research Laboratory, Washington, District of Columbia
[1]Science Applications, Inc., McLean, Virginia
[2]Plasma Physics Laboratory, Princeton University, Princeton, New Jersey

1S2 FREE ELECTRON LASERS WITH A REALIZABLE WIGGLER AND AXIAL GUIDE FIELD
H.P. Freund,[1] S. Johnston,[2] and P. Sprangle, Naval Research Laboratory, Washington, District of Columbia
[1]Science Applications, Inc., McLean, Virginia
[2]Plasma Physics Laboratory, Columbia University, New York, New York

1S3 NONLINEAR ANALYSIS OF FREE-ELECTRON LASER AMPLIFIERS WITH AXIAL GUIDE FIELDS
H.P. Freund,[1] Naval Research Laboratory, Washington, District of Columbia
[1]Science Applications, Inc., McLean, Virginia

1S4 A COMPARISON OF THEORETICAL MODELS AND PHYSICAL MECHANISMS OF THE FREE ELECTRON LASER INSTABILITY
J.A. Davies, R.C. Davidson, and G.L. Johnston, Massachusetts Institute of Technology, Cambridge, Massachusetts

1S5 EFFECTS OF NONLINEAR OSCILLATORY PARTICLE MOTION ON LOW-GAIN FREE ELECTRON LASER
G.L. Johnston, and R.C. Davidson, Massachusetts Institute of Technology, Cambridge, Massachusetts

1S6 NUMERICAL RESULTS OF 2-D PULSE PROPAGATION IN THE FREE ELECTRON LASER OSCILLATOR
C.-M. Tang and F. Sprangle, Naval Research Laboratory, Washington, District of Columbia

1S7 DISPERSION CHARACTERISTICS OF AN FEL WITH A LINEARLY POLARIZED WIGGLER AND AXIAL GUIDE FIELD
Y.Z. Yin and G. Bekefi, Massachusetts Institute of Technology, Cambridge, Massachusetts

1S8 FREE ELECTRON LASER EXPERIMENTS USING A LONG PULSE INDUCTION LINAC
J.A. Pasour and R. Lucey,[1] Naval Research Laboratory, Washington, District of Columbia
[1]Pulse Sciences, Inc., San Leandro, California

1S9 THREE-DIMENSIONAL THEORY OF THE UBITRON IN THE COLLECTIVE REGIME
H.P. Freund[1] and A.K. Ganguly, Naval Research Laboratory, Washington, District of Columbia
[1]Science Applications, Inc., McLean, Virginia

Monday, May 23, 1983
2:00 P.M. (San Antonio Room)

Oral Session 2A - LASER PLASMA INTERACTION AND MATERIAL RESPONSE TO INTENSE LASER BEAMS
Session Chairperson - N. Luhmann

2A1 APPLICATIONS OF A SELF CONSISTENT RESONANCE ABSORPTION PROFILE (S.C.R.A.P.) MODEL
R. Dragila, M.D.J. Burgess, B. Luther-Davies, K.A. Nugent, A. Perry, and G.J. Tallents, Department of Engineering Physics, Research School of Physical Sciences, The Australian National University, Canberra, Australia

2A2 STIMULATED RAMAN SCATTERING IN A THETA PINCH
B. Amini and F.F. Chen, UCLA, Los Angeles, California

2A3 INVITED PAPER: COMPARISON OF LASER-PLASMA INTERACTION AT $\lambda = 1.3$ μm and 0.44 μm.
A.G.M. Maaswinkel, G.P. Banfi, K. Eidmann, E. Fill, R. Sigel, G.D. Tsakiris, and S. Witkowski, Max-Planck-Institut für Quantenoptik, D-8046 Garching, FRG

2A4 FAST ION SPECTRA FROM CO_2 LASER PRODUCED PLASMAS
S.J. Gitomer, R.D. Jones, F. Begay, A.W. Ehler, and J. Kephart, Los Alamos National Laboratory, Los Alamos, New Mexico

2A5 ONE-HALF GIGA ELECTRON VOLT TANTALUM IONS FROM A CO_2 LASER PRODUCED PLASMA
A.W. Ehler and L. Foreman, University of California, Los Alamos National Laboratory, Los Alamos, New Mexico

2A6 AN EXPERIMENTAL AND THEORETICAL STUDY OF LASER IONIZATION BASED ON RESONANCE SATURATION
M.A. Cappelli, P.G. Cardinal, H. Herchen, R.M. Measures, and S.K. Wong, Institute for Aerospace Studies, University of Toronto, Downsview, Ontario, Canada

2A7 MODEL OF VACUUM IMPULSE COUPLING AT LOW LASER INTENSITIES
F.S. Felber, Western Research Corporation, San Diego, California

2A8 THERMAL COUPLING AND DAMAGE MECHANISMS OF LASER RADIATION ON SELECTED MATERIALS
F. Schwirzke, W.F. Jenkins, and W.R. Schmidt, Naval Postgraduate School, Monterey, California

2A9 A NEW SHOCK WAVE AND ITS APPLICATION TO INERTIAL CONFINEMENT FUSION
R.D. Jones, B. Bezzerides, J. Saltzman, and D.H. Aldrich, Los Alamos National Laboratory, Los Alamos, New Mexico

Monday, May 23, 1983
2:00 P.M. (Chenin Room)

Oral Session 2B - INTENSE ELECTRON AND ION BEAMS
Session Chairperson - S. A. Goldstein

2B1 INVITED PAPER: INTENSE-LIGHT-ION BEAM DIODE RESEARCH AT NRL
S.J. Stephanakis, Naval Research Laboratory, Washington, D.C.

2B2 INVITED PAPER: PBFAI ION DIODE EXPERIMENTS
P.A. Miller, E.J.T. Burns, J.C. Crow, P.L. Dreike, C. W. Mendell, Jr., L.P. Mix, J.P. Quintenz, S.E. Rosenthal, D.B. Seidel, S.A. Slutz, J.P. VanDevender

2B3 ION BEAM GENERATION IN INVERSE PINCH ION DIODE
S. Miyamoto, K. Imasaki, M. Saito, T. Ozaki, S. Higaki, A. Yoshinouch, S. Sakabe, S. Nakai, and C. Yamanaka, Institute of Laser Engineering, Osaka University, Yamada-Oka Suita, Osaka, Japan

2B4 TRANSVERSE ELECTRIC FIELDS INFERRED FROM ELECTRON LOSSES AND ION BEAM DYNAMICS IN A MAGNETICALLY INSULATED DIODE
Y. Maron, C. Litwin, and D.A. Hammer, Cornell University, Ithaca, New York

2B5 COMPARISON OF DIODE VOLTAGE AND ION ENERGY FOR AN INTENSE PULSED ION-BEAM DIODE
F.C. Young, S.J. Stephanakis, J.R. Boller, and S.A. Goldstein,[1] Naval Research Laboratory, Washington, District of Columbia
[1]Jaycor, Inc., Alexandria, Virginia

2B6 SCALING EXPERIMENTS ON PLASMA OPENING SWITCHES FOR INDUCTIVE ENERGY STORAGE APPLICATIONS
R.A. Meger[1], J.R. Boller, R.J. Commisso,[1] G. Cooperstein, S.A. Goldstein,[1] J.M. Neri,[1] P.F. Ottinger,[1] T.J. Renk,[2] J.D. Shipman Jr,[3] S.J. Stephanakis, F.C. Young, and B.V. Weber,[1] Naval Research Laboratory, Washington, District of Columbia
[1]Jaycor, Inc., Alexandria, Virginia
[2]NRL/NRC Cooperative Research Associate
[3]Sachs/Freeman Associates, Bowie, Maryland

2B7 THEORETICAL MODELING OF THE PLASMA OPENING SWITCH
P.F. Ottinger,[1] S.A. Goldstein,[1] R.A. Meger,[1] and S. McDonald, Naval Research Laboratory, Washington, District of Columbia
[1]Jaycor, Inc., Alexandria, Virginia
[2]University of Maryland, College Park, Maryland

2B8 A NEW INTERPRETATION OF VIRTUAL CATHODE OSCILLATIONS
A. Kadish, Los Alamos National Laboratory, Advanced Concepts and Plasma Applications Group, Los Alamos, New Mexico

2B9 INSTABILITY THRESHOLD FOR A CALUTRON (ISOTOPE SEPARATOR) WITH ONLY ONE ISOTOPE SPECIES
I. Alexeff, Electrical Engineering Department, University of Tennessee, Knoxville, Tennessee

2B10 MICROWAVE AND UHF PLASMA DISK ION SOURCE
J. Root and J. Asmussen, Michigan State University, East Lansing, Michigan

Monday, May 23, 1983
2:00 P.M. (Gamay Room)

Oral Session 2C - COMPACT TOROIDS AND REVERSE FIELD PINCH
Session Chairperson - T. Tamano

2C1 HIGH CURRENT TOROIDAL PINCH EXPERIMENTS IN OHTE
R. Goforth, T. Carlstrom, C. Chu, G. Jackson, R. LaHaye, T. Ohkawa, M. Schaffer, T. Tamano, and P. Taylor, GA Technologies Inc., San Diego, California

2C2 ENERGY CONFINEMENT MODELS FOR RFP'S
K.A. Werley and G.H. Miley, Fusion Studies Lab., University of Illinois, Urbana, Illinois

2C3 THE CONSTRUCTION AND FIRST OPERATION OF THE S-1 SPHEROMAK
R.A. Ellis Jr., A. Janos, S. Jardin, J. Joyce, D. McNeil, C. Munson, S. Paul, F. Wysocki, and M. Yamada, Princeton University Plasma Physics Laboratory, Princeton, New Jersey

2C4 INVITED PAPER: CONFINEMENT SCALING, EQUILIBRIUM, AND STABILIZATION STUDIES IN FRX-C
R.E. Siemon, W.T. Armstrong, R.R. Bartsch, R.E. Chrien, J.C. Cochrane, R.W. Kewish, P.L. Klingner, R.K. Linford, K.F. McKenna, D.J. Rej, E.G. Sherwood, and M. Tuszewski, Los Alamos National Laboratory, Los Alamos, New Mexico

2C5 THOMSON SCATTERING MEASUREMENTS IN THE FRX-C DEVICE
D.J. Rej, W.T. Armstrong, R.R. Bartsch, R.E. Chrien, J.C. Cochrane, R.W. Kewish, P.L. Klingner, K.F. McKenna, E.G. Sherwood, R.E. Siemon, and M. Tuszewski, Los Alamos National Laboratory, Los Alamos, New Mexico

2C6 INVITED PAPER: MEASUREMENTS AND MODEL OF THE COUPLED PARTICLE LOSS AND FLUID ACCELERATION IN THE BOUNDARY LAYER OF THE ZT-40M REVERSED-FIELD PINCH
A.R. Jacobson, M.G. Rusbridge,[1] and L.C. Burkhardt, Los Alamos National Laboratory, Los Alamos, New Mexico
[1]University of Manchester Institute of Science and Technology, United Kingdom

Monday, May 23, 1983
2:00 P.M. (San Diego Room)

Oral Session 2D - HIGH POWER MICROWAVE GENERATION
Session Chairperson - R. Shefer

2D1 INVITED PAPER: HIGH POWER GYROTRONS FOR FUSION APPLICATIONS
A.W. Fliflet, Y. Carmel,[1] K.R. Chu, D. Dialetis,[2] R. Seeley,[1] M.E. Read, and V.L. Granatstein, Naval Research Laboratory, Washington, District of Columbia
[1]Jaycor, Inc., Alexandria, Virginia
[2]Science Applications, Inc., McLean, Virginia

2D2 AN EXPERIMENTAL STUDY OF A QUASI-OPTICAL GYROTRON FOR FUSION APPLICATIONS
S.Y. Park,[1] M.E. Read, R. Seeley,[2] A. Fliflet, G.L. Bergeron,[2] K.J. Kim, and V.L. Granatstein, Naval Research Laboratory, Washington, District of Columbia
[1]Omega-P, New Haven, Connecticut
[2]Jaycor, Inc., Alexandria, Virginia

2D3 A 94 GHz, 1 MEGAWATT GYROTRON
K. Busby, G. Bergeron,[1] A. Dudas,[1] A.W. Fliflet, K. Killian, M. NaGurney,[2] J. Condon, M. Rhinewine, and M. Read, Naval Research Laboratory, Washington, District of Columbia
[1]Jaycor, Alexandria, Virginia
[2]Mission Research Corporation, Alexandria, Virginia

2D4 DEMONSTRATION OF A TWO STAGE BACKWARD WAVE OSCILLATOR/FREE ELECTRON LASER
Y. Carmel[1] and V.L. Granatstein, Naval Research Laboratory, Washington, District of Columbia
[1]University of Maryland, College Park, Maryland

2D5 STEADY-STATE OPERATION OF THE ORBITRON FREE-ELECTRON MASER
I. Alexeff, F. Dyer, H.F. Karimy, and W. Nakonieczny, Electrical Engineering Department, University of Tennessee, Knoxville, Tennessee

2D6 MICROWAVE GENERATION BY VIRTUAL CATHODES AND REFLEXING SYSTEMS
T.J.T. Kwan and L.E. Thode, Los Alamos National Laboratory, Advanced Concepts and Plasma Applications Group, Los Alamos, New Mexico

2D7 INFLUENCE OF NON-UNIFORM MAGNETIC FIELD ON THE CUSPTRON MICROWAVE AMPLIFIER
H.S. Uhm, Naval Surface Weapons Center, Silver Spring, Maryland

2D8 60 GHz GYROTRON OSCILLATOR
W.J. DeHope, P.E. Ferguson, S.L. Hart, V.A. Matranga, J.J. Sandoval, M.J. Schmitt, and J.J. Tancredi, Hughes Aircraft Company, Electron Dynamics Division, Torrance, California

Monday, May 23, 1983
2:00 P.M. (Grand Ballroom)

Poster Session 2P - PLASMA DIAGNOSTICS

2P1 A PHOTON-COUNTING DETECTOR FOR DOPPLER WIDTH ION TEMPERATURE MEASUREMENTS
R. Benjamin, A. Nudelfuden, and H.W. Moos, The Johns Hopkins University, Baltimore, Maryland

2P2 TIME RESOLVING GRAZING INCIDENCE SPECTROGRAPH WITH SPATIAL RESOLUTION FOR PLASMA FUSION DIAGNOSTICS
A. Nudelfuden, R. Solanki, and H.W. Moos, The Johns Hopkins University, Baltimore, Maryland

2P3 PRELIMINARY RESULTS FROM THE DOUBLET III CRYSTAL X-RAY SPECTROMETER
A. Lieber, S. Wojtowicz, and W. West, GA Technologies Inc., San Diego, California

2P4 XPS FOR TIME RESOLVED X-RAY SPECTROSCOPY OF PLASMAS
R.P. Gupta and J. Brown,[1] Nat. Res. Council, Ottawa, Ontario, Canada
[1]EMR, Ottawa, Ontario, Canada

2P5 DETECTION OF LOW-ENERGY X-RAYS USING SELF-SCANNING PHOTODIODE ARRAYS
J.L. Guttman, B.A. Watson, and W.C. Jordan, Lockheed Palo Alto Research Laboratory, Palo Alto, California

2P6 CAMRET: A CAMAC BASED RETICON CONTROLLER FOR VUV/VIS SPECTROSCOPY
D.F. Register, S.E. Walker, and T.J. Dolan,[1] Phillips Petroleum Co., Bartlesville, Oklahoma
[1]University of Missouri-Rolla, Rolla, Missouri

2P7 A GRATING SPECTROMETER FOR MILLIMETER WAVES
W.M. Bollen, R.H. Jackson, D.J. Sullivan, and D.E. Voss, Mission Research Corporation, Alexandria, Virginia

2P8 MODIFICATION OF THE DOUBLET III MICROWAVE INTERFEROMETER
E.S. Fairbanks and D.R. Baker, GA Technologies Inc., San Diego, California

2P9 INSTALLATION OF THE HEAVY ION BEAM PROBE ON ISX-B
J. Mathew, G.A. Hallock, J.C. Forster, J.F. Lewis, R.L. Hickok, and W.C. Jennings, Rensselaer Polytechnic Institute, Troy, New York

2P10 EBT HEAVY ION BEAM PROBE UPGRADE
L. Solensten, J.R. Goyer, G.A. Hallock, K.A. Connor, and R.L. Hickok, Rensselaer Polytechnic Institute, Troy, New York

2P11 RADIAL CHARGE DISTRIBUTION OF THE HEAVY ION FUSION CESIUM ION BEAM DERIVED FROM ELECTRON BEAM PROBE MEASUREMENTS
M. Lampel, Lawrence Berkeley Laboratory, University of California, Berkeley, California

2P12 AN OPTICAL FIBER COUPLED STREAK CAMERA SYSTEM FOR MULTICHANNEL RECORDING OF SIMULTANEOUS EMISSION FROM A SINGLE PLASMA PRODUCING EVENT
T.H. Tan and A.H. Williams, University of California, Los Alamos National Laboratory, Los Alamos, New Mexico

Monday, May 23, 1983
2:00 P.M. (Grand Ballroom)

Poster Session 2Q - PLASMA WAVES, INSTABILITIES, AND ANTENNAS (THEORY)

2Q1 THE KINETIC THEORY OF NONSYMMETRIC WAVES IN BOUNDED PLASMA
I.H. Peneva, A.N. Kondratenko,[1] and I. Sarhad,[1] Higher Pedagogical Inst., Shumen, Bulgaria
[1]Harkov, USSR

2Q2 REFLECTION OF AN ELECTROMAGNETIC WAVE FROM A SUDDENLY CREATED PLASMA HALF-SPACE
D. Kalluri and R.C. Prasad, Department of Electrical Engineering, Birla Institute of Technology, Mesra, Ranchi, India

2Q3 REFLECTION OF ION ACOUSTIC WAVES IN A DENSITY GRADIENT
I. Ibrahim and H.H. Kuehl, University of Southern California, Los Angeles, California

2Q4 EFFECT OF PLASMA BOUNDARY ON SELF EXCITED ION OSCILLATIONS
V.V Agashe, and M.H. Ghoranneviss, Department of Physics, University of Poona, Poona-7 India

2Q5 TEARING MODES BEHAVIOUR IN HIGH BETA PLASMAS WITH A RESISTIVE RIGID WALL
G.F. Nalesso, Instituto di Elettrotecnica ed Elettronica, Universita di Padova, Padova, Italy

2Q6 INSTABILITY IN A TWO-ION PLASMA WITH MASS-RELATED ION DRIFT
I.M.A. Gledhill and M.A. Hellberg, University of Natal, Durban, South Africa

2Q7 FILAMENTATION INSTABILITY OF ION ACOUSTIC WAVES DRIVEN BY A RELATIVISTIC ELECTRON BEAM
H. Lee and M.E. Jones, Advanced Concepts and Plasma Applications Group, Los Alamos National Laboratory, Los Alamos, New Mexico

2Q8 SPACE-TIME EVOLUTION OF 1-D ELECTROSTATIC INSTABILITIES
D.S. Lemons and M.E. Jones, Advanced Concepts and Plasma Applications Group, Los Alamos National Laboratory, Los Alamos, New Mexico

2Q9 GROWTH RATES OF PARAMETRIC INSTABILITIES DRIVEN BY TWO PUMP WAVES
J. Milovich, B. Fried, and G. Morales, Department of Physics, University of California, Los Angeles, California

2Q10 VELOCITY DIFFUSION AND STOCHASTIC ACCELERATION OF CHARGED PARTICLES IN TURBULENT ELECTRIC FIELDS
O. Ishihara and A. Hirose, Department of Physics, University of Saskatchewan, Saskatoon, Canada

2Q11 SPECTRUM OF STRONG LANGMUIR PLASMA TURBULENCE: RANDOMLY LOCALIZED SOLITON BLOBS, PELLET FUSION, LASER-RELATIVISTIC ELECTRON BEAM PLASMA HEATING
E. Siegel, San Francisco, California

2Q12 STRONG PLASMA TURBULENCE EQUIVALENCE TO CONDENSED MATTER INDUCED ANDERSON LOCALIZATION: TURBULENCE AS GENERALIZED-DISORDER
E. Siegel, San Francisco, California

2Q13 PLASMON (LANGMUIR) CONDENSATION VIA SUPERSONIC SOLITONS (SPIKONS), SUBSONIC SOLITONS AND CAVITON S.C.F. COHERENT NONLINEAR DYNAMIC MODES IN STRONG LANGMUIR TURBULENCE: MODULATIONAL INSTABILITY VIA NONLINEAR LANDAU DAMPING AND ION-SOUND EMISSION
E. Siegel, San Francisco, California

Monday, May 23, 1983
2:00 P.M. (Grand Ballroom)

Poster Session 2R - TOKAMAKS

2R1 VARIATIONS IN HEATING QUALITY WITH NEUTRAL BEAMS IN PLT
J.D. Strachan and H. Solswitch, Plasma Physics Laboratory, Princeton University, Princeton, New Jersey

2R2 CHARACTERISTICS OF BEAM HEATED EXPANDED BOUNDARY DIVERTOR DISCHARGES
N. Ohyabu, R.D. Stambaugh, J.C. DeBoo, S. Ejima, T.W. Petrie, E.J. Strait and Doublet III Group, GA Technologies Inc., San Diego, California

2R3 OBSERVATIONS OF MHD ACTIVITY IN DOUBLET III DIVERTOR DISCHARGES
E.J. Strait, G.L. Jahns, R.D. Stambaugh, and J.K. Lee GA Technologies Inc., San Diego, California

2R4 HIGH ENERGY NEUTRAL FLUX SPECTRA IN DOUBLET III
C.J. Armentrout, D.P. Schissel, G. Bramson, GA Technologies Inc., San Diego, California

2R5 EQUILIBRIUM AND STABILITY RESULTS FROM THE HIGH BETA TOKAMAK, TORUS II
F.M. Levinton, M. Machida,[1] G.A. Navratil, and A. Grossman, Columbia University, New York, New York
[1]Univ. Estadual, Campinas, Brazil

2R6 OBSERVATION OF NONLINEAR MODE COUPLING OF A LOW FREQUENCY MHD OSCILLATION IN TEXT
S.B. Kim, E.J. Powers, T.P. Kochanski, J.A. Snipes, and G.R. Joyce, University of Texas at Austin, Austin, Texas

2R7 INTERNAL AND EXTERNAL MHD MODES IN LT-4
H. Kuwahara, A.D. Cheetham, S.M. Hamberger, G.R. Hogg,[1] A.H. Morton, and L.E. Sharp, The Australian Nat. Univ., Canberra, Australia
[1]AAEC Lucas Heights Research Laboratories, Sutherland, New South Wales, Australia

2R8 EDGE TURBULENCE IN THE PRETEXT TOKAMAK
S.J. Levinson, J.M. Beall, E.J. Powers, and R.D. Bengtson, University of Texas at Austin, Austin, Texas

2R9 X-RAY SPECTRA FOR 10 keV $< h\nu <$ 100 keV FROM THE ALCATOR C TOKAMAK
J.E. Rice, E. Källne,[1] and J. Källne,[1] Massachusetts Institute of Technology, Cambridge, Massachusetts
[1]S.A.O., Cambridge, Massachusetts

2R10 THE SOURCE OF HEAVY IMPURITIES IN THE ALCATOR C TOKAMAK
J.E. Rice and E.S. Marmar, Massachusetts Institute of Technology, Cambridge, Massachusetts

2R11 EDDY CURRENT MODELLING AND POLOIDAL FIELD PENETRATION IN TFTR
D.I. Brown, M.G. Bell, and J. Coonrod, Princeton University, Princeton, New Jersey

Tuesday, May 24, 1983
8:30 A.M. (Champagne Ballroom)

REVIEW PAPER

Chairperson, G. COOPERSTEIN

J. PACE VANDEVENDER
SANDIA NATIONAL LABORATORIES
ALBUQUERQUE, NEW MEXICO

"LIGHT ION BEAM FUSION; DARK HORSE OR FRONT RUNNER?"

Tuesday, May 24, 1983
9:30 A.M. (San Antonio Room)

Oral Session 3A - ULTRAFAST Z-PINCHES
Session Chairperson - J. Degman

3A1 DIODE CLOSURE IN BLACKJACK 5'
M. Friedman and A. Wilson, S-Cubed, La Jolla, California

3A2 MEASUREMENTS OF THE X-RAY EMISSION FROM IMPLODED ARGON PLASMAS
R. Richardson, W. Clark, M. Wilkinson, M. Gersten, J. Rauch, J. Riordan, and J. Pearlman, Maxwell Laboratories, Inc., San Diego, California

3A3 GAS PUFF EXPERIMENTS ON PIXI-1
S. Wong, J. Fockler, J. Glazo, R. Huff, G. James, Physics International Company, San Leandro, California

3A4 INVITED PAPER: ZAPP, Z-PINCH ATOMICS PHYSICS PROJECT
R. J. Fortner, Lawrence Livermore National Laboratories, Livermore, California

3A5 SAUSAGE MODE OF A HIGH DENSITY Z-PINCH
N.R. Pereira and N. Rostoker, Maxwell Laboratories, San Diego, CA

3A6 HIGH EXPLOSIVE DRIVEN PLASMA OPENING SWITCHES
A.E. Greene, J.H. Goforth, J.H. Brownell, T.A. Oliphant, R.L. Bowers, and D.L. Weiss, Los Alamos National Laboratory, Los Alamos, New Mexico

3A7 INERTIALLY STABILIZED THERMONUCLEAR Z-PINCH
F. Winterberg, Desert Research Institute, University of Nevada System, Reno, Nevada

3A8 NEUTRON PRODUCTION IN CYLINDRICAL TARGETS DRIVEN BY FAST PLASMA LINERS
J.S. Buff, Mission Research Corporation, Albuquerque, New Mexico

Tuesday, May 24, 1983
9:30 A.M. (Chenin Room)

Oral Session 3B - PLASMA FOCUS
Session Chairperson - K. Ware

3B1 INERTIAL CONFINEMENT FUSION BY IMPLOSION AND COMPRESSION OF MAGNETO-VORTEX RINGS
F. Winterberg, Desert Research Institute, University of Nevada System, Reno, Nevada

3B2 MEASUREMENTS OF IONS PRODUCED BY A CURRENT CHARGED TRANSMISSION LINE WITH PLASMA FOCUS OPENING SWITCH
M.J. Rhee and R.F. Schneider, Laboratory for Plasma and Fusion Energy Studies, University of Maryland, College Park, Maryland

3B3 PRELIMINARY STUDIES OF THE PLASMA FOCUS AS AN OPENING SWITCH
F. Venneri and G. Gerdin, Fusion Studies Lab., Nuclear Engineering Program, University of Illinois, Urbana, Illinois

3B4 IMPROVED CATHODES FOR A DENSE PLASMA FOCUS
R.A. Hill, Sandia National Laboratories, Albuquerque, New Mexico

3B5 INVITED PAPER: PLASMA FOCUS IN CHINA
Yang Jinji, Department of Electrical Engineering, Tsinghua University, Beijing, China

3B6 INVESTIGATION OF CONNECTIONS BETWEEN THE PLASMA COLUMN EVOLUTION AND THE NEUTRON EMISSION IN THE PLASMA-FOCUS DEVICE
S. Czekaj, S. Denus, A. Kasperczuk, R. Miklaszewski, M. Paduch, S. Sledzinski, K. Tomaszewski, J. Wolski, and Z. Wereszczynski, S. Kaliski Institute of Plasma Physics and Laser Microfusion, Warsaw, Poland

Tuesday, May 24, 1983
9:30 A.M. (Gamay Room)

Oral Session 3C - PLASMA WAVES, INSTABILITIES, AND ANTENNAS
Session Chairperson - M. P. Bachynski

3C1 ELECTRON DENSITY MEASUREMENTS OF HIGH PRESSURE ARGON SURFACE WAVE PLASMAS
M. Brake, M. Peters, J. Rogers, J. Asmussen, and R. Kerber, College of Engineering, Michigan State University, East Lansing, Michigan

3C2 STRIP SIMULATION OF WAVEGUIDE AND CAVITY FILLED WITH LOSSLESS PLASMA
D. Kalluri, R. Prasad, and M.V.S. Rao, Birla Institute of Technology, Mesra, Ranchi, India

3C3 RADIATED PLASMA WAVES FROM MODULATED CHARGED PARTICLE BEAMS
T. Ohnuma and T. Wanatabe,[1] Department of Electrical Engineering, Tohoku University, Sendai, Japan
[1]Institute for Fusion Theory, Hiroshima University, Hiroshima, Japan

3C4 RADIATION OF A MAGNETIC RING SOURCE ENCIRCLING A DRIFTING PLASMA COLUMN
K. Nakagawa, Department of Electronics, Okayama University of Science, Okayama, Japan

3C5 WAVE AMPLITUDES AND WAVE FRONTS OF RF-ENERGY IN AN INHOMOGENEOUS MAGNETOPLASMA
T. Ohnuma and T. Wanatabe,[1] Department of Electrical Engineering, Tohoku University, Sendai, Japan
[1]Institute for Fusion Theory, Hiroshima University, Hiroshima, Japan

3C6 THE STRONG TURBULENCE EQUATIONS DERIVED FROM KINETIC THEORY AND THE COLLAPSE DYNAMICS
He Xian-Tu, Institute of Atomic Energy, Academia Sinica, Beijing, China

3C7 EXCITATION OF STREAMING TEARING MODE
T. Sato,[1] U. Basu,[2] and B. Dasgupta, Department of Physics, Southern Illinois University, Carbondale, Illinois
[1]Institute for Fusion Theory, Hiroshima University, Hiroshima, Japan
[2]State Bank of India, Calcutta, India

3C8 PLASMA WAVE INSTABILITIES AS INVERSE ANDERSON LOCALIZATION: MAGNETOPLASMA BERNSTEIN MODE-DRIFT WAVE AND BERNSTEIN MODE-ION ACOUSTIC WAVE HYBRIDIZATION
E. Siegel, I. Cook,[1] C. Lashmore-Davies,[1] and J.J. Sanderson,[2] San Francisco, California
[1]Culham Laboratory, UKAEA, Abingdon, Berks, United Kingdom
[2]University of St. Andrews, St. Andrews, Fife, Scotland

3C9 LANDAU DAMPING IN PLASMAS AS GENERALIZED-(VELOCITY)-DISORDER INDUCED INVERSE ANDERSON LOCALIZATION
E. Siegel, I. Cook,[1] and C. Lashmore-Davies,[1] San Francisco, California
[1]Culham Laboratory, UKAEA, Abingdon, Berks, United Kingdom

3C10 INVITED PAPER: ANOMALOUS $\vec{k}$-SPECTRUM IN CURRENT DRIVEN ION-ACOUSTIC INSTABILITIES
A. Hirose, Department of Physics, University of Saskatchewan, Sask. Canada

Tuesday, May 24, 1983
9:30 A.M. (San Diego Room)

Oral Session 3D - NEUTRAL BEAMS FOR FUSION RESEARCH
Session Chairperson - J. Fink

3D1 NEUTRAL BEAM HEATING AND PLASMA IMPURITY CONTROL FOR TOKAMAK FUSION REACTORS
B.M. Ma, Department of Nuclear Engineering and Engineering Research Institute, Iowa State University, Ames, Iowa

3D2 EFFECTIVE MASS NUMBER OF A MULTICOMPONENT ION BEAM
J. Fasolo, GA Technologies Inc., San Diego, California

3D3 ION BEAM EXTRACTION BY OVER-ACCELERATION METHOD
T. Sugawara and K. Hayashi, Toshiba Research and Development Center, Kawasaki, Japan

3D4 CESIUM TRANSPIRATION THROUGH A NEGATIVE-ION FORMING ELECTRODE
J.H. Fink, Negion, Inc., on assignment at the Lawrence Livermore National Laboratory, University of California, Livermore, California

Tuesday, May 24, 1983
9:30 A.M. (Grand Ballroom)

Poster Session 3P - PLASMA HEATING AND CURRENT DRIVE

3P1 A SADI NUMERICAL SCHEME FOR THE SOLUTION OF THE 2-D FOKKER-PLANCK EQUATION
M. Shoucri, V. Krapchev,[1] and A. Bers,[1] Groupe Tokamak de Varennes, Quebec, Canada
[1]Plasma Fusion Center, MIT, Massachusetts

3P2 ION CYCLOTRON HEATING AND ITS EFFECT ON PARTICLE ORBITS IN ATF
D.J. Hoffman, A.C. England, O.C. Eldridge, R.H. Fowler, T.C. Jernigan, J.H. Harris, and J.F. Lyon, Oak Ridge National Laboratory, Oak Ridge, Tennessee

3P3 TOKAMAK WAVE COUPLING AND HEATING IN THE ICRF
H. Romero, J. Scharer, and R. Sund, University of Wisconsin, Madison, Wisconsin

3P4 ENHANCEMENT OF BEAM CURRENT DRIVE BY ICRH WAVES
M. Cox and D.F.H. Start, Culham Laboratory, Euratom/UKAEA Fusion Association, Abingdon, Oxon, United Kingdom

3P5 FAST ALFVÉN WAVE PROPAGATION AND DAMPING IN THE TEXAS TECH TOKAMAK
P.D. Coleman, M.O. Hagler, M. Kristiansen, and R. Kluge,[1] Department of Electrical Engineering, Texas Tech University, Lubbock, Texas
[1]Princeton Plasma Physics Laboratory, Princeton, New Jersey

3P6 EXPERIMENTAL OBSERVATION OF FAST-MAGNETOSONIC WAVES BETWEEN THE FUNDAMENTAL AND SECOND HARMONIC ION CYCLOTRON FREQUENCIES IN THE PLT TOKAMAK
H.R. Thompson Jr., J.C. Hosea, and J.R. Wilson, Princeton University, Princeton, New Jersey

3P7 RECENT RESULTS ON ICRF HEATING ON PLT
J.R. Wilson, B. Denne, E. Hinnov, J.C. Hosea, D. Hwang, D. Manos, E. Mazzucato, S. Suckewer, A. Semet, H. Toyama, and B. Stratton,[1] Princeton University, Princeton, New Jersey
[1]Johns Hopkins University

3P8 SELECTIVE HEATING AND SEPARATION OF ISOTOPES IN A METALLIC PLASMA
P. Moffa, D. Cheshire, B. Flanders, R. Myer, W. Robinette, J. Thomson, and S. Young, TRW, Redondo Beach, California

3P9 ISOTOPE SEPARATION USING SELECTIVE ION CYCLOTRON RESONANCE HEATING IN METALLIC PLASMAS
M. Mussetto, T.E. Romesser, D. Dixon, C. Strawitch, and J. Tang, TRW Energy Research Center, Redondo Beach, California

3P10 A COMPARISON OF ICRH ANTENNA DESIGNS FOR THE SELECTIVE EXCITATION OF PLASMA ISOTOPES
R. Myer, P. Moffa, and J. Thomson, TRW Energy Research Center, Redondo Beach, California

3P11 MODEL OF A SPUTTER-PRODUCED METALLIC PLASMA SOURCE
R. Martinez, M. Iskra, J. Orthel, P. Moffa, and J. Thomson, TRW Energy Research Center, Redondo Beach, California

3P12 A LARGE AREA METALLIC ION PLASMA SOURCE
T.E. Romesser, V. Vanek, J. Tang, D. Dixon, J. Bayless, M. Mussetto, C. Strawitch, and L. Higgins, TRW Energy Research Center, Redondo Beach, California

3P13 NUMERICAL STUDIES OF CURRENT DRIVE OPERATIONS IN A TOKAMAK
O. Mitarai and A. Hirose, Department of Physics, University of Saskatchewan, Saskatoon, Canada

Tuesday, May 24, 1983
9:30 A.M. (Grand Ballroom)

Poster Session 3Q - LASER PLASMA INTERACTIONS

3Q1 HARMONICS OF THE ION WAVE IN STIMULATED BRILLOUIN SCATTERING
C.E. Clayton, C. Joshi, and F.F. Chen, UCLA, Los Angeles, California

3Q2 A COMPARISON OF SHORT AND LONG PULSE 1μm LASER PLASMA IRRADIATION PHENOMENA
M.D.J. Burgess, R. Dragila, B. Luther-Davies, K.A. Nugent, A. Perry, G.J. Tallents, Department of Engineering Physics, Research School of Physical Sciences, The Australian National University, Canberra, Australia

3Q3 OBLIQUE INCIDENCE OF AN ELECTROMAGNETIC WAVE IN A COLD INHOMOGENEOUS ELECTRON PLASMA. ABSORPTION AT NC "RELATIVISTIC EFFECTS"
D. Babonneau and A. Bourdier, Commissariat à l'Energie Atomique, Centre d'Etudes de Limeil, Villeneuve St. Georges, France

3Q4 COMPUTER SIMULATIONS OF RAMAN FORWARD SCATTERING
W. Mori, C. Joshi, and J.M. Dawson, University of California at Los Angeles, California

3Q5 STUDIES OF RAMAN BACK AND FORWARD SCATTERING AT 0.35 μm
H. Figueroa, C. Joshi, N.A. Ebrahim,[1] and H. Azechi,[1] UCLA, Los Angeles, California
[1]Yale University

3Q6 MEASUREMENTS OF THE NONLINEAR SPECTRUM IN STIMULATED BRILLOUIN SCATTERING
C. Pawley, H.E. Huey, and N.C. Luhmann Jr., University of California at Los Angeles, Los Angeles, California

3Q7 APPLICATION OF LASER GUIDED DISCHARGES TO RAPID MELTING, HOLE BORING, AND WELDING OF MATERIALS
R.M. Gilgenbach, M.L. Brake, L.D. Horton, O.E. Ulrich, and J. Tucker, Nuclear Engineering Department, The University of Michigan, Ann Arbor, Michigan

3Q8 35 GHz MICROWAVES PRODUCED BY HIGH INTENSITY CO_2 LASER LIGHT
D. Bach, C. Barnes, D. Forslund, D. Casperson, and S. Gitomer, Los Alamos National Laboratory, Los Alamos, New Mexico

3Q9 MEASUREMENT OF RETURN CURRENTS AND SELF-SIMILAR EXPANSION OF LASER PRODUCED PLASMA
A. Ludmirsky, S. Eliezer, D. Salzmann, M. Loebenstein, Y. Gazit, A. Borowitz, A.D. Krumbein, B. Arad, R. Lalluz, and S. Jackel, Soreq Nuclear Research Center, Yavne, Israel

3Q10 CREATION OF A CONFINED PLASMA COLUMN AND DIAGNOSTIC ARRANGEMENT FOR X-RAY LASER DEVELOPMENT
D. Voorhees, C. Keane, H. Milchberg, A. Semet, C. Skinner, and S. Suckewer, Princeton Plasma Physics Laboratory, Princeton, New Jersey

3Q11 CALCULATION OF POPULATION INVERSIONS AND GAIN IN A CONFINED PLASMA COLUMN
C. Keane, H. Fishman, H. Milchberg, C. Skinner, S. Suckewer, and D. Voorhees, Princeton University Plasma Physics Laboratory, Princeton, New Jersey

Tuesday, May 24, 1983
9:30 A.M. (Grand Ballroom)

Poster Session 3R - HIGH POWER MICROWAVE GENERATION

3R1 OPERATION OF DOUBLET III ELECTRON CYCLOTRON SYSTEM
D.B. Remsen Jr., GA Technologies Inc., San Diego, California

3R2 THERMAL MONITORING OF GYROTRON WINDOWS
H.E. Huey, G. Hu, E. Choi, and L. Mundie,[1] Varian Associates, Inc., Palo Alto, California
[1]Consultant

3R3 A SLOW WAVE ELECTRON CYCLOTRON MASER WITH AXIAL INJECTION
D. Mitrovich, J. Vomvoridis, and F.S. Felber, Western Research Corporation, San Diego, California

3R4 MILLIMETER-WAVE HARMONIC GYROTRON RESULTS
D.B. McDermott, D.S. Furuno, and N.C. Luhmann Jr., University of California, Los Angeles, Los Angeles, California

3R5 SATURATION OF ELECTRON-CYCLOTRON MASER INSTABILITY DRIVEN BY A LOSS-CONE DISTRIBUTION
Y.F. Lan, S.P. Kuo, and B.R. Cheo, Polytechnic Institute of New York, Farmingdale, New York

3R6 ANALYSIS OF ELECTRON CYCLOTRON MASER INSTABILITY
S.P. Kuo, B.R. Cheo, and Y.F. Lan, Polytechnic Institute of New York, Farmingdale, New York

3R7 EFFECTS OF SELF-ELECTRIC AND SELF-MAGNETIC FIELDS ON THE SPONTANEOUS EMISSION FOR THE CYCLOTRON MASER, LONGITUDINAL WIGGLER AND HELICAL WIGGLER FEL CONFIGURATIONS
W.A. McMullin and R.C. Davidson, Massachusetts Institute of Technology, Cambridge, Massachusetts

3R8 MODE CONVERSIONS BY A DISCONTINUOUS JUNCTION OF TWO HELIX LOADED WAVEGUIDES
J.Y. Choe, H.S. Uhm, S. Ahn,[1] and A.K. Ganguly,[1] Naval Surface Weapons Center, Silver Spring, Maryland
[1]Naval Research Laboratory

3R9 TRANSVERSE WAVE IMPEDANCE OF SLOW AND FAST WAVE MODES IN A BIFILAR HELIX-LOADED WAVEGUIDE
S. Ahn, A. Ganguly, J. Choe,[1] and H. Uhm[1], Naval Research Lab, Washington, DC
[1]Naval Surface Weapons Center, White Oaks, MD

Tuesday, May 24, 1983
9:30 A.M. (Grand Ballroom)

Poster Session 3S - STELLARATORS

3S1 NON-OHMIC CURRENTS IN THE PROTO-CLEO STELLARATOR
J.D. Treffert and J.L. Shohet, Torsatron/Stellarator Laboratory, University of Wisconsin-Madison, Madison, Wisconsin

3S2 THREE DIMENSIONAL BALLOONING MODE STABILITY FOR STELLARATORS
H.L. Berk, M.N. Rosenbluth, and J.L. Shohet,[1] IFS, University of Texas, Austin, Texas
[1]Torsatron Stellarator Laboratory, University of Wisconsin, Madison, Wisconsin

3S3 ELECTRON CYCLOTRON RESONANCE PREIONIZATION AND HEATING IN THE PROTO-CLEO TORSATRON
L.C.S. Goes, R. Doerner, P.H. Probert, and J.L. Shohet, Torsatron/Stellarator Laboratory, University of Wisconsin, Madison, Wisconsin

3S4 FORMATION OF MAGNETIC ISLANDS AND MAGNETIC FIELD LINE RECONNECTION IN THE PROTO-CLEO STELLARATOR
D. Wroblewski and J.L. Shohet, Torsatron/Stellarator Lab, University of Wisconsin, Madison, Wisconsin

3S5 DESIGN, FABRICATION, AND INITIAL OPERATION OF IMS
D.T. Anderson, F.S.B. Anderson, and J.L. Shohet, Torsatron/Stellarator Laboratory, University of Wisconsin, Madison, Wisconsin

3S6 SECOND AND THIRD HARMONIC CYCLOTRON EMISSION IN THE HELIOTRON-E STELLARATOR
J.N. Talmadge and H. Zushi,[1] Torsatron/Stellarator Laboratory, University of Wisconsin, Madison, Wisconsin
[1]Kyoto University, Kyoto, Japan

3S7 MODULAR HELIAC STELLARATOR
L.P. Mai, G. Gibson, and T.K. Chu[1], Westinghouse Electric Corporation
[1]Princeton Plasma Physics Laboratory, Princeton, New Jersey

Tuesday, May 24, 1983
2:00 P.M. (San Antonio Room)

Oral Session 4A - MIRRORS AND EBT
Session Chairperson - R. J. Colchin

4A1 ELECTRON DENSITY MEASUREMENTS WITH 9-CHANNEL MICROWAVE INTERFEROMETER ON EBT-S
T. Uckan, Oak Ridge National Laboratory, Oak Ridge, Tennessee

4A2 COMPUTATION OF EQUILIBRIUM AND TRANSPORT IN OPEN ENDED AND CLOSED LINE SYSTEMS
Harold Grad, Courant Institute of Mathematical Sciences, New York University, New York, New York

4A3 INVITED PAPER: TMX-U EXPERIMENTAL RESULTS
P. Poulsen and the TMX Group, Lawrence Livermore National Laboratory, Livermore, California

4A4 PRELIMINARY DESIGN OF A LARGE BORE SUPERCONDUCTING MIRROR DEVICE
M. Peck, S. Adams, S. Glenn, S. McGhee, B. Reed, C. Wallace, and M. Prelas, University of Missouri-Columbia, Nuclear Engineering, Columbia, Missouri

4A5 SHIELDING DESIGN FOR THE MISSOURI-MIRROR PROJECT
A.K. Chung, C. Wallace, and M.A. Prelas, University of Missouri-Columbia, Columbia, Missouri

4A6 AN ELECTROMAGNETIC SPHERICAL PHASED ARRAY THERMONUCLEAR FUSION REACTOR
E.C. Okress, The Franklin Institute, Philadelphia, Pennsylvania

Tuesday, May 24, 1983
2:00 P.M. (Chenin Room)

Oral Session 4B - ATOMIC PHYSICS, DENSE PLASMAS
Session Chairperson - J. Pearlman

4B1 INVITED PAPER: RADIATION FROM DENSE HOT PLASMAS
J. Davis, Naval Research Laboratory, Washington, D.C.

4B2 IONIZATION PHASE TRANSITION IN DENSE PLASMAS
G. Kalman, R.-X. Ying, and R. Hogaboom, Department of Physics, Boston College, Chestnut Hill, Massachusetts

4B3 DYNAMIC STRUCTURE FACTORS IN TWO-COMPONENT PLASMAS
R. Cauble, D.B. Boercker,[1] and J. Davis,[2] Berkeley Research Associates, Springfield, Virginia
[1]Lawrence Livermore National Laboratory, Livermore, California
[2]Naval Research Laboratory, Washington, District of Columbia

4B4 ULTRAVIOLET FLUORESCENCE BY OPTICAL PUMPING WITH LINE RADIATION
J. Trebes and M. Krishnan, Yale University, New Haven, Connecticut

4B5 ANGULAR DEPENDENCE OF LINE RADIATION FROM ALUMINUM PLASMAS
J.P. Knauer, B.A. Watson, and L.F. Chase, Lockheed Palo Alto Research Laboratory, Palo Alto, California

4B6 THERMAL PROPERTIES OF HIGH DENSE DEUTERIUM
T. Ariyasu and K. Inoue, Kansai University, Osaka, Japan

4B7 RADIATION IMPLOSION IN DENSE PLASMAS AND SOLIDS
F. Winterberg, Desert Research Institute, University of Nevada System, Reno, Nevada

Tuesday, May 24, 1983
2:00 P.M. (Gamay Room)

Oral Session 4C - GAS DISCHARGES
Session Chairperson - J. Asmussen, Jr.

4C1 UV-RADIATION OF ENRICHED Hg-ISOTOPES AND THEIR MIXTURES IN A LOW PRESSURE MERCURY-ARGON DISCHARGE
R.K. Sun, Lawrence Berkeley Laboratory, University of California, Berkeley, California

4C2 THEORETICAL SIMULATION OF INTENSE-ELECTRON-BEAM EXCITED RARE-GAS HALIDE LASERS
A. Suda, F. Kannari, M. Obara, and T. Fujioka, Department of Electrical Engineering, Keio University, Yokohama, Japan

4C3 STUDIES OF ELECTRON-BEAM CONTROLLED DIFFUSE DISCHARGES
V.E. Scherrer, R.J. Commisso,[1] R.F. Fernsler,[1] and I.M. Vitkovitsky, Naval Research Laboratory, Washington, District of Columbia
[1]Jaycor, Inc., Alexandria, Virginia

4C4 MEASUREMENTS OF EFFECTIVE IONIZATION RATES IN TRANSIENT GAS DISCHARGES
W.W. Byszewski, M.J. Enright, and J.M. Proud, GTE Laboratories, Waltham, Massachusetts

4C5 INVITED PAPER: NON-EQUILIBRIUM KINETICS AND GAS HEATING IN THE CATHODE SHEATH
W.H. Long, Northrop Research and Technology Center, Palos Verdes Peninsula, CA

4C6 EFFICIENCIES OF SOME COLLISIONAL PROCESSES IN HYDROGEN DISCHARGES
D.A. Erwin and J.A. Kunc, University of Southern California, Los Angeles, California

4C7 A THEORETICAL STUDY OF STEADY-STATE PROPERTIES OF A HIGH-CURRENT HYDROGEN DISCHARGE
J.A. Kunc and M.A. Gundersen, University of Southern California, Los Angeles, California

Tuesday, May 24, 1983
2:00 P.M. (San Diego Room)

Oral Session 4D - THERMIONICS AND PLASMA DIODES
Session Chairperson - J. F. Morris

4D1 ELECTRON EMISSION FROM THORIATED TUNGSTEN WITH ADSORBED CESIUM
M.T. Tang and D.L. Jacobson, Mechanical and Aerospace Engineering, Arizona State University, Tempe, Arizona

4D2 SINGLE CRYSTAL LaB_6: A COMPARISON WITH CURRENTLY USED THERMIONIC CATHODES FOR BROAD BEAM APPLICATIONS
L.W. Swanson and P.R. Davis, Department of Applied Physics and Electrical Engineering, Oregon Graduate Center, Beaverton, Oregon

4D3 COMPARISON OF ELECTRON BEAMS GENERATED FROM LASER-ACTIVATED TUNGSTEN AND GRAPHITE CATHODES
C. Lee and P.E. Oettinger, Thermo Electron Corporation, Waltham, Massachusetts

4D4 HIGH PERFORMANCE, CLOSED-SPACED THERMIONIC CONVERTERS
R.S. Dick, J.B. McVey, G.O. Fitzpatrick, and E.J. Britt, Rasor Associates, Inc., Sunnyvale, California

4D5 CALCULATIONAL MODELS OF CLOSE-SPACED THERMIONIC CONVERTERS
J.B. McVey, Rasor Associates, Inc., Sunnyvale, California

4D6 SURFACE PROPERTIES OF CERAMIC/METAL COMPOSITE MATERIALS FOR THERMIONIC CONVERTER APPLICATIONS
P.R. Davis, L.W. Swanson, and M.J. Bozack, Department of Applied Physics and Electrical Engineering, Oregon Graduate Center, Beaverton, Oregon

4D7 INVITED PAPER: BRIGHT, LONG PULSE DIODES
C.W. Roberson, Office of Naval Research, Washington, D.C.

Tuesday, May 24, 1983
2:00 P.M. (Grand Ballroom)

Poster Session 4P - PLASMA HEATING AND CURRENT DRIVE

4P1 ELECTRON CYCLOTRON CURRENT DRIVE ON THE ISX-B TOKAMAK
J.S. Levine, M.E. Read, A.C. England,[1] and O.C. Eldridge,[1] Naval Research Laboratory, Washington, District of Columbia
[1]Oak Ridge National Laboratory

4P2 THE 60 GHz TRANSMISSION SYSTEM FOR THE DOUBLET III ELECTRON CYCLOTRON HEATING EXPERIMENT
C.P. Moeller, R. Prater, and S.H. Lin, GA Technologies Inc., San Diego, California

4P3 ORDINARY MODE ELECTRON CYCLOTRON HEATING OF PLASMAS IN DOUBLET III
R. Prater, S.H. Lin, C. Moeller, and the Doublet III and JAERI Physics Groups, GA Technologies Inc., San Diego, California

4P4 ELECTRON CYCLOTRON RESONANCE HEATING IN PHAEDRUS AND TMX-U
N.T. Lam, J. Scharer, and K. Audenaerde, University of Wisconsin, Madison, Wisconsin

4P5 SOME NOVEL FEATURES OF THE ORDINARY MODE ELECTRON CYCLOTRON RESONANCE HEATING OF TOKAMAK PLASMAS
V. Arunsalam, P.C. Efthimion, J.C. Hosea, H. Hsuan, and G. Taylor, Plasma Physics Laboratory, Princeton University, Princeton, New Jersey

4P6 ELECTRON CYCLOTRON RESONANCE CONTROL OF CURRENT DRIVE BY RELATIVISTIC ELECTRONS
I. Fidone, G. Giruzzi, G. Granata, R.L. Meyer, Association Euratom-Cea Sur La Fusion, Fontenay-aux-Roses, France

4P7 SUPERADIABATIC INVARIANTS FOR ELECTRON CYCLOTRON HEATING OF A RELATIVISTIC PLASMA
S.P. Kuo and S. Chi,[1] Polytechnic Institute of New York, Farmingdale, New York
[1]National Chiao-Tung University, Hsin-chu, Republic of China

4P8 A FOKKER PLANCK TREATMENT OF RELATIVISTIC EFFECTS IN ECRH CURRENT DRIVE
M.R. O'Brien, D.F.H. Start, and P.M.V. Grace,[1] Culham Laboratory, Euratom/UKAEA Fusion Association, Abingdon, Oxon, United Kingdom
[1]St. John's College, Cambridge, United Kingdom

4P9 RF GENERATED CURRENTS IN A MAGNETIZED PLASMA USING A SLOW WAVE STRUCTURE
B.R. Poole, B.R. Cheo, S.P. Kuo, and M.G. Tang,[1] Polytechnic Institute of New York, Farmingdale, New York
[1]Chengdu Institute of Radio Engineering, Chengdu, People's Republic of China

4P10 SOFT AND HARD X-RAY SPECTROSCOPIC RADIAL PROFILE MEASUREMENTS DURING LOWER-HYBRID CURRENT DRIVE AND HEATING EXPERIMENTS ON THE VERSATOR II TOKAMAK
M.J. Mayberry, K-I. Chen, S.F. Knowlton, S.C. Luckhardt, F.S. McDermott, M. Porkolab, and R. Rohatgi, Massachusetts Institute of Technology, Cambridge, Massachusetts

4P11 MEASUREMENT OF X-RAY SPECTRA DURING LOWER HYBRID CURRENT DRIVE EXPERIMENTS ON THE ALCATOR C TOKAMAK
S. Texter, J. Rice, B. Lloyd, M. Porkolab, and J. Schuss, Plasma Fusion Center, Massachusetts Institute of Technology, Cambridge, Massachusetts

4P12 APPLICATIONS OF LOWER HYBRID WAVE CURRENT DRIVE: SOME PRELIMINARY OBSERVATIONS FROM THE PLT TOKAMAK
W. Hooke, S. Bernabei, T.K. Chu, J. Hosea, F. Jobes, R. Motley, J. Stevens, and S. von Goeler, Princeton University, Princeton, New Jersey

4P13 A SEARCH FOR THE OPTIMUM CURRENT DRIVER FOR STEADY-STATE TOKAMAK REACTORS
K.L. Wong and M. Ono, Princeton University, Princeton, New Jersey

Tuesday, May 24, 1983
2:00 P.M. (Grand Ballroom)

Poster Session 4Q - COMPUTER METHODS

4Q1 PARTICLE SIMULATION FOR MICROINSTABILITIES
W.W. Lee, Plasma Physics Laboratory, Princeton University, Princeton, New Jersey

4Q2 ONE AND A HALF DIMENSIONAL PARTICLE SIMULATION SCHEME AND ITS APPLICATION
C. Liu, L. Xu, J. Zhang, S. Zhang, F. Chen, H. Liang, S. Yu, and Y. Li, Institute of Atomic Energy, Academia Sinica, Beijing, People's Republic of China

4Q3 TRANSIENT 3D-MAGNETIC FIELD OF A THETA PINCH COIL IN A METALLIC VACUUM CHAMBER
R.P. Gupta, M.M. Kekez, J.H. Lau, G.D. Lougheed, D. Lowther,[1] S. McFee,[1] and P. Silvester,[1] Nat. Res. Council, Ottawa, Ontario, Canada
[1]McGill University

4Q4 NEUCG2: TWO SPECIES NEUTRAL TRANSPORT CODE
R.E. Stockdale, GA Technologies Inc., San Diego, California

4Q5 PLT DATA REDUCTION PROCEDURES
J. Hovey, Plasma Physics Laboratory, Princeton University, Princeton, New Jersey

4Q6 TRAQ I - A CAMAC SYSTEM FOR MULTICHANNEL DATA ACQUISITION, STORAGE & PROCESSING
A.S. Broad, C.L. Jordan, H.P. Kojola, and M. Miller, Transiac Corporation, Mountain View, California

4Q7 IDEAL MHD β LIMITS IN THE BIG DEE TOKAMAK
F.J. Helton, L.C. Bernard, and J.M. Greene, GA Technologies Inc., San Diego, CA

Tuesday, May 24, 1983
2:00 P.M. (Grand Ballroom)

Poster Session 4R - HIGH POWER MICROWAVE GENERATION

4R1 NUMERICAL SIMULATIONS OF A RIPPLED-FIELD MAGNETRON (CROSS-FIELD FREE ELECTRON LASER)
R.D. Estes and A.T. Drobot,[1] Massachusetts Institute of Technology, Cambridge, Massachusetts
[1]Science Applications, Inc.

4R2 EXPERIMENTAL RESULTS FROM A RIPPLED FIELD MAGNETRON (CROSS-FIELD FEL)
R.E. Shefer, B.D. Nevins, and G. Bekefi, Massachusetts Institute of Technology, Cambridge, Massachusetts

4R3 DIRECT MEASUREMENTS OF THE DRIFT VELOCITY OF AN INTENSE RELATIVISTIC ELECTRON BEAM
R.E. Shefer, Y.Z. Yin, and G. Bekefi, Massachusetts Institute of Technology, Cambridge, Massachusetts

4R4 THEORY OF THE RIPPLED FIELD MAGNETRON
C.L. Chang, E. Ott,[1] T.M. Antonsen Jr.,[1] and A.T. Drobot, Science Applications, Inc., McLean, Virginia
[1]Department of Physics, University of Maryland, College Park, Maryland

4R5 KINEMATIC DESCRIPTION OF CROSSED FIELD ELECTRON-RF WAVE INTERACTION WITH SUPERPOSED TRANSVERSE MAGNETIC WIGGLER
T.E. Ruden, Varian Associates, Inc., Beverly, Massachusetts

4R6 RELATIVISTIC MAGNETRON INTERACTION
T.E. Ruden, Varian Associates, Inc., Beverly, Massachusetts

4R7 COMPARISON OF COMPUTER SIMULATION AND SOLITON THEORY FOR A MAGNETRON
B. Goplen, W.M. Bollen, and G.E. Thomas,[1] Mission Research Corporation, Alexandria, Virginia
[1]Varian Associates, Inc.

4R8 MICROWAVE GENERATION FROM A CUSPTRON DEVICE WITH A ROTATING ELECTRON BEAM THROUGH A MAGNETIC CUSP FIELD
W. Namkung, W. Lawson, and D. Byun, Electrical Engineering Department, University of Maryland, College Park, Maryland

4R9 RF SATURATION OF AN ELECTRON PLASMA IN CROSSED D.C. ELECTRIC AND MAGNETIC FIELDS
G.E. Thomas, Varian Associates, Inc., Beverly, Massachusetts

4R10 DETAILED SPECTRA OF HIGH POWER BROADBAND MICROWAVE RADIATION FROM INTERACTIONS OF RELATIVISTIC ELECTRON BEAMS WITH WEAKLY MAGNETIZED PLASMAS
K.G. Kato, G. Benford, and D. Tzach, University of California, Irvine, California

4R11 GENERATION OF HIGH-POWER MICROWAVES IN PULSED-POWER DIODES
A.L. Peratt, T.J.T Kwan, M.A. Mostrom, and L.E. Thode, Los Alamos National Laboratory, Advanced Concepts and Plasma Applications Group, Los Alamos, New Mexico

Tuesday, May 24, 1983
2:00 P.M. (Grand Ballroom)

Poster Session 4S - ULTRAFAST Z-PINCHES

4S1 ARGON GAS PUFF IMPLOSION EXPERIMENTS ON PROTO-II
R.B. Spielman, J.P. Anthes, D.L. Hanson, and M.A. Palmer, Sandia National Laboratories, Albuquerque, New Mexico

4S2 COUPLING OF RADIATION EMISSION AND HYDRODYNAMICS IN A Z-PINCH
J. Bailey, A. Fisher, and N. Rostoker, University of California, Irvine, California

4S3 FAST GAS-PUFF VALVE FOR Z-PINCH MICROLITHOGRAPHIC APPLICATION
F.J. Wessel and W.S. Williamson, Hughes Research Laboratories, Malibu, California

4S4 MODELLING OF IMPLODING PHASE OF THIN FILM LINERS
P. Savic, M.M. Kekez, R.P. Gupta, J.H. Lau, and G.D. Lougheed, National Research Council, Ottawa, Ontario, Canada

4S5 THIN-FILM PLASMA LINER FORMATION AND ACCELERATION IN A COAXIAL GUN
G.D. Lougheed, R.P. Gupta, M.M. Kekez, and J.H. Lau, National Research Council, Ottawa, Ontario, Canada

4S6 A MODEL FOR THE SATURATION OF THE HYDROMAGNETIC RAYLEIGH-TAYLOR INSTABILITY
N.F. Roderick and T.W. Hussey,[1] University of New Mexico, Albuquerque, New Mexico
[1]Sandia National Laboratories

4S7 GROWTH OF THE HYDROMAGNETIC RAYLEIGH-TAYLOR INSTABILITY FROM A REALISTIC SPECTRUM OF FOIL PERTURBATIONS
G.R. Montry, T.W. Hussey, and K.W. Bieg, Sandia National Laboratories, Albuquerque, New Mexico

4S8 PHOTON ABLATION OF CONDUCTOR SURFACES IN IMPLODING FOIL DIODES - A SIMPLE MODEL
D. Kania, Los Alamos National Laboratory, Los Alamos, New Mexico

4S9 DENSE GAS EMBEDDED Z-PINCH DESIGNATED WITH A RELASTIVISTIC ELECTRON BEAM
J.D. Sethian, K.A. Gerber, A.E. Robson, A.W. DeSilva,[1] and F.L. Sandel,[1] Naval Research Laboratory, Washington, District of Columbia
[1]Sachs/Freeman Assoc., Bowie, Maryland

Wednesday, May 25, 1983
8:30 A.M. (Champagne Ballroom)

REVIEW PAPER
Chairperson - G. Rogoff

PLASMA ARC LAMPS TODAY AND TOMORROW
John F. Waymouth, GTE Products Corporation, Sylvania Lighting Center, Danvers, Massachusetts

Wednesday, May 25, 1983
9:30 A.M. (San Antonio Room)

Oral Session 5A - PLASMA DIAGNOSTICS
Session Chairperson - Glen A. Wurden

5A1 THE Te DETERMINATION IN RF H-TYPE DISCHARGES BY ADP SYSTEM
G.X. Chen and H.C. Hsu, Institute for Electric Light Sources, Fudan University, Shanghai, People's Republic of China

5A2 MAGNETIC SPECTROMETER EMPLOYING A RUTHERFORD SCATTERING FOIL FOR INTENSE PROTON BEAM ENERGY MEASUREMENTS
R.J. Leeper, J.R. Lee, D.J. Johnson, W.A. Stygar, D.E. Hebron, and L.D. Roose, Sandia National Laboratories, Albuquerque, New Mexico

5A3 A HIGH SPEED MULTICHANNEL DATA RECORDER
J. Chang, C. Martinez, J.A. Foesch, J.P. Black,[1] R. Malone,[1] M. Ward,[1] G. Jordan,[1] and J. Manning,[1] Sandia National Laboratories, Albuquerque, New Mexico
[1]EG&G, Los Alamos, New Mexico

5A4 URA CODED-APERTURE CAMERA FOR ICF PLASMA DIAGNOSTICS
H. Niki, A. Yamada, Y. Yamamoto, A. Kisoda, M. Yamanaka, M. Yokoyama, N. Miyanaga, Y. Kitagawa, Y. Kato, T. Sasaki, and C. Yamanaka, Institute of Laser Engineering, Osaka University, Osaka, Japan

5A5 RADIATION MEASUREMENTS USING FILTERED PYROELECTRIC DETECTORS ON PLT DURING LH CURRENT DRIVE, ICRF AND NB HEATING
H. Toyama, S. Bernabei, T.K. Chu, P. Efthimion, W. Hooke, J. Hosea, J. Hovey, D. Hwang, F. Jobes, R. Motley, G. Schilling, J. Stevens, G. Taylor, H. Thompson, S. von Goeler, and J. Wilson, Princeton University, Princeton, New Jersey

5A6 ICF PLASMA-ION AND SOFT X-RAY MEASUREMENT COMPARISON BETWEEN THE KMSF THERMISTOR AND LIVERMORE THERMOELECTRIC PLASMA CALORIMETERS
J.D. Simpson, KMS Fusion, Inc., Ann Arbor, Michigan

5A7 INVITED PAPER: ADVANCES IN ZEEMAN SPLITTING PLASMA MAGNETIC FIELD DIAGNOSTICS
P.G. Weber and G.A. Wurden, Los Alamos National Laboratory, Los Alamos, New Mexico

5A8 INVITED PAPER: MULTICHANNEL FIR SCATTERING OBSERVATIONS ON TEXT
W.A. Peebles, N.C. Luhmann Jr., D. Brower, C.X. Yu, D. Jungwirth, R. Savage, and W. Rowan,[1] UCLA, Los Angeles, California
[1]Fusion Research Center, University of Texas

Wednesday, May 25, 1983
9:30 A.M. (Chenin Room)

Oral Session 5B - THERMIONICS AND PLASMA DIODES
Session Chairperson - J. B. McVey

5B1 PRE-1973 TECHNOLOGY ENABLES NEAR-TERM US SPACE NUCLEAR POWER
J.F. Morris, Air Force Scholarly Research Program, Mechanical and Aerospace Engineering, Arizona State University, Tempe, Arizona

5B2 THERMIONIC-ENERGY-CONVERSION IMPLICATIONS OF SPACE-NUCLEAR-REACTOR ULTRALLOYS
J.F. Morris, Air Force Scholarly Research Program, Mechanical and Aerospace Engineering, Arizona State University, Tempe, Arizona

5B3 A NEW MODEL OF THERMIONIC CONVERSION
J.L. Lawless, Carnegie-Mellon University, Pittsburgh, Pennsylvania

5B4 TEST RESULTS ON TWO THERMIONIC CONVERTERS WITH CERMET EMITTERS
M. Saunders, L. Danielson, and F. Huffman, Thermo Electron Corporation, Waltham, Massachusetts

5B5 THERMIONIC-PHOTOVOLTAIC ENERGY CONVERTER
D.L. Chubb, NASA Lewis Research Center, Cleveland, Ohio

5B6 ARIZONA STATE UNIVERSITY RESEARCH RELATED TO THERMIONIC ENERGY CONVERSION
D.L. Jacobson and J.F. Morris, Mechanical and Aerospace Engineering, Arizona State University, Tempe, Arizona

Wednesday, May 25, 1983
9:30 A.M. (Gamay Room)

Oral Session 5C - OTHER MAGNETIC CONFINEMENT CONCEPTS
Session Chairperson - J. Reece Roth

5C1 ELECTROSTATIC PLUGGING OF CUSPS
T.J. Dolan, University of Missouri-Rolla, Rolla, Missouri

5C2 APPLICATION OF LASER-PRODUCED-PLASMA TO A SMALL SURMAC DEVICE (SL-1)
S. Kogoshi, M. Kisaka, and T. Sekiguchi, Department of Electrical Engineering, University of Tokyo, Bunkyo, Tokyo, Japan

5C3 INVITED PAPER: RECENT RESULTS FROM THE TOROIDAL CUSP EXPERIMENT
M. Rhodes, G. Peng, S. Ratliff, J. Dawson, and N.C. Luhmann Jr., UCLA, Los Angeles, California

5C4 THE ROLE OF ADVANCED FUEL CYCLES IN IMPROVING THE COMMERCIAL ATTRACTIVENESS OF FUSION REACTORS
J.R. Roth, Department of Physics, University of Tennessee, Knoxville, Tennessee

5C5 SCRAPE-OFF MODEL AND PUMPED-LIMITER DESIGN FOR REVERSED-FIELD PINCHES (RFP)
M.J. Embrechts, C.G. Bathke, and R.A. Krakowski, Los Alamos National Laboratory, Los Alamos, New Mexico

5C6 HELIAC
Allen H. Boozer, Plasma Physics Laboratory, Princeton, New Jersey

5C7 A REVIEW OF FUSION TORCH APPLICATIONS
B.J. Eastlund and W.C. Gough, The BDM Corporation, Houston, Texas

5C8 ELECTROMAGNETIC INDUCTION PHENOMENA IN HIGH TEMPERATURE PLASMA SYSTEMS
B. Karlovitz, Combustion & Explosives Research, Inc., Pittsburgh, Pennsylvania

5C9 THERMONUCLEAR DYNAMO
F. Winterberg, Desert Research Institute, University of Nevada System, Reno, Nevada

5C10 FLUID DYNAMIC STABILIZED HIGH GAIN MAGNETIC INERTIAL FUSION TARGET
F. Winterberg, Desert Research Institute, University of Nevada System, Reno, Nevada

Wednesday, May 25, 1983
9:30 A.M. (San Diego Room)

Oral Session 5D - HYDRODYNAMICS AND ENERGY TRANSPORT FOR DIRECT DRIVE ICF TARGETS
Session Chairperson - S. Gitomer

5D1 INVITED PAPER: VORTEX SHEDDING AND THE RAYLEIGH-TAYLOR INSTABILITY IN LASER ABLATION
M. Emery, Naval Research Laboratories, Washington, D.C.

5D2 INVITED PAPER: EFFICIENT AND UNIFORM COMPRESSION OF CANNON-BALL TARGET TO HIGH DENSITY WITH TWO 1.052μm LASER BEAMS
N. Miyanaga, Y. Kato, Y. Kitagawa, M. Nakatsuka, T. Norimatsu, Y. Izawa, T. Yabe, K. Nishihara and C. Yamanaka, Institute of Laser Engineering, Osaka University Suita, Osaka 565, Japan

5D3 SPATIAL COHERENCE REDUCTION OF FUSION LASERS FOR UNIFORM ACCELERATION OF FUSION TARGETS
Y. Kato, K. Mima, S. Arinaga, N. Miyanaga, and C. Yamanaka, Institute of Laser Engineering, Oaska University, Suita, Osaka, Japan

5D4 INVITED PAPER: SPERICAL TRANSPORT EXPERIMENTS AT 1.05 MICRONS
B. Yaacobi, University of Rochester, Rochester, New York

5D5 INVITED PAPER: BEHAVIOR OF ELECTRON TRANSPORT INFERRED FROM LAYERED-DISK TARGET IRRADIATION AT 1.06 AND 0.35μm WAVELENGTHS
W.C. Mead, E.M. Campbell, W.L. Kever, R.E. Turner, K.G. Tirsell, G.L. Stradling, B. Pruett, D.W. Phillion, P.H.Y. Lee, D.L. Matthews, R.J. Trainor, N.C. Holmes, C.E. Max, and F. Ze, Lawrence Livermore National Laboratory, Livermore, California

Wednesday, May 25, 1983
9:30 A.M. (Grand Ballroom)

Poster Session 5P - COMPACT TOROIDS AND REVERSE FIELD PINCHES

5P1 EXPERIMENTAL RESULTS OF THE PROTO S-1 SPHEROMAK DEVICES
C. Munson, A. Janos, S. Paul, F. Wysocki, and M. Yamada, Princeton Plasma Physics Laboratory, Princeton University, Princeton, New Jersey

5P2 COMPARISON OF EXPERIMENTAL SPHEROMAK EQUILIBRIA WITH TAYLOR RELAXATION
C. Chin-Fatt, A.W. DeSilva, G.C. Goldenbaum, G.W. Hart, R.S. Shaw, B.-C. Tan, University of Maryland, College Park, Maryland

5P3 TIME EXTENSION OF MIXED-CT EXPERIMENTS IN RECE-CHRISTA
M.R. Parker, D.P. Taggart, H. Hopman, and H.H. Fleischmann, Cornell University, Ithaca, New York

5P4 SMALL TOROIDAL FIELD EXPERIMENTS IN RECE-CHRISTA
M.R. Parker, D.P. Taggart, H. Hopman, and H. H. Fleischmann, Cornell University, Ithaca, New York

5P5 FORMATION OF SPHEROMAKS IN CTX ON VARIOUS TIME SCALES
I. Henins, H.W. Hoida, T.R. Jarboe, A.R. Sherwood, and C.W. Barnes, Los Alamos National Laboratory, Los Alamos, New Mexico

5P6 SUSTAINED SPHEROMAK EXPERIMENTS IN CTX
T.R. Jarboe, C.W. Barnes, I. Henins, H.W. Hoida, R.K. Linford, and A.R. Sherwood, Los Alamos National Laboratory, Los Alamos, New Mexico

5P7 ZERO-DIMENSIONAL TIME-DEPENDENT ENERGY BALANCE MODELLING OF CTX SPHEROMAK PLASMAS
C.W. Barnes, T.R. Jarboe, R.A. Hulse,[1] and D.E. Post,[1] Los Alamos National Laboratory, Los Alamos, New Mexico
[1]Princeton Plasma Physics Laboratory

Wednesday, May 25, 1983
9:30 A.M. (Grand Ballroom)

Poster Session 5Q - INTENSE ELECTRON AND ION BEAMS

5Q1 INFLUENCE OF GENERATOR STRUCTURE ON PINCH REFLEX DIODE OPERATION FOR LIGHT ION PRODUCTION
A. Bernard, C. Bourgeois, N. Camarcat, and B. Tournier, C.E.A. Valduc, Is-sur-Tille, France

5Q2 PLASMA OPENING SWITCH STUDIES
J.M. Neri,[1] R.J. Commisso,[1] S.A. Goldstein,[1] R.A. Meger,[1] P.F. Ottinger,[1] B.V. Weber,[1] and F.C. Young, Naval Research Laboratory, Washington, District of Columbia
[1]Jaycor, Inc., Alexandria, Virginia

5Q3 THE EFFECT OF CATHODE SURFACE IMPURITIES ON GAP CLOSURE
D.D. Hinshelwood, Massachusetts Institute of Technology, Cambridge, Massachusetts

5Q4 ANALYSIS OF ION BEAM DIVERGENCE AND DEFLECTIONS, AND OF THE ELECTRON FLUX TO THE ANODE IN A MAGNETICALLY INSULATED DIODE
C. Litwin, Y. Maron, and D.A. Hammer, Cornell University, Ithaca, New York

5Q5 LONGSHOT OPERATION WITH ANODE-SIDE MAGNETIC FIELD COILS
J.B. Greenly and E. Schamiloglu, Cornell University, Ithaca, New York

5Q6 RECENT EXPERIMENTS ON COLLECTIVE ION ACCELERATION USING SLOW SPACE CHARGE WAVES
A. Anselmo, S. Greenwald, J. Ivers, and J. Nation, Cornell University, Ithaca, New York

5Q7 THE EXCITATION OF MICROWAVES BY A RELATIVISTIC ELECTRON BEAM IN A DIELECTRIC-LINED WAVEGUIDE
M. Shoucri, Groupe Tokamak de Varennes, Québec, Canada

5Q8 RADIAL E-BEAM AUTOACCELERATOR FOR ICF
J.W. Poukey, T.R. Lockner, J.P. Quintenz, and J.P. VanDevender, Sandia National Laboratories, Albuquerque, New Mexico

5Q9 B_θ DIODE FLOATING ANODE EXPERIMENTS AT SANDIA NATIONAL LABS
T.R. Lockner, J.W. Poukey, W. Stygar, R. Leeper, G. Allen, and D. Kraybill,[1] Sandia National Laboratories, Albuquerque, New Mexico
[1]Lawrence Livermore National Laboratory

5Q10 ANALYSIS OF X-RAY PRODUCTION IN A MULTIMODULE ACCELERATOR
M.A. Sweeney, J.A. Halbleib, and B.N. Turman, Sandia National Laboratories, Albuquerque, New Mexico

5Q11 THE AZIMUTHAL STABILITY OF COMPRESSED RING ACCELERATORS
G. Gisler and R. Faehl, Los Alamos National Laboratory, Advanced Concepts and Plasma Applications Group, Los Alamos, New Mexico

5Q12 THREE-DIMENSIONAL NUMERICAL SIMULATION OF CROSS-FIELD PLASMOID PROPAGATION
W. Shanahan, R. Faehl, and C. Snell, Los Alamos National Laboratory, Advanced Concepts and Plasma Applications Group, Los Alamos, New Mexico

5Q13 DUAL ENERGY HEAVY ION TARGET CONCEPTS
G.R. Magelssen, Los Alamos National Laboratory, Los Alamos, New Mexico

5Q14 MAGNETIZED FUEL TARGETS: FUELS OTHER THAN D-T???
I.R. Lindemuth and R.C. Kirkpatrick, Los Alamos National Laboratory, Los Alamos, New Mexico

Wednesday, May 25, 1983
2:00 P.M. (Grand Ballroom)

Poster Session 5R - NEUTRAL BEAMS FOR FUSION RESEARCH

5R1 PLASMA PROPERTIES IN THE SINGLE-RING MAGNETIC CUSP ION SOURCE
J.P. Brainard and J.B. O'Hagan, Sandia National Laboratories, Albuquerque, New Mexico

5R2 NEUTRAL BEAM INJECTION ON THE PHAEDRUS TANDEM MIRROR EXPERIMENT
J.R. Conrad, R.A. Breun, D.A. Brouchous, S.F. Horne, L. Peranich, H. Persing, and D.R. Pirkle, Nuclear Engineering, University of Wisconsin, Madison, Wisconsin

5R3 EXPERIMENTAL RESULTS FROM THE ORNL POSITIVE ION SOURCE DESIGNED FOR HIGH POWER (≈2 Mw) LONG PULSE (30 s) NEUTRAL BEAM INJECTION
M.M. Menon, G.C. Barber, W.K. Dagenhart, W.L. Gardner, H.H. Haselton, N.S. Ponte, P.M. Ryan, D.E. Schechter, W.L. Stirling, C.C. Tsai, and J.H. Whealton, Oak Ridge National Laboratory, Oak Ridge, Tennessee

5R4 THE PERFORMANCE OF THE PDX NEUTRAL BEAM WALL ARMOR
H.W. Kugel, H.P. Eubank, T.A. Kozub, M. Ulrickson, and M.D. Williams, Princeton University, Princeton, New Jersey

5R5 EXPEDITIOUS 3D POISSON VLASOV ALGORITHM APPLIED TO ION EXTRACTION FROM A PLASMA
J.H. Whealton, R.W. McGaffey, and P.S. Meszaros, Oak Ridge National Laboratory, Oak Ridge, Tennessee

5R6 ION SOURCE OPERATION WITH DIFFERENT MAGNETIC CONFINEMENT GEOMETRIES
K.N. Leung and K.W. Ehlers, Lawrence Berkeley Laboratory, University of California, Berkeley, California

5R7 PRODUCTION OF HIGH PERCENTAGE H_2^+ or D_2^+ ION BEAMS
K.W. Ehlers and K.N. Leung, Lawrence Berkeley Laboratory, University of California, Berkeley, California

5R8 PERFORMANCE OF AN ELECTRON FEED ASSEMBLY FOR ORNL/MFTF-B 30-s ION SOURCES
D.E. Schechter and C.C. Tsai, Oak Ridge National Laboratory, Oak Ridge, Tennessee

5R9 HIGH RESOLUTION TOTAL BEAM MAGNETIC SPECIES ANALYZER FOR A 13 × 43 cm^2, 50 A ION SOURCE
W.K. Dagenhart and R.J. Raridon, Oak Ridge National Laboratory, Oak Ridge, Tennessee

5R10 A LINEAR OPTICS THEORY APPLIED TO DOUBLET III NEUTRAL INJECTOR ION SOURCES
J. Kim, GA Technologies Inc., San Diego, California

5R11 REDUCTION OF THE OXYGEN IMPURITY OF NEUTRAL BEAM INJECTORS USING GETTERING TECHNIQUES
R. Kane, P. Poulsen, S. Hibbs, and R. Kerr, Lawrence Livermore National Laboratory, Livermore, California

5R12 ACCELERATION OF INTERMEDIATE Z AND HIGH Z BEAMS FROM A DUOPIGATRON
P. Weber, R.M. Gilgenbach, J. Meachum, P. Shah, and M. Cuneo, Nuclear Engineering Department, The University of Michigan, Ann Arbor, Michigan

Wednesday, May 25, 1983
2:00 P.M. (San Antonio Room)

Oral Session 6A - NUCLEAR PUMPED LASERS
Session Chairperson - M. Zediker

6A1 CO-PRODUCTION FROM CHARGED PARTICLE RADIOLYSIS
M. Peck, A. Chung, and M. Prelas, Nuclear Engineering, University of Missouri-Columbia, Columbia, Missouri

6A2 RADIOLYTIC DYNAMICS OF HELIUM-BUFFERED CO_2 SYSTEM
A.K. Chung, M. Peck, and M.A. Prelas, Nuclear Engineering, University of Missouri-Columbia, Columbia, Missouri

6A3 NUCLEAR GENERATION OF $O_2(^1\Delta)$ BY PHOTOLYSIS OF OZONE
H. Elsayed-Ali, M. Zediker, and G.H. Miley, Fusion Studies Lab., University of Illinois, Urbana, Illinois

6A4 INVITED PAPER: CHARGED PARTICLE SPECTRA FROM B-10 AND UO_2 SLAB AND SPHERICAL SOURCES
A. K. Chung and M. A. Prelas, Nuclear Engineering, University of Missouri, Columbia

6A5 POWER DEPOSITION IN A CYLINDRICAL GEOMETRY USING B-10 COATINGS
A.K. Chung and M.A. Prelas, Nuclear Engineering, University of Missouri-Columbia, Columbia, Missouri

6A6 THE DECAY OF $O_2(^1\Delta)$ GENERATED BY NUCLEAR PUMPING IN A FLOWING Ar-O_2 MIXTURE
M.S. Zediker, D.C. Shannon, H. Elsayed-Ali, and G.H. Miley, Fusion Studies Lab., University of Illinois, Urbana, Illinois

6A7 EVALUATION OF CURRENT NUCLEAR TECHNOLOGY FOR POWERING SPACE LASERS
M.A. Prelas and F.P. Boody,[1] University of Missouri, Columbia, Missouri
[1]NPL Corp., Kingston, New Jersey

6A8 DESIGN OF A NUCLEAR PUMPED HEAT PIPE FOR A GAS DYNAMIC CO_2 LASER
M. Zediker and G. H. Miler, University of Illinois, Urbana, Illinois

6A9 STUDY OF A SIMULATED DNP LASER PLASMA
M. Fitaire, A.M. Pointu, D. Paleodimos, M. Vialle, Laboratoire de Physique des Plasmas, Universite Paris-Sud, Orsay, France

Wednesday, May 25, 1983
2:00 P.M. (Chenin Room)

Oral Session 6B - TOKAMAKS AND STELLERATORS
Session Chairperson - D. Overskei

6B1 INVITED PAPER PARTICLE CONFINEMENT IN ISX-B
A.J. Wootton, Oak Ridge National Laboratory, Oak Ridge, Tennessee

6B2 AN ALCATOR-LIKE CONFINEMENT TIME SCALING LAW DERIVED FROM BUCKINGHAM'S PI THEOREM
J.R. Roth, University of Tennessee, Knoxville, Tennessee

6B3 PLASMA RESISTIVITY IN THERMAL AND SLIDEAWAY DISCHARGES IN THE PLT TOKAMAK
G. Taylor, S. Bernabei, D. Boyd,[1] A. Cavallo,[1] T.K. Chu, C. Daughney, P. Efthimion, W. Hooke, J. Hosea, F. Jobes, R. Motley, J. Stevens, J. Strachan, and S. von Goeler, Princeton University, Princeton, New Jersey
[1]University of Maryland, College Park, Maryland

6B4 SPACE POTENTIAL, ELECTRON TEMPERATURE, AND ELECTRON DENSITY MEASUREMENTS ON RENTOR WITH A HEAVY ION BEAM PROBE
P.M. Schoch, W.C. Jennings, and R.L. Hickok, Rensselaer Polytechnic Institute, Troy, New York

6B5 INVITED PAPER: THE ADVANCED TOROIDAL FACILITY-1
T.C. Jernigan, Oak Ridge National Laboratory, Oak Ridge, Tennessee

Wednesday, May 25, 1983
2:00 P.M. (Gamay Room)

Oral Session 6C - RAILGUNS AND MASS ACCELERATORS
Session Chairperson - R. S. Hawke

6C1 DEVELOPMENT OF A CAPACITOR POWERED RAIL GUN FOR HYPERVELOCITY IMPACT STUDIES
J.E. Shrader, Boeing Aerospace Company, Seattle, Washington

6C2 INVITED PAPER: DISTRIBUTED ENERGY STORE RAILGUN SYSTEM EXPERIMENTAL RESULTS AND ANALYSIS
L.D. Holland, Center for Electromechanics, The University of Texas at Austin, Austin, Texas

6C3 HYVAX: A HYPERVELOCITY RAILGUN EXPERIMENT
J.V. Parker, W.M. Parsons, D.R. Peterson, and C.E. Cummings, Los Alamos National Laboratory, Los Alamos, New Mexico

6C4 EFFICIENCY OF ARC DRIVEN RAILGUNS
Y.C. Thio and I.R. McNab, Westinghouse Research Laboratory, Pittsburg, Pennsylvania

6C5 HARD-DRIVEN RAIL-GUN TESTS
D.R. Peterson, C.M. Fowler, J.F. Kerrisk, C.E. Cummings, S.P. Marsh, and J.V. Parker, Los Alamos National Laboratory, Los Alamos, New Mexico

6C6 SPATIAL DISTRIBUTION OF CURRENT IN A RAIL GUN ARC ARMATURE
K.A. Jamison, M. Marquez-Reines, and H.S. Burden, U.S. Army Ballistic Research Laboratory, Aberdeen Proving Ground, Maryland

6C7 MEASUREMENT AND CALCULATION OF MAGNETIC FIELDS ASSOCIATED WITH RAIL-GUN CURRENTS
J.F. Kerrisk, C.M. Fowler, and D.R. Peterson, Los Alamos National Laboratory, Los Alamos, New Mexico

6C8 MULTI-STAGE MAGNETIC INDUCTION MASS ACCELERATOR
T.J. Burgess and B.W. Duggin, Sandia National Laboratories, Albuquerque, New Mexico

6C9 HYBRID RAIL GUN ELECTROMAGNETIC ACCELERATORS
K.W. Chen, H. Hachen, A. Lee, G. Legh, T. Lin, S. Mattay, and S. Wipf,[1] Center for Accelerator Technology & Applied Sciences, University of Texas at Arlington, Arlington, Texas
[1]Los Alamos National Laboratory, Los Alamos, New Mexico

Wednesday, May 25, 1983
2:00 P.M. (San Diego Room)

Oral Session 6D - ELECTRODELESS DISCHARGES, ARCS, AND PLASMA CHEMISTRY
Session Chairperson - W. W. Byszewski

6D1 WALL CHARGE VARIATIONS IN ELECTRODELESS DISCHARGES IN 60 Hz FIELDS
R.L. Ma[1] and F.L. Curzon, Physics Department, University of British Columbia, Vancouver, British Columbia, Canada
[1]Cultural Exchange Visitor from South China Institute of Technology, Guangzhou, People's Republic of China

6D2 CHARACTERISTICS OF MICROWAVE PLASMA PRODUCED BY SURFACE WAVES
J. Marec, E. Bloyet, E. Dervisevic, C. Laporte, P. Leprince, M. Pouey, and S. Saada, Universite Paris-Sud, ORSAY, FRANCE

6D3 ENERGY BALANCE MEASUREMENTS FOR MICROWAVE PLASMA COUPLING OF POWER TO HYDROGEN
M.C. Hawley, T.J. Morin, and R. Chapman, Department of Chemical Engineering, Michigan State University, East Lansing, Michigan

6D4 MEASUREMENTS OF THE ELECTROMAGNETIC FIELD PATTERNS SURROUNDING ATMOSPHERIC MICROWAVE DISCHARGES
S. Whitehair and J. Asmussen, Michigan State University, East Lansing, Michigan

6D5 INVITED PAPER: CHEMICAL SYNTHESIS UNDER THERMAL PLASMA CONDITIONS, MODELLING, TEMPERATURES, VELOCITIES, KINETIC MEASUREMENTS: APPLICATION TO NO SYNTHESIS IN D.C. ARC PLASMA
P. Fauchais, A. Catherinot and J.F. Coudert, University of Limoges, France

6D6 TEMPERATURES OF DYNAMIC NITROGEN ARCS IN HIGH SPEED FLOW
Y.C. Lau and D.M. Benenson, State University of New York at Buffalo, Amherst, New York

6D7 VACUUM BREAKDOWN UNDER IMPULSE VOLTAGES
Y. Yen, D.T. Tuma, and D.K. Davies,[1] Department of Electrical Engineering, Carnegie-Mellon University, Pittsburgh, Pennsylvania
[1]Westinghouse Research and Development Center

6D8 FUEL AND CONTROL FOR AN INTEGRATED FUEL CELL SYSTEM
W.E. Young and J.A. Dilmore, Westinghouse R&D Center, Pittsburgh, Pennsylvania

Wednesday, May 25, 1983
2:00 P.M. (Grand Ballroom)

Poster Session 6P - COMPACT TOROIDS AND REVERSE FIELD PINCHES

6P1 EQUILIBRIUM CONTROL EXPERIMENTS ON ZT-40M
R.G. Watt, R.S. Massey, C.J. Buchenauer, L.C. Burkhardt, A. Haberstich, A.R. Jacobson, G. Miller, R. Moses, and K. Schoenberg, Los Alamos National Laboratory, Los Alamos, New Mexico

6P2 AN EVALUATION OF LIMITER CONFIGURATIONS IN ZT-40M
J.N. Downing, C.J. Buchenauer, M.J. Embrechts, J.C. Ingraham, R.A. Krakowski, J.A. Phillips, K.S. Thomas, and R.G. Watt, Los Alamos National Laboratory, Los Alamos, New Mexico

6P3 TEMPERATURE MEASUREMENTS IN ZT-40M
E.M. Little, A. Haberstich, K.S. Thomas, and R.G. Watt, Los Alamos National Laboratory, Los Alamos, New Mexico

6P4 RADIAL MAGNETIC FIELD MEASUREMENTS AT THE WALL AND CORRELATION WITH ENERGY FLUX
R.B. Howell and J.C. Ingraham, Los Alamos National Laboratory, Los Alamos, New Mexico

6P5 CALCULATION OF A PLASMA RESISTIVITY IN THE PRESENCE OF A REVERSED-FIELD PINCH DYNAMO
K.F. Schoenberg, R.W. Moses Jr., and R.L. Hagenson,[1] Los Alamos National Laboratory, Los Alamos, New Mexico
[1]Technology International Inc., Ames, Iowa

6P6 FORMATION OF FIELD REVERSED CONFIGURATIONS
A.L. Hoffman, J.T. Slough, and R.D. Milroy, Mathematical Sciences Northwest, Bellevue, Washington

6P7 NEW RESULTS FROM SIDE-ON INTERFEROMETRY ON FIELD-REVERSED CONFIGURATIONS IN THE FRX-C DEVICE
M. Tuszewski, R.L. Spencer, and the FRX-C Group, Los Alamos National Laboratory, Los Alamos, New Mexico

6P8 QUADRUPOLE STABILIZATION OF THE n=2 ROTATIONAL MODE IN FRX-C
R. Chrien, T. Armstrong, R. Bartsch, J. Cochrane, R. Kewish, P. Klingner, R. Linford, K. McKenna, D. Rej, E. Sherwood, R. Siemon, and M. Tuszewski, Los Alamos National Laboratory, Los Alamos, New Mexico

Wednesday, May 25, 1983
2:00 P.M. (Grand Ballroom)

Poster Session 6Q - INTENSE ELECTRON AND ION BEAMS

6Q1 RETURN CURRENT 2D-MAPPING OF SHORT-PULSE RELATIVISTIC ELETRON BEAMS PROPAGATING IN GASES
J.-M. Dolique, A. Piquemal, J.-R. Roche, and P. Sortais, Laboratoire de Physique des Plasmas, Universite de Grenoble I., France

6Q2 A SIMPLE MODEL OF HOSE INSTABILITIES IN ROTATING ELECTRON BEAMS
J.E. Brandenburg, Sandia National Laboratories, Albuquerque, New Mexico

6Q3 INVESTIGATION OF ENERGY SPREAD AND ANGULAR SCATTER IN INNER AND OUTER CONDUCTOR FOILLESS DIODES
L.E. Thode, Los Alamos National Laboratory, Advanced Concepts and Plasma Applications Group, Los Alamos, New Mexico

6Q4 THE AXISYMMETRIC INSTABILITY OF A PINCHED ELECTRON BEAM
H.C. Chen and H.S. Uhm, Naval Surface Weapons Center, Silver Spring, Maryland

6Q5 EXTERNAL TRANSPORT SCHEME FOR CROSSED FIELD INJECTION INTO A MODIFIED BETATRON
F. Mako,[1] W. Manheimer, D. Chernin,[2] J. Golden, and C.A. Kapetanakos, Naval Research Laboratory, Washington, District of Columbia
[1]Jaycor, Inc., Alexandria, Virginia
[2]Berkeley Research Associates, Springfield, Virginia

6Q6 STRONGLY-FOCUSED, HIGH CURRENT BETATRONS
D. Chernin,[1] A. Mondelli, and C.W. Roberson,[2] Science Applications, Inc., McLean, Virginia
[1]Berkeley Research Associates
[2]Office of Naval Research

6Q7 BEATRON ACCELERATION OF ELECTRON RINGS IN RECE-CHRISTA
D. Taggart, M. Parker, H. Hopman and H.H. Fleischmann, Cornell University, Ithaca, NY

6Q8 ELECTRON RING TRAPPING IN MIRROR FIELDS
W. Peter and R.J. Faehl, Los Alamos National Laboratory, Advanced Concepts and Plasma Applications Group, Los Alamos, New Mexico

6Q9 COMPACT TOROIDAL ENERGY STORAGE DEVICE WITH RELATIVISTICALLY DENSIFIED ELECTRONS THROUGH THE USE OF TRAVELLING MAGNETIC WAVES
K.W. Chen and F. Winterberg,[1] Center for Accelerator Technology & Applied Sciences, University of Texas at Arlington, Arlington, Texas
[1]Desert Research Institute, University of Nevada System

6Q10 PARTICLE SIMULATIONS OF TRANSITIONS IN MAGNETICALLY INSULATED TRANSMISSION LINES
D.B. Seidel and C.W. Mendel Jr., Sandia National Laboratories, Albuquerque, New Mexico

6Q11 ANNULAR ELECTRON BEAM PRODUCTION ON GAMBLE II USING A MAGNETICALLY INSULATED SPLITTER
W.F. Oliphant, R.J. Barker,[1] J.R. Boller, G. Cooperstein, S.A. Goldstein,[2] and S.J. Stephanakis, Naval Research Laboratory, Washington, District of Columbia
[1]Mission Research Corp., Alexandria, Virginia
[2]Jaycor, Inc., Alexandria, Virginia

6Q12 PERFORMANCE OF ANNULAR ELECTRON BEAMS WITH A MAGNETICALLY INSULATED SPLITTER
G.M. Wilkinson, J. Shannon, J. Pearlman, and W. Clark, Maxwell Laboratories, Inc., San Diego, California

6Q13 DOSE CALIBRATIONS OF ITENSIFYING SCREENS AND NEUTRAL DENSITY FILTERS FOR USE ON PULSED X-RAY SOURCES
M. Gersten, J.E. Rauch, and J. Shannon, Maxwell Laboratories, Inc., San Diego, California

Wednesday, May 25, 1983
2:00 P.M. (Grand Ballroom)

Poster Session 6R - FUSION REACTOR TECHNOLOGY

6R1 CHARGE EXCHANGE FLUX ON TOKAMAK LIMITERS -- MODELING AND EFFECTS
R.T. McGrath and M.J. Poploski, Nuclear Engineering Department, Pennsylvania State University, University Park, Pennsylvania

6R2 CONTROL FOR FUSION THERMAL STABILITY
I. Maya and H.D. Campbell, GA Technologies Inc., San Diego, California

6R3 SUPPRESSION OF TRITIUM PERMEATION THROUGH STAINLESS STEEL WALL BY GOLD PLATING
T. Norimatsu, M. Yoshida, M. Takagi, Y. Izawa, and C. Yamanaka, Institute of Laser Engineering, Osaka University, Osaka, Japan

6R4 PERFORMANCE TEST OF TWO 21.5 INCH BORE SUPERCONDUCTING MAGNETS FOR USE IN THE MISSOURI MIRROR FUSION PROJECT
M. Peck, B. Reed, M. Prelas, and W. Meyer[1], Nuclear Engineering, University of Missouri-Columbia, Columbia, Missouri
[1]Syracuse University, Syracuse, New York

6R5 INNOVATIVE TECHNOLOGIES IN LASER-PELLET, TOKAMAK, HYBRID FUSION REACTORS
S.M. Ayub, Karachi, Pakistan

Wednesday, May 25, 1983
2:00 P.M. (Grand Ballroom)

6S POST DEADLINE PAPERS