

Monday, May 14, 1984
8:30 A.M. (Mississippi Ballroom)

OPENING SESSION

Chairperson, T. J. MENNE
MCDONNELL DOUGLAS CORPORATION

I. ALEXEFF
UNIVERSITY OF TENNESSEE

IEEE FELLOWS AWARDS
IEEE SPECIAL AWARDS

J. LEON SHOHEIT
UNIVERSITY OF WISCONSIN
MADISON, WISCONSIN

"IEEE CENTENNIAL COMMEMORATION"

DAVID B. NELSON
U. S. DEPARTMENT OF ENERGY
WASHINGTON, D. C.

KEYNOTE ADDRESS:

"U. S. MAGNETIC FUSION - TODAY AND TOMORROW"

Monday, May 14, 1984
10:00 A.M. (St. Louis Room)

Oral Session 1A - INTENSE ELECTRON AND ION BEAMS
Session Chairperson - C. W. Roberson

- 1A1 PBFA I LOW INDUCTANCE MAGNETICALLY SELF-INSULATED VOLTAGE ADDER
J. T. Crow, Sandia National Laboratories, Albuquerque, New Mexico
- 1A2 FLUTE INSTABILITIES OF A SELF-PINCHED ELECTRON BEAM
H. S. Uhm, Naval Surface Weapons Center, Silver Spring, Maryland
- 1A3 RADIATIVE AND NON-RADIATIVE ELECTROMAGNETIC FIELDS OF RELATIVISTIC ACCELERATED CHARGES
W. B. Mater II and D. D. Cobb, Los Alamos National Laboratory, Los Alamos, New Mexico
- 1A4 LASER DEFLECTION DIAGNOSTIC FOR REDUCED DENSITY CHANNELS PRODUCED BY ELECTRON BEAM
E. A. Rose and M. A. Greenspan, McDonnell Douglas Research Laboratories, St. Louis, Missouri
- 1A5 INVITED PAPER: A MULTI-GHZ MULTI-CHANNEL PHOTONIC ANALOG DATA RECORDING SYSTEM
J. Chang, W. F. Filter, G. J. Lockwood, and B. T. Neyer, Sandia National Laboratories, Albuquerque, New Mexico
- 1A6 GENERATION AND TRANSPORT OF ELECTRON BEAMS FOR EXCIMER LASER PUMPING
M. E. Jones and D. S. Lemons, Los Alamos National Laboratory, Los Alamos, New Mexico
- 1A7 A BETTER BOUND FOR PARTICLE BEAM CURRENTS
A. Kadish, Los Alamos National Laboratory, Los Alamos, New Mexico
- 1A8 INVITED PAPER: HIGH CURRENT BETATRON
A. Fisher, University of California, Irvine, California
- 1A9 300 keV INDUCTION CAVITY ELECTRON INJECTOR FOR THE ATP BETATRON
S. Humphries, Jr., L. K. Len, and D. M. Woodall, University of New Mexico, Albuquerque, New Mexico
- 1A10 BEAM OPTICS TEST STAND
G. R. Hess and S. Humphries, Jr., University of New Mexico, Albuquerque, New Mexico

Monday, May 14, 1984
10:00 A.M. (Lewis Room)

Oral Session 1B - TOKAMAKS AND STELLARATORS
Session Chairperson - J. L. Shoheit

- 1B1 INVITED PAPER: FIRST YEAR OF TFTR OPERATION
J. Sillis and the TFTR Group, Princeton Plasma Physics Laboratory, Princeton, New Jersey
- 1B2 TFTR FIELD COIL OPERATING LIMITS AND ASSOCIATED TESTING
R. Woolley, Princeton Plasma Physics Laboratory, Princeton, New Jersey
- 1B3 PLASMA SPACE POTENTIAL MEASUREMENTS ON ISX-B
G. Hallcock, J. Mathew, R. Hickok, W. Jennings, A. Wootton, ¹Rensselaer Polytechnic Institute, Troy, New York
¹Oak Ridge National Laboratory, Oak Ridge, Tennessee
- 1B4 RADIAL PROFILE MEASUREMENTS OF ϕ , T_e AND n ON RENTOR
P. Schoch, W. Jennings and R. Hickok, Rensselaer Polytechnic Institute, Troy, New York
- 1B5 MEASUREMENT OF FLUCTUATION ENHANCED DIFFUSION IN RENTOR
K. Saadatmand, W. Jennings and R. Hickok, Rensselaer Polytechnic Institute, Troy, New York
- 1B6 TRANSPORT OF INJECTED IMPURITIES IN HELIOTRON E
J. Rice, J. Terry, E. Marmor, O. Motojima, ¹H. Kaneko, ¹K. Kondo, ¹and T. Mizuuchi, ¹Plasma Fusion Center, MIT, Cambridge, Massachusetts
¹Kyoto University, Kyoto, Japan

Monday, May 14, 1984
10:00 A.M. (Clark Room)

Oral Session 1C - FAST OPENING SWITCHES
Session Chairperson - G. Cooperstein

- 1C1 PLASMA COMPRESSION OPENING SWITCH EXPERIMENTS
J. Goforth and A. Williams, Los Alamos National Laboratory, Los Alamos, New Mexico
- 1C2 EXPLOSIVELY DRIVEN OPENING SWITCHES
A. Williams, S. Marsh and J. Goforth, Los Alamos National Laboratory, Los Alamos, New Mexico
- 1C3 INVITED PAPER: MULTIMEGAJoule, MULTIMEGAMPERE OPERATION OF A PLASMA FLOW SWITCH
P. Turchi, G. Bird, C. Boyer, D. Conte, J. Davis, S. Seiler, W. Baker, ¹R. Reinovsky, ¹J. Degnan, ¹J. Holmes, ¹R. Sand, ¹and E. Lopez, ¹R & D Associates, Alexandria, Virginia
¹Air Force Weapons Laboratory, Kirtland AFB, New Mexico
- 1C4 LIMITATIONS ON PEOS OPERATION
P. Ottinger, R. Meger ¹and J. Neri, ¹JAYCOR, Inc., Alexandria, Virginia
¹Naval Research Laboratory, Washington, D. C.
- 1C5 POSITIVE POLARITY OPERATION OF THE PLASMA EROSION OPENING SWITCH
B. Weber, R. Comisso, ¹W. Oliphant, ¹P. Ottinger, JAYCOR, Inc., Alexandria, Virginia
¹Naval Research Laboratory, Washington, D. C.
- 1C6 NUMERICAL STUDIES OF PLASMA EROSION OPENING SWITCHES
J. Neri, P. Ottinger, ¹A. Drobot, ²Naval Research Laboratory, Washington, D. C.
¹JAYCOR, Inc., Alexandria, Virginia
²Science Applications, Inc., McLean, Virginia
- 1C7 USE OF AN ELECTRON-BEAM CONTROLLED DIFFUSE DISCHARGE AS A FAST OPENING SWITCH
V. Scherrer, R. Comisso, R. Fernsler and I. Vitkovitsky, Naval Research Laboratory, Washington, D. C.
- 1C8 EXPERIMENTAL STUDY OF PLASMA FOCUS OPENING SWITCH COUPLED WITH A CURRENT CHARGED TRANSMISSION LINE
M. Rhee, B. Park and R. Schneider, University of Maryland, College Park, Maryland

Monday, May 14, 1984
10:00 A.M. (Field Room)

Oral Session 1D - TOROIDS AND PINCHES
Session Chairperson - L. Steinhauer and J. Pearlman

- 1D1 CHARACTERIZATION OF THE GAS-PUFF IMPLoding PLASMA ON THE NRL GAMBLE II GENERATOR
S. Stephanakis, J. Boller, G. Cooperstein, R. Meger, J. Neri, P. Ottinger, F. Young, D. Nagel, J. Davis, D. Duston, P. Kepple, S. Wong, T. Sheridan, P. Sincerny, and C. Gilman, Naval Research Laboratory, Washington, D. C.
Physics International Company, San Leandro, California
- 1D2 MODELING PROTO II GAS PUFF IMPLSIONS
M. Matzen and T. Hussey, Sandia National Laboratories, Albuquerque, New Mexico
- 1D3 CYLINDRICAL DIFFUSION OF MAGNETIC FIELDS INTO A PLASMA SHELL
N. Roderick, University of New Mexico, Albuquerque, New Mexico
- 1D4 INVITED PAPER: A COMPARISON OF MAINLINE AND ALTERNATE APPROACHES TO FUSION ENERGY
P. Hayman and J. Roth, Duke Power Company, Charlotte, North Carolina
University of Tennessee, Knoxville, Tennessee
- 1D5 FIELD-REVERSED CONFIGURATION TRANSLATION STUDIES IN FRX-C/T
R. Chrien, W. Armstrong, P. Klingner, R. Linford, K. McKenna, D. Rej, E. Sherwood, R. Siemon and M. Tuszewski, Los Alamos National Laboratory, Los Alamos, New Mexico
- 1D6 INTERNAL MAGNETIC FIELD MEASUREMENTS IN A TRANSLATING FIELD- REVERSED CONFIGURATION
W. Armstrong, R. Chrien, K. McKenna, D. Rej, E. Sherwood, R. Siemon and M. Tuszewski, Los Alamos National Laboratory, Los Alamos, New Mexico
- 1D7 NEUTRAL PARTICLE DIFFUSION IN FIELD-REVERSED CONFIGURATIONS
D. Rej, Los Alamos National Laboratory, Los Alamos, New Mexico
- 1D8 FIELD-REVERSED CONFIGURATION CONFINEMENT IN TRX-1
L. Steinhauer and J. Slough, Mathematical Sciences Northwest, Bellevue, Washington

Monday, May 14, 1984
10:00 A.M. (Jefferson Room)

Poster Session 1P - NEUTRAL BEAMS FOR FUSION RESEARCH

- 1P1 APPLICATION OF RADIO FREQUENCY INDUCTION DISCHARGES FOR NEUTRAL BEAM SYSTEMS
W. DiVergilio, Manhattan Beach, California
- 1P2 NEUTRAL BEAM INJECTION ON THE PHAEDRUS TANDEM MIRROR EXPERIMENT
J. Conrad, R. Breun, D. Brouchous, G. Butz, S. Horne, L. Peranich, H. Persing, D. Pirkle and S. Ross, University of Wisconsin, Madison, Wisconsin
- 1P3 A MODERN NEUTRAL BEAM INJECTOR FOR 475-keV MARS SLOSHING IONS
G. Hamilton and D. Goebel, Lawrence Livermore National Laboratory, Livermore, California
TRW, Redondo Beach, California
- 1P4 DYNAMICS OF 3-D RIBBON BEAMS USING 2-D METHODS
O. Anderson and L. Soroka, Lawrence Berkeley Laboratory, Berkeley, California
- 1P5 MECHANICAL DESIGN OF THE TRANSVERSE FIELD FOCUSING (TFF) MATCHING AND PUMPING SECTION FOR NEGATIVE ION BASED NEUTRAL BEAM SYSTEMS
P. Purgalis, M. Fong, Y. Maruyama, C. Matuk, T. Nakae, J. Paterson and A. Wandesforde, Lawrence Berkeley Laboratory, Berkeley, California
- 1P6 DIRECTLY HEATED LANTHANUM HEXABORIDE FILAMENTS FOR LONG PULSE OR CW ION SOURCE OPERATION
K. Leung, P. Pincosy and K. Ehlers, Lawrence Berkeley Laboratory, Berkeley, California
- 1P7 PERFORMANCE TEST AT THE PROTOTYPE INJECTOR UNIT FOR JT-60
S. Tanaka and JAERI Neutral Beam Development Group, Japan Atomic Energy Research Institute, Naka, Ibaraki, Japan

- 1P8 EVALUATION OF CRYSTAL IMPLANTATION TECHNIQUE FOR THE MEASUREMENT OF NEUTRAL BEAM COMPOSITION AND ENERGY SPECTRA
P. Ryan, R. Langley, C. Magee, C. Tsai, M. Menon, S. Combs, S. Milora, H. Haselton, Oak Ridge National Laboratory, Oak Ridge, Tennessee
RCA Laboratories, Princeton, New Jersey
- 1P9 GRID LOADING MECHANISMS IN ION SOURCES FOR NEUTRAL BEAM APPLICATIONS
C. Tsai, H. Haselton, R. McGaffey, M. Menon, D. Schechter and J. Whealton, Oak Ridge National Laboratory, Oak Ridge, Tennessee.
- 1P10 ANGULAR SPREAD OF NEGATIVE HYDROGEN IONS SPUTTERED BY CESIUM BOMBARDMENT
R. Gibson, J. Lopes, M. Seidl, Stevens Institute of Technology, Hoboken, New Jersey
- 1P11 PRODUCTION OF VIBRATIONALLY EXCITED H₂ FOR USE IN AN H⁻ SOURCE
S. Walther and R. Turnbull, University of Illinois, Urbana, Illinois
- 1P12 VOLUME PRODUCTION OF H⁻ UTILIZING VIBRATIONALLY EXCITED H₂
P. Genis, V. Scarpine and R. Turnbull, University of Illinois, Urbana, Illinois

Monday, May 14, 1984
10:00 A.M. (Jefferson Room)

Poster Session 1Q - GASEOUS ELECTRONICS

- 1Q1 EQUATION OF EVOLUTION FOR ELECTRONS IN A WEAKLY IONIZED GAS AND INFLUENCED BY SPACE-TIME VARYING ELECTRIC FIELDS
E. Kunhardt, Polytechnic Institute of New York, Farmingdale, New York
- 1Q2 AVALANCHE CONTROLLED SELF-SUSTAINED GLOW DISCHARGE EXPERIMENTS IN FLUORINE/HYDROGEN GAS MIXTURES
W. Moeny, Tetra Corporation, Albuquerque, New Mexico
- 1Q3 ONSET CONDITIONS FOR CONSTRICTION AND FILAMENT FORMATION IN DIFFUSE GLOW DISCHARGE PLASMAS
G. Rogoff, GTE Laboratories, Waltham, Massachusetts
- 1Q4 LASER DIAGNOSTICS OF LASER PREIONIZATION TRIGGERED SPARK COLUMNS FOR HIGH POWER SWITCH APPLICATION
E. Crawford, W. Kimura, M. Kushner and S. Byron, Mathematical Sciences Northwest, Inc., Bellevue, Washington
- 1Q5 FINAL JUMP PHASE OF THE LEADER CHANNEL
M. Kekez and P. Savic, National Research Council, Canada, Ottawa, Canada
- 1Q6 CORONA AND TRACKING PROTECTION FOR PARALLEL PLATE TRANSMISSION LINES
M. Kekez, A. Shewchuk and G. Loughheed, National Research Council, Canada, Ottawa, Canada
- 1Q7 LIQUID METAL WETTING OF METALS USING A PLASMA DISCHARGE TECHNIQUE
T. Sudarshan, M. Lim, R. Dougal and P. Hefley, University of South Carolina, Columbia, South Carolina
- 1Q8 MULTITHERMAL ANALYSIS OF SUBATMOSPHERIC ARGON ARCS
T. Eddy, Georgia Institute of Technology, Atlanta, Georgia

Monday, May 14, 1984
10:00 A.M. (Jefferson Room)

Poster Session 1R - HIGH POWER MICROWAVE GENERATION

- 1R1 TWO MECHANISMS FOR MICROWAVE GENERATION: REFLEXING ELECTRONS AND OSCILLATING VIRTUAL CATHODE
B. DeVolder, L. Thode, T. Kwan, and M. Clark, Los Alamos National Laboratory, Los Alamos, New Mexico
Air Force Weapons Laboratory, Kirtland AFB, Albuquerque, New Mexico
- 1R2 A HIGH-POWER REFLEX TRIODE
A. Peratt, B. Freeman, R. Hoerberling, L. Thode and J. Toevs, Los Alamos National Laboratory, Los Alamos, New Mexico
- 1R3 VIRTUAL CATHODE MICROWAVE GENERATION USING INHOMOGENEOUS MAGNETIC FIELD AND WAVE GUIDE WALL CONFIGURATION
L. Thode, T. Kwan and B. DeVolder, Los Alamos National Laboratory, Los Alamos, New Mexico

1R4	OBSERVATIONS OF HIGH-POWER MICROWAVE EMISSION FROM A VIRTUAL CATHODE DEVICE H. Davis and R. Bartsch, Los Alamos National Laboratory, Los Alamos, New Mexico	2A9	TRANSPORT OF NEUTRAL HYDROGEN ATOMS IN A HYDROGEN PLASMA S. Loyalka and R. Warder, University of Missouri, Columbia, Missouri
1R5	ANALYTIC THEORY OF THE SANDIA BACKWARD WAVE OSCILLATOR J. Swegle, Sandia National Laboratories, Albuquerque, New Mexico	2A10	CONCEPTUAL NEUTRAL BEAM-INJECTION TOKAMAK FOR STUDY OF PLASMA HEATING, IMPURITY CONTROL, AND IRRADIATION EFFECT ON FUSION REACTOR MATERIALS B. Ma, Iowa State University, Ames, Iowa
1R6	PARTICLE SIMULATIONS OF RELATIVISTIC BWO J. Poukey and G. Leifeste, Sandia National Laboratories, Albuquerque, New Mexico		
1R7	HIGH POWER MICROWAVE GENERATION FROM A CUSP-INJECTED INTENSE RELATIVISTIC ELECTRON BEAM R. Kulkarni, W. Destler, W. Lawson, C. Striffler and S. Swanekamp, University of Maryland, College Park, Maryland		Monday, May 14, 1984 2:00 P.M. (Lewis Room)
1R8	AN ELECTROOPTICAL POWER AND SPECTRUM ANALYZER FOR PULSED MICROWAVE MEASUREMENTS J. Chang and C. Vittitoe, Sandia National Laboratories, Albuquerque, New Mexico		Oral Session 2B - GASEOUS ELECTRONICS Session Chairperson - G. L. Rogoff
1R9	STABILITY OF ELECTRON ORBITS IN THE ORBITRON MASER W. Nakoneczny and I. Alexeff, University of Tennessee, Knoxville, Tennessee	2B1	MOLECULAR DISSOCIATIVE PROCESSES IN THE PRODUCTION OF ATOMIC EMISSION IN A NON-EQUILIBRIUM HYDROGEN PLASMA J. Kunc and M. Gundersen, University of Southern California, Los Angeles, California
1R10	THEORY AND SIMULATION OF A CROSSED-FIELD MICROWAVE DEVICE G. Thomas, W. Bollen, ¹ B. Goplen, ¹ D. Kaup, ² and G. Johnston, ³ Varian Associates, Inc., Beverly, Massachusetts ¹ Mission Research Corporation ² Clarkson College ³ Plasma Fusion Center, MIT, Cambridge, Massachusetts	2B2	STREAMER STRUCTURE AND PROPAGATION R. Fernsler, Naval Research Laboratory, Washington, D. C.
1R11	HIGH MAGNETIC FIELD EXPERIMENTS WITH A MICROWAVE CROSSED-FIELD AMPLIFIER S. Shpock and G. Thomas, Varian Beverly Microwave Division, Beverly, Massachusetts	2B3	SPACE-CHARGE DOMINATED PHENOMENA IN THE ELECTRICAL BREAKDOWN OF GASES S. Dhali and P. Williams, Texas Tech University, Lubbock, Texas
1R12	SPACE-TIME EVOLUTION OF RELATIVISTIC ELECTROMAGNETIC INSTABILITIES A. Ram and A. Bers, Plasma Fusion Center, MIT, Cambridge, Massachusetts	2B4	SPACE CHARGE EFFECT ON THE ELECTRON KINETICS OCCURRING IN ATMOSPHERIC GAS PRESSURE L. Lee and F. Li, San Diego State University, San Diego, California
		2B5	TWO-STEP IONIZATION IN A TRANSIENT NITROGEN DISCHARGE W. Byszewski, K. Chung, R. Piejak, J. Novak, ¹ GTE Laboratories, Inc., Waltham, Massachusetts ¹ IREQ, Varemnes, Quebec, Canada
		2B6	INVESTIGATIONS OF E-BEAM CONTROLLED DIFFUSE DISCHARGES K. Schoenbach, G. Schaefer, M. Kristiansen, H. Krompholz, H. Harjes and D. Skaggs, Texas Tech University, Lubbock, Texas
		2B7	MODELING OF LASER TRIGGERED SPARK COLUMNS M. Kushner and R. Milroy, Mathematical Sciences Northwest, Inc., Bellevue, Washington
	Monday, May 14, 1984 2:00 P.M. (St. Louis Room)	2B8	POWER DISSIPATED IN LOW PRESSURE RADIO-FREQUENCY DISCHARGE PLASMAS O. Popov, V. Godyak, ¹ Stevens Institute of Technology, Hoboken, New Jersey ¹ Moscow, USSR
	Oral Session 2A - NEUTRAL BEAMS FOR FUSION RESEARCH Session Chairperson - K. W. Ehlers	2B9	PERFORMANCE MEASUREMENTS ON A MICROWAVE ELECTROTHERMAL ENGINE S. Whitehair, J. Asmussen and S. Nakanishi, ¹ Michigan State University, East Lansing, Michigan ¹ NASA - Lewis Research Center, Cleveland, Ohio
2A1	NEUTRAL BEAM INJECTION SYSTEM FOR THE TARA TANDEM MIRROR J. Coleman, M. Gaudreau, R. Torti and R. Pose, MIT, Plasma Fusion Center, Cambridge, Massachusetts	2B10	THE THERMAL BOUNDARY LAYER AND ARC COLUMN IN PULSED ARCS WITHIN ORIFICE NOZZLES J. Ravi and D. Benenson, State University of New York, Buffalo, New York
2A2	NEUTRAL BEAM SOURCE PARAMETERS FOR THE TARA TANDEM MIRROR R. Torti, J. Coleman and R. Pose, MIT, Plasma Fusion Center, Cambridge, Massachusetts	2B11	EXPERIMENTAL INVESTIGATION OF A DYNAMIC NITROGEN ARC IN HIGH SPEED FLOW Y. Lau, J. Ravi and D. Benenson, State University of New York, Buffalo, New York
2A3	INVITED PAPER: NBTF - A USER FACILITY FOR THE DEVELOPMENT OF LONG-PULSE NEUTRAL INJECTORS K. Berkner, Lawrence Berkeley Laboratory, Berkeley, California	2B12	INTERACTION OF ARCS WITH A DIELECTRIC SUBSTRATE IN A SURFACE DISCHARGE SWITCH R. Curry, M. Kristiansen, L. Hatfield and V. Agarwal, Texas Tech University, Lubbock, Texas
2A4	RESULTS OF 30 SECOND ENGINEERING TESTING OF THE LBL APIS M. Vella, P. Pincosy, K. Berkner, F. Burrell, K. Ehlers, A. Lietzke, H. Owen, A. Paterson and R. Pyle, Lawrence Berkeley Laboratory, Berkeley, California		
2A5	ACCELERATION OF H ⁻ IONS FROM THE SURFACE-PRODUCTION TYPE NEGATIVE ION SOURCE J. Kwan, O. Anderson, W. Cooper and W. Steele, Lawrence Berkeley Laboratory, Berkeley, California		
2A6	HELPFUL TECHNIQUES FOR THE RELIABLE PRODUCTION OF LARGE (>1 A) H ⁻ CURRENTS FROM CESIATED SURFACES AT LBL A. Lietzke, K. Ehlers and B. Yant, Lawrence Berkeley Laboratory, University of California, Berkeley, California		Monday, May 14, 1984 2:00 P.M. (Clark Room)
2A7	CESIUM-DISPENSING ELECTRODES FOR NEGATIVE ION PRODUCTION J. Desplaf, M. Korringa, E. Britt, A. Lietzke, ¹ K. Leung and J. Fink ¹ Rasor Associates, Inc., Sunnyvale, California ¹ Lawrence Berkeley Laboratory, Berkeley, California ² NEGION, Inc., Hayward, California		Oral Session 2C - FUSION TECHNOLOGY AND MHD Session Chairperson - E. J. Britt
2A8	PRODUCTION OF O ⁺ AND C ⁺ BEAMS WITH THE SITEX SOURCE W. Dagenhart and W. Stirling, Oak Ridge National Laboratory, Oak Ridge, Tennessee	2C1	THE TRANSVERSE FLOW FIELD IN AN MHD CHANNEL S. Girschick and C. Kruger, Stanford University, Stanford, California
		2C2	VARIATIONAL PRINCIPLE FOR G-MODES IN A VISCOUS STRATIFIED PLASMA WITH MAGNETIC SHEAR F. Gratton and A. Gonzalez, University of Buenos Aires, Buenos Aires, Argentina

- 2C3 CURRENT DENSITIES AND CLOSURE RATES IN DIODES CONTAINING LASER DRIVEN, CESIUM-COATED THERMIONIC CATHODES
C. Lee and P. Oettinger, Thermo Electron Corporation, Waltham, Massachusetts
- 2C4 INVITED PAPER: ANALYTICAL COADSORPTION MODEL
N. Rasor, Rasor Associates, Inc., Sunnyvale, California
- 2C5 EMITTER SHEATH EFFECTS ON THERMIONIC CONVERTER PERFORMANCE
G. Main and S. Lam, Princeton University, Princeton, New Jersey
- 2C6 ION TRAPPING EFFECTS IN ELECTRON-RICH UNIGNITED-MODE THERMIONIC CONVERTERS
J. McVey, Rasor Associates, Inc., Sunnyvale, California
- 2C7 A STUDY OF THE NUCLEAR PARAMETERS OF A FUSION REACTOR BLANKET - SENSITIVITY TO NON HOMOGENEITIES
B. Robouch, J. Brzosko, L. Ingrassio, Associazione EURATOM-ENEA sulla Fusione, Frascati, Italy
- 2C8 BIG DEE VESSEL PROTECTION SYSTEM
T. McKelvey, D. Eames, J. Luxon, M. Mahdavi and T. Taylor, GA Technologies Inc., San Diego, California
- 2C9 TRADEOFFS IN THE FIRST STEP FACILITY DESIGN
W. Saylor, J. Pendergrass, D. Dudziak and R. Peterson, Los Alamos National Laboratory, Los Alamos, New Mexico
- 2C10 STATUS OF A 5 x 2 GW LASER-PELLET FUSION REACTOR
S. Ayub, St. Paul, Minnesota
- Monday, May 14, 1984
2:00 P.M. (Field Room)
- Oral Session 2D - NUCLEAR PUMPED LASERS
Session Chairperson - M. S. Zediker
- 2D1 INVITED PAPER: STATUS OF NUCLEAR-PUMPED LASER RESEARCH
M. Prelas, University of Missouri, Columbia, Missouri
- 2D2 MEASUREMENT OF OZONE DENSITY IN NOBLE GAS-OXYGEN DISCHARGES CREATED BY NUCLEAR RADIATION
H. Elsayed-All and G. Miley, University of Illinois, Urbana, Illinois
- 2D3 THE EFFECTS OF TRANSIENTS ON NUCLEAR-PUMPED PLASMAS
M. Prelas, M. Zediker, ¹F. Boody, ¹A. Chung, University of Missouri, Columbia, Missouri
¹ Nuclear-Pumped Laser Corporation, Kingston, New Jersey
- 2D4 OZONE GENERATION BY NUCLEAR IRRADIATION OF OXYGEN AND OXYGEN-SULFUR HEXAFLUORIDE MIXTURES
H. Elsayed-All and G. Miley, University of Illinois, Urbana, Illinois
- 2D5 A DIRECT ENERGY CONVERSION TECHNIQUE BASED ON AN AEROSOL CORE REACTOR CONCEPT
M. Prelas, F. Boody, M. Zediker and M. Rowe, Nuclear-Pumped Laser Corporation, Kingston, New Jersey
- 2D6 PRODUCTION OF SINGLET DELTA OXYGEN WITH A LOW E/N DISCHARGE
M. Zediker and G. Miley, Fusion Studies Laboratory, University of Illinois, Urbana, Illinois
- 2D7 SENSITIVITY ANALYSIS OF NUCLEAR-PUMPED Ar₂ EXCIMER PLASMA
A. Chung and M. Prelas, University of Missouri, Columbia, Missouri
- 2D8 THEORETICAL INVESTIGATION OF NUCLEAR-PUMPED Xe₂ EXCIMER FLUORESCENCE
A. Chung and M. Prelas, University of Missouri, Columbia, Missouri
- Monday, May 14, 1984
2:00 P.M. (Jefferson Room)
- Poster Session 2P - TOKAMAKS AND STELLARATORS
- 2P1 HIGH-FREQUENCY INDUCTIVE BREAKDOWN AND HEATING IN THE PROTO-CLEO STELLARATOR
D. Wroblewski and J. Shohet, University of Wisconsin, Madison, Wisconsin
- 2P2 EQUIPOTENTIAL SURFACES IN THE PROTO-CLEO TORSATRON
P. Trost and J. Shohet, University of Wisconsin, Madison, Wisconsin
- 2P3 THE PROTO-CLEO COAXIAL TORSATRON
I. Lehrman, P. Draxler, L. Goes and J. Shohet, University of Wisconsin, Madison, Wisconsin
- 2P4 MAGNETIC SURFACE TOPOLOGY IN THE INTERCHANGEABLE MODULE STELLARATOR
D. Anderson, F. Anderson, R. Doerner, I. Lehrman, P. Probert, J. Shohet and J. Talmadge, University of Wisconsin, Madison, Wisconsin
- 2P5 POLOIDAL FLUX IN STELLARATORS AND TORSATRONS
J. Shohet, D. Anderson, W. Hitchon and K. McLenithan, University of Wisconsin, Madison, Wisconsin
- 2P6 THREE DIMENSIONAL STABILITY ANALYSIS FOR ANISOTROPIC PRESSURE PLASMAS IN STELLARATORS
K. Buckle, W. Hitchon and J. Shohet, University of Wisconsin, Madison, Wisconsin
- 2P7 BOUNCE AVERAGED MONTE-CARLO EVALUATION OF STELLARATOR TRANSPORT
C. Beidler, W. Hitchon and J. Shohet, University of Wisconsin, Madison, Wisconsin
- 2P8 STARTUP, CURRENT PENETRATION AND FLUX CONSUMPTION IN TFTR
J. Coonrod, M. Bell, R. Hawryluk, G. Tait, Princeton University Plasma Physics Laboratory, Princeton, New Jersey
- 2P9 MEASUREMENTS OF THE IMAGE FIELDS IN THE STOR-1M TOKAMAK
O. Mitarai, S. Wolfe, H. Skarsgard and A. Hirose, University of Saskatchewan, Saskatoon, Canada
- 2P10 HIGH RESOLUTION X-RAY OBSERVATIONS OF ARGON, MOLYBDENUM AND SULPHUR FROM THE ALCATOR C TOKAMAK
J. Rice, E. Marmor, R. Petrasso, E. Källne, ¹J. Källne ¹ and R. Cowan, ² MIT, Cambridge, Massachusetts
¹ Joint European Torus
² Los Alamos National Laboratory, Los Alamos, New Mexico
- 2P11 CHARACTERISTICS OF DOUBLE SANTEETH AND SAWTOOTH-LIKE OSCILLATIONS ON TEXT
S. Kim, T. Kochanski, J. Snipes and E. Powers, University of Texas at Austin, Austin, Texas
- 2P12 OBSERVATION OF EDGE PLASMA PROPERTIES IN DOUBLET-III BY A COMBINATION OF LANGMUIR PROBES, THERMOCOUPLES, AND IR-CAMERA
M. Washizu, M. Shimada, S. Sengoku, C. Kahn, T. Petrie, E. Fairbanks, T. Kobayashi, N. Miya, M. Kasai, M. Abe, A. Kameari, S. Kitsunezaki, S. Konoshima, M. Nagami, N. Suzuki, T. Yamamoto, and the GA Doublet-III Group Japan Atomic Energy Research Institute, GA Technologies, Inc., San Diego, California
- 2P13 STUDIES ON LIMITER CONFINED TOROIDAL PLASMA IN BETA
D. Bora, C. Reddy, R. Jayakumar and P. Kaw, Plasma Physics Programme, Navrangpura, Ahmedabad, India
- Monday, May 14, 1984
2:00 P.M. (Jefferson Room)
- Poster Session 2Q - INTENSE ELECTRON AND ION BEAMS
- 2Q1 INTENSE ION BEAM PROPAGATION IN A MAGNETIC FIELD
R. Kraft, B. Kusse and J. Moschella, Cornell University, Ithaca, New York
- 2Q2 PLASMA BEAM PROPAGATION IN AN INHOMOGENEOUS MAGNETIC FIELD
W. Shanahan and R. Keinigs, Los Alamos National Laboratory, Los Alamos, New Mexico
- 2Q3 THE AXISYMMETRIC HOLLOWING INSTABILITY OF AN INTENSE RELATIVISTIC ELECTRON BEAM PROPAGATING IN AIR
C. Ekdahl, W. Stygar, G. Leifste, J. Freeman, R. Miller, and B. Godfrey, ¹ Sandia National Laboratories, Albuquerque, New Mexico
¹ Mission Research Corporation, Albuquerque, New Mexico
- 2Q4 1-MeV ELECTRON BEAM PROPAGATION EXPERIMENTS IN NEUTRAL GAS
M. Greenspan and E. Rose, McDonnell Douglas Research Laboratories, St. Louis, Missouri
- 2Q5 INTENSE ELECTRON BEAM PROPAGATION INTO VACUUM
P. O'Shea, W. Destler, M. Reiser, C. Striffler and D. Welsh, University of Maryland, College Park, Maryland
- 2Q6 A MODEL OF HOSE INSTABILITIES IN ROTATING ELECTRON BEAMS
J. Brandenburg and E. Lee, ¹ Sandia National Laboratories, Albuquerque, New Mexico
¹ Lawrence Berkeley Laboratory, Berkeley, California
- 2Q7 STABILITY PROPERTIES OF A RELATIVISTIC ELECTRON BEAM IN A COLLISIONAL ANNULAR PLASMA CHANNEL
H. Chen and H. Uhm, Naval Surface Weapons Center, Silver Spring, Maryland

2Q8 VISIBLE AND UV DIAGNOSTIC MEASUREMENTS OF ELECTRON BEAMS
IN AIR
M. Buchwald, R. Karl and D. Cobb, Los Alamos National
Laboratory, Los Alamos, New Mexico

Tuesday, May 15, 1984
8:30 A.M. (Mississippi Ballroom)

2Q9 A NEW PULSED ELECTRON SOURCE FOR ACCELERATOR APPLICATIONS
W. Peter and R. Faehl, Los Alamos National Laboratory,
Los Alamos, New Mexico

REVIEW PAPER

2Q10 DESIGN STUDY OF THE UCI STELLATRON
B. Mandelbaum, H. Ishizuka, G. Lindley, A. Fisher and
N. Rostoker, University of California, Irvine, California

Chairperson, B. H. RIPIN

Monday, May 14, 1984
2:00 P.M. (Jefferson Room)

GEROLD YONAS
SANDIA NATIONAL LABORATORIES
ALBUQUERQUE, NEW MEXICO

Poster Session 2R - TOROIDS AND PINCHES

2R1 STABILITY STUDIES OF A PREHEATED GAS-EMBEDDED Z-PINCH
P. Choi, A. Dangor, M. Favre, D. Hammer,¹ O. Parfenov²
and M. Psimopoulos, Blackett Laboratory, Imperial College,
London, England
¹ Cornell University, Ithaca, New York
² Krasnoyarsk University, Krasnoyarsk, USSR

"PHYSICS AND TECHNOLOGY REQUIREMENTS OF THE
STRATEGIC DEFENSE INITIATIVE"

2R2 X-RAY EMISSION AND DYNAMICS OF A GAS-PUFF Z-PINCH
C. Challis, A. Dangor, D. Hammer,¹ M. Lewis, J. Liu,²
G. Nave and J. Westlake, Blackett Laboratory, Imperial
College, London, England
¹ Cornell University, Ithaca, New York
² Changsha Institute of Science and Technology, Peoples
Republic of China

Tuesday, May 15, 1984
9:30 A.M. (St. Louis Room)

Oral Session 3A - MIRRORS AND EBT
Session Chairperson - N. Hershkowitz

2R3 XENON GAS-PUFF Z-PINCHES
R. Spielman, D. Hanson, M. Palmer, W. Stygar and J. Peek,
Sandia National Laboratories, Albuquerque, New Mexico

3A1 IEEE FELLOW INVITED PAPER: SOME EXAMPLES OF CLOSE
RELATION BETWEEN LABORATORY AND SPACE PLASMAS
H. Kikuchi, Nihon University, Tokyo, Japan

2R4 EFFECTS OF FLARING ON GAS PUFF IMPLOSIONS
T. Hussey and M. Matzen, Sandia National Laboratories,
Albuquerque, New Mexico

3A2 RECENT RESULTS FROM TMX-U THERMAL BARRIER EXPERIMENTS
A. Molvik, S. Allen, J. Barter, L. Berzins,²
M. Carter,² T. Casper, J. Clauser, C. Clower,²
F. Coensgen, D. Correll, W. Cummins, G. Dimonte,¹
B. Failor,² S. Falabella,² M. Flammer,² J. Foote,
R. Goodman, D. Grubb, D. Hill, B. Hooper, R. Hornady,
W. Hsu,⁴ A. Hunt, R. James,³ R. Kerr, C. Lasnier,³
G. Leppelmeier, J. Marilleau, T. Nash, W. Nexsen,
W. Pickles, P. Poulsen, E. Silver, T. Simonen, B.
Stallard, J. Taska, W. Turner, T. Yu,⁵ Lawrence Livermore
National Laboratory, Livermore, California
¹ TRW, Redondo Beach, California
² University of California, Davis, California
³ University of Maryland, College Park, Maryland
⁴ Sandia National Laboratory, Albuquerque, New Mexico
⁵ Johns Hopkins University, Baltimore, Maryland

2R5 EXPERIMENTAL STUDY OF A CAPILLARY DISCHARGE
D. Kanfa and L. Jones, Los Alamos National Laboratory,
Los Alamos, New Mexico

2R6 WALL STABILIZED Z-PINCH
J. Sethian, K. Gerber, A. Robson and A. Desilva,¹
Naval Research Laboratory, Washington, D. C.
¹ Sachs/Freeman, Bowie, Maryland and University of
Maryland

2R7 DYNAMICS OF A RADIATING Z-PINCH
J. Perez and L. Tannenwald, Lockheed Palo Alto Research
Laboratory, Palo Alto, California

3A3 INVITED PAPER: RECENT ADVANCES IN EXPERIMENTAL TANDEM MIRROR
CONFINEMENT RESEARCH
R. Price, U. S. Department of Energy, Washington, D. C.

2R8 OBSERVATIONS OF POSSIBLE INTERNAL MHD KINK MODES IN THE CTX
SPHEROMAK
C. Barnes, I. Henins, H. Hoida, T. Jarboe, G. Marklin,
B. Wright and G. Wurden, Los Alamos National Laboratory, Los
Alamos, New Mexico

3A4 FOKKER PLANCK ANALYSIS OF ELECTRONIC COUPLING IN TANDEM
MIRRORS
M. Baghail and J. Woo, InterScience, Inc., Schenectady,
New York

2R9 GLOBAL MAGNETICS OF S-1 SPHEROMAK PLASMAS
A. Janos, Princeton University, Princeton, New Jersey

3A5 RF DRIFT PUMPING DESIGNS FOR PHAEDRUS UPGRADE
R. Breun, S. Golovato, P. Nonn, G. Severn and K. Siebert,
University of Wisconsin, Madison, Wisconsin

2R10 DIAGNOSTIC RESULTS FROM THE INITIAL RUN OF THE S-1
SPHEROMAK
S. Paul, G. Hart, A. Janos, D. McNeill, F. Wysocki and
M. Yamada, Princeton University, Princeton, New Jersey

3A6 INVITED PAPER: NEOCLASSICAL TRANSPORT IN THE ELMO BUMPY
TORUS
C. Chang, AMPC Inc., Encinitas, California

2R11 RESULTS FROM TRX-2 SLOW FIELD-REVERSED-THETA-PINCH
J. Slough, D. Harding and A. Hoffman, Mathematical
Sciences Northwest, Inc., Bellevue, Washington

3A7 THEORY OF LOW FREQUENCY FLUCTUATIONS IN BUMPY TORI
H. Sanuki, UCLA, Los Angeles, California

2R12 LINER-COMPRESSION OF MAGNETICALLY-CONFINED, FRC PLASMAS
W. Armstrong, Los Alamos National Laboratory, Los Alamos,
New Mexico

3A8 THE INVESTIGATION OF THE APPLICATION OF THE SUPERCONDUCTING
TECHNIQUE TO MIRROR MACHINES IN CHINA
W. Yao, Southwest Institute of Physics, Leshan Sichan, China

2R13 ION RING INJECTION THROUGH PUFFED GAS CLOUDS-PREPARATION
FOR RING TRAPPING WITH A FAST GATED COIL
P. Pedrow, J. Greenly, D. Hammer and R. Sudan, Cornell
University, Ithaca, New York

2R14 THE ZT-P EXPERIMENT
K. Schoenberg, Los Alamos National Laboratory, Los
Alamos, New Mexico

Tuesday, May 15, 1984
9:30 A.M. (Lewis Room)

Oral Session 3B - HIGH POWER MICROWAVE GENERATION
Session Chairperson - A. K. Ganguly

3B1 INVITED PAPER: AXIAL MAGNETIC FIELD EFFECTS ON THE
OPERATION OF THE FEL/UBITRON
H. Freund¹ and A. Ganguly, Naval Research Laboratory,
Washington, D. C.
¹ Science Applications Inc., McLean, Virginia

- 382 AN INTENSE BEAM FREE-ELECTRON LASER AMPLIFIER OPERATING AT 35 GHz
S. Gold, L. Barnett, V. Granatstein, ¹ H. Freund, ² W. Black, ³ A. Kinkead, ³ and D. Hardesty, ³ University of Utah, Salt Lake City, Utah
¹ University of Maryland, College Park, Maryland
² Science Applications, Inc., McLean, Virginia
³ Naval Research Laboratory, Washington, D. C.
- 383 A HIGH EFFICIENCY, HIGH-POWER 100 GHZ GYROTRON
P. Ferguson, W. DeHope, V. Matranga, J. Sandoval, M. Schmitt, J. Tancredi and C. Thorington, Hughes Aircraft Company, Torrance, California
- 384 LARGE SIGNAL ANALYSIS FOR HIGH-POWER GYRO-KLYSTRON AMPLIFIERS
W. Bollen, A. Ganguly, ¹ B. Arfin, ¹ A. Fliflet, ¹ Mission Research Corporation, Alexandria, Virginia
¹ Naval Research Laboratory, Washington, D. C.
- 385 HIGH HARMONIC MICROWAVE GENERATION FROM A NON-RELATIVISTIC CUSPTRON DEVICE
W. Namkung, University of Maryland, College Park, Maryland
- 386 HIGH POWER RF FROM A LASER PHOTOCATHODE GENERATOR
F. Wessel and F. Felber, ¹ Western Research Corporation, San Diego, California
¹ JAYCOR, San Diego, California

Tuesday, May 15, 1984
9:30 A.M. (Clark Room)

Oral Session 3C - PLASMA HEATING AND CURRENT DRIVE
Session Chairperson - G. J. Morales

- 3C1 DESIGN OF RIDGED WAVEGUIDES FOR FUSION ENERGY APPLICATIONS
A. Mense, D. Banker and J. Mullen, McDonnell Douglas Corporation, St. Louis, Missouri
- 3C2 INVITED PAPER: LOWER HYBRID HEATING AND CURRENT DRIVE EXPERIMENTS IN ALCATOR C
B. Lloyd, S. Knowlton, M. Porkolab, J. Schuss, Y. Takase, S. Texter, R. Watterson, P. Bonoli, R. Englade and Alcator Group, Plasma Fusion Center, MIT, Cambridge, Massachusetts
- 3C3 ALPHA-DRIVEN CURRENTS IN TOKAMAK REACTORS
M. Gouge and L. Hively, ¹ U. S. Department of Energy, Oak Ridge, Tennessee
¹ Oak Ridge National Laboratory, Oak Ridge, Tennessee
- 3C4 INVITED PAPER: ELECTRON CYCLOTRON RESONANCE HEATING AND ITS MICROWAVE SOURCES
A. Lin, UCLA, Los Angeles, California
- 3C5 800 MHZ LOWER-HYBRID CURRENT DRIVE EXPERIMENTS ON THE VERSATOR II TOKAMAK
X-I. Chen, S. Luckhardt, M. Porkolab, M. Mayberry, R. Rohatgi, Plasma Fusion Center, MIT, Cambridge, Massachusetts
- 3C6 GENERATION OF BERNSTEIN MODES FROM NOISE FLUCTUATIONS DURING ICRF HEATING
G. Morales, S. Antani, and B. Fried, UCLA, Los Angeles, California
- 3C7 INVITED PAPER: PROPAGATION OF DRIVEN ALFVÉN WAVES IN A TOKAMAK: THEORY & EXPERIMENT
R. Bengtson, W. Booth, T. Evans, S. Mahajan, M. Oakes, D. Ross, P. Valanju and X-Z. Wang and C. Surko, ¹ University of Texas at Austin, Austin, Texas
¹ AT&T Bell Laboratories, Murray Hill, New Jersey

Tuesday, May 15, 1984
9:30 A.M. (Field Room)

Oral Session 3D - ION BEAMS AND MASS ACCELERATORS
Session Chairperson - M. D. Nahemow

- 3D1 RF PLASMA RESONANCE OF IONS AND NEUTRALS LEADING TO CAVITONIC FUSION
P. Handel and R. Schneider, ¹ University of Missouri, St. Louis, Missouri
¹ University of Florida, Gainesville, Florida
- 3D2 HIGH-CURRENT, EXTENDED-PULSE PULSELAC INJECTOR FOR ION IMPLANTATION
L. Len and S. Humphries, Jr., University of New Mexico, Albuquerque, New Mexico

- 3D3 INVITED PAPER: REPETITIVELY PULSED METAL ION BEAMS FOR ION IMPLANTATION
R. Adler, Mission Research Corporation, Albuquerque, New Mexico
- 3D4 ARC DAMAGE TO RAILGUN INSULATORS: MECHANISMS AND CONSEQUENCES
J. Parker and W. Parsons, Los Alamos National Laboratory, Los Alamos, New Mexico
- 3D5 HIGH-VELOCITY HYDROGEN PELLETS INJECTOR CONSISTING OF A GAS GUN AND A PLASMA-ARC-DRIVEN RAILGUN
J. Honig and K. Kim, University of Illinois, Urbana, Illinois
- 3D6 EFFECT OF NUMBER OF TURNS ON RAIL-GUN PERFORMANCE
J. Shrader, Boeing Aerospace Company, Seattle, Washington
- 3D7 THERMAL MANAGEMENT IN ION IMPLANTATION
M. Nahemow, Westinghouse Electric Corporation, Pittsburgh, Pennsylvania

Tuesday, May 15, 1984
9:30 A.M. (Jefferson Room)

Poster Session 3P - INTENSE ELECTRON AND ION BEAMS

- 3P1 A GAS-BREAKDOWN ANODE PLASMA SOURCE FOR MAGNETICALLY-INSULATED ION DIODES
J. Greenly, M. Ueda, G. Rondeau and E. Schamiloglu, Cornell University, Ithaca, New York
- 3P2 SPECTROSCOPIC OBSERVATIONS OF ION LINE-EMISSION FROM A MAGNETICALLY INSULATED ION DIODE
Y. Maron, H. Peng, G. Rondeau and D. Hammer, Cornell University, Ithaca, New York
- 3P3 OPTICAL METALLOGRAPHIC EXAMINATION OF THE ANODE SURFACE IN AN ION DIODE
M. Sweeney, K. Bieg, D. Johnson, R. Lujan, Sandia National Laboratories, Albuquerque, New Mexico
- 3P4 CATHODE PLASMA ELECTRON TEMPERATURE MEASUREMENTS IN REB DIODES
R. Li and D. Hinshelwood, MIT, Cambridge, Massachusetts
- 3P5 AMPFION-HYBRID DIODE ON THE CORNELL LION ACCELERATOR
G. Rondeau, J. Greenly and D. Hammer, Cornell University, Ithaca, New York
- 3P6 PROGRESS IN ION OUTPUT ON LONGSHOT II FOR ION RING FORMATION AND PROPAGATION STUDIES
E. Schamiloglu and J. Greenly, Cornell University, Ithaca, New York
- 3P7 COLLECTIVE ACCELERATION OF IONS FROM SOLID ELEMENTS
J. Smith and M. Rhee, ¹ Naval Surface Weapons Center, Silver Spring, Maryland
¹ University of Maryland, College Park, Maryland
- 3P8 COLLECTIVE ACCELERATION OF LIGHT AND HEAVY IONS USING AN INTENSE LINEAR ELECTRON BEAM
W. Destler, J. Cremer, L. Floyd, P. O'Shea, M. Reiser and C. Striffler, University of Maryland, College Park, Maryland
- 3P9 CURRENT DENSITY DISTRIBUTION MEASUREMENTS FROM LANTHANUM HEXABORIDE CATHODES
W. Getty and A. Ashraf, University of Michigan, Ann Arbor, Michigan
- 3P10 ION SOURCE-EXTRACTOR DEVELOPMENT FOR HEAVY ION FUSION
E. Ballard, W. Ehler, E. Meyer, K. Riepe and H. Rutkowski, Los Alamos National Laboratory, Los Alamos, New Mexico

Tuesday, May 15, 1984
9:30 A.M. (Jefferson Room)

Poster Session 3Q - PLASMA DIAGNOSTICS

- 3Q1 NEUTRON ACTIVATION MEASUREMENTS AT THE NOVETTE LASER FACILITY
S. Lane, Lawrence Livermore National Laboratory, Livermore, California
- 3Q2 DELAYED NEUTRON COUNTING FOR PLASMA NEUTRON DIAGNOSTICS
E. Nieschmidt and J. Isaacson, Princeton University, Princeton, New Jersey

3Q3 MEASUREMENT ACCURACY AND RESOLUTION OF THE ISX-B HEAVY ION BEAM PROBE
J. Mathew, G. Hallock, R. Hickok, W. Jennings and A. Wootton, [†] Rensselaer Polytechnic Institute, Troy, New York
[†] Oak Ridge National Laboratory, Oak Ridge, Tennessee

Tuesday, May 15, 1984
9:30 A.M. (Jefferson Room)

Poster Session 3S - LASER PLASMA INTERACTIONS AND ICF

3Q4 ION BEAM PROBING FOR RECONNECTION STUDIES
R. Jayakumar and D. Bora, Plasma Physics Programme, Ahmedabad, India

3Q5 THE USE OF MULTIPLE CHARGE SPECIES AND MULTIPLE DETECTORS IN A HEAVY ION BEAM PROBE DIAGNOSTIC SYSTEM
J. Michael, E. Saravia, W. Jennings and R. Hickok, Rensselaer Polytechnic Institute, Troy, New York

3Q6 HEAVY ION BEAM PROBE DATA ACQUISITION ON EBT
J. Goyer, L. Solensten, K. Connor and R. Hickok, Rensselaer Polytechnic Institute, Troy, New York

3Q7 EBT PLASMA POTENTIAL MEASUREMENTS
L. Solensten, J. Goyer, K. Connor and R. Hickok, Rensselaer Polytechnic Institute, Troy, New York

3Q8 NEUTRAL TIME-OF-FLIGHT DIAGNOSTIC FOR ZT-40M
C. Munson and K. Schoenberg, Los Alamos National Laboratory, Los Alamos, New Mexico

3Q9 FAST PARTICLE EFFECTS ON RADIATION LOSSES AND START-UP
A. Sharma and R. Jayakumar, Plasma Physics Programme, Navrangpura, Ahmedabad, India

3Q10 TIME RESOLVED PINHOLE CAMERA FOR INTENSE PROTON BEAM FOCUS MEASUREMENTS
R. Leeper, D. Johnson, D. Hebron and W. Stygar, Sandia National Laboratories, Albuquerque, New Mexico

3Q11 THOMSON SPECTROMETER RESOLUTION ANALYSIS
R. Schneider, C. Luo and M. Rhee, University of Maryland, College Park, Maryland

3S1 EFFECT OF LASER FLUX ON MAGNETIC FIELD GENERATED THERMAL INSTABILITY IN A LASER PRODUCED PLASMA
V. Tripathi, P. Saikia and A. Kumar, Indian Institute of Technology, New Delhi, India

3S2 FAST ION EMISSION IN LASER MATTER INTERACTION THEORY AND EXPERIMENT
S. Gitomer and R. Jones, Los Alamos National Laboratory, Los Alamos, New Mexico

3S3 SOFT X-RAY GENERATION AND ITS USE IN INERTIAL CONFINEMENT FUSION
T. Yabe, T. Mochizuki and C. Yamanaka, Institute of Laser Engineering, Osaka University, Osaka, Japan

3S4 HIGH DENSITY IMPLOSION EXPERIMENTS USING GEKKO XII GLASS LASER SYSTEM
C. Yamanaka, S. Nakai, T. Yamanaka, Y. Kato, Y. Izawa, M. Nakatsuka, T. Sasaki, T. Mochizuki, M. Yamanaka, K. Yoshida, Y. Kitagawa, H. Nishimura, H. Azechi, N. Miyanaga, T. Norimatsu, H. Niki, T. Jitsuno, E. Fujiwara, S. Sakabe, K. Nishihara, K. Mima, T. Yabe and H. Takabe, Institute of Laser Engineering, Osaka University, Osaka, Japan

3S5 ONE AND TWO DIMENSIONAL SIMULATIONS ON BEAT WAVE ACCELERATION
W. Mori, C. Joshi, J. Dawson, D. Forslund, [†] and J. Kindel, [†] UCLA, Los Angeles, California
[†] Los Alamos National Laboratory, Los Alamos, New Mexico

3S6 TIME RESOLVED MEASUREMENTS OF ABLATION VELOCITY AND ACCELERATION OF LASER IRRADIATED THIN FOIL TARGETS
P. Lee, O. Willi and C. Wang, [†] Los Alamos National Laboratory, Los Alamos, New Mexico
[†] Lawrence Livermore National Laboratory, Livermore, California

3S7 ELECTRON ACCELERATION BY A LOCALIZED, HIGH FREQUENCY ELECTRIC FIELD OCCURRING IN LASER PLASMA
X. Zhizhan, Y. Wei and Z. Wengi, Shanghai Institute of Optics and Fine Mechanics, Shanghai, Peoples Republic of China

3S8 FUSION-PRODUCT ENERGY LOSS IN INERTIAL CONFINEMENT FUSION PLASMAS WITH APPLICATIONS TO TARGET BURNS
D. Harris and G. Miley, Fusion Studies Lab, University of Illinois, Urbana, Illinois

3S9 STABILIZATIONS OF THE RAYLEIGH-TAYLOR INSTABILITIES IN DENSE PLASMAS
C. Choi, Purdue University, West Lafayette, Indiana

Tuesday, May 15, 1984
9:30 A.M. (Jefferson Room)

Poster Session 3R - PLASMA WAVES, INSTABILITIES, AND ANTENNAS

3R1 RESPONSE FROM A SMALL PULSED ANTENNA IN A MAGNETIZED PLASMA
C. Grabbe, University of Iowa, Iowa City, Iowa

3R2 SLOW WAVE ANTENNA FOR UNIDIRECTIONAL ALFVEN WAVE PROPAGATION IN A SMALL TOKAMAK
H. Akiyama, J. Gahl, K. Rathbun, M. Kristiansen and M. Hagler, Texas Tech University, Lubbock, Texas

3R3 BROADBAND RF EMISSION AND ELECTRON NUMBER DENSITY MEASUREMENTS OF AN ELECTRIC FIELD DOMINATED PLASMA
J. Roth, D. Rosenberg and P. Spence, University of Tennessee, Knoxville, Tennessee

3R4 A CALIBRATED, BROADBAND ANTENNA FOR PLASMA RF EMISSION MEASUREMENTS BELOW 1 GHz
P. Spence, D. Rosenberg and J. Roth, University of Tennessee, Knoxville, Tennessee

3R5 MICROWAVE SCATTERING AND ELECTROSTATIC TURBULENCE EXPERIMENTS ON A CLASSICAL PENNING DISCHARGE
L. Baylor, P. Dehkordi and J. Roth, University of Tennessee, Knoxville, Tennessee

3R6 EFFECT OF SHEATH-WAVES ON THE FREQUENCY CHARACTERISTICS OF RESONANT PROBES
G. Goyette and M. Nachman, Ecole Polytechnique of Montreal, Montreal, Quebec, Canada

3R7 U. S. NATIONAL ICH PROJECT: RESULTS OF DEVELOPMENT, SIMULATION, AND TESTING OF ANTENNAS FOR THE NEXT LARGE U. S. FUSION DEVICES
D. Hoffman, F. Baity, W. Becraft, S. Combs, T. Owens, F. Stuss and J. Wheaton, Oak Ridge National Laboratory, Oak Ridge, Tennessee

3R8 ALFVEN WAVE HEATING STUDIES IN TOKAPOLE II TOKAMAK
D. Kortbawi, F. Witherspoon, S. Zhu, T. Casavant, J. Sprott, and S. Prager, University of Wisconsin, Madison, Wisconsin

3R9 DISPERSION RELATION OF SURFACE WAVES FOR NONCIRCULAR PLASMA BASED ON THE BOUNDARY ELEMENT METHOD
T. Honma, H. Murakami, M. Kito [†] and I. Kaji, Hokkaido University, Sapporo, Japan
[†] Electrotechnical Lab, Ibaraki, Japan

Tuesday, May 15, 1984
2:00 P.M. (St. Louis Room)

Oral Session 4A - LASER PLASMA INTERACTIONS AND ICF
Session Chairperson - B. H. Ripin

4A1 INVITED PAPER: LASER PLASMA INTERACTION RESEARCH WITH ANTARES
S. Gitomer, G. Eden, J. Kephart, R. Kristal and C. Mansfield, Los Alamos National Laboratory, Los Alamos, New Mexico

4A2 INVITED PAPER: ELECTRON PLASMA WAVES IN CO₂ LASER PLASMA INTERACTIONS
H. Baldis, D. Villeneuve and C. Walsh, National Research Council, Ottawa, Ontario, Canada

4A3 INVITED PAPER: LASER-PLASMA INTERACTION EXPERIMENTS USING SEVERAL KILOJOULES OF GREEN LIGHT
R. Drake, R. Turner, R. Kauffman, D. Phillion, B. Lasinski, K. Estabrook, E. Williams, C. Wang, E. Campbell, W. Krueer, Lawrence Livermore National Laboratory, Livermore, California

4A4 INVITED PAPER: NEW RESULTS OF GEKKO XII GLASS LASER IN ICF RESEARCH
Y. Kato and C. Yamanaka, Osaka University, Osaka, Japan

4A5 INVITED PAPER: EXPERIMENTS RELEVANT TO LASER COMPRESSION AT THE RUTHERFORD APPLETON LABORATORY CENTRAL LASER FACILITY
J. Kilkenny, Imperial College, London, England

4A6 INVITED PAPER: SHORT WAVELENGTH LASER-PLASMA INTERACTION EXPERIMENTS IN A SPHERICAL GEOMETRY
R. Keck, University of Rochester, Rochester, New York

Tuesday, May 15, 1984
2:00 P.M. (Lewis Room)

Oral Session 4B - INTENSE ELECTRON AND ION BEAMS
Session Chairperson - R. N. Sudan

- 4B1 TIME RESOLVED PROTON FOCUS STUDIES ON A RADIAL APPLIED B-FIELD DIODE
D. Johnson, R. Leeper, S. Slutz, and W. Stygar, Sandia National Laboratories, Albuquerque, New Mexico
- 4B2 APPLIED-B ION DIODE EXPERIMENTS ON PBFA-I
P. Dreike, E. Burns, S. Slutz, D. Johnson, R. Leeper, L. Mix, D. Seidel and J. Maenchen, Sandia National Laboratories, Albuquerque, New Mexico
- 4B3 PLANAR TYPE SELF-MAGNETICALLY INSULATED DIODE AS A NEW SOURCE OF AN INTENSE PULSED LIGHT-ION BEAM
K. Yatsui, T. Yoshikawa, K. Masugata, M. Ito, and M. Matsui, Technol. University of Nagaoka, Nagaoka, Niigata, Japan
- 4B4 AN EXTRACTION APPLIED MAGNETIC FIELD ION DIODE FOR ION SOURCE STUDIES
E. Burns, K. Bieg, D. Johnson, L. Dorrell, R. Lujan, and D. Pattison, Sandia National Laboratories, Albuquerque, New Mexico
- 4B5 INVITED PAPER: INERTIAL CONFINEMENT FUSION RESEARCH BY REIDEN IV LIGHT ION BEAM SYSTEM
C. Yamanaka, K. Imasaki, S. Miyamoto, T. Ozaki, S. Nakai, Y. Kato, and T. Yabe, Osaka University, Osaka, Japan
- 4B6 TARGETS DRIVEN BY DUAL ENERGY IONS
G. Magelssen, Los Alamos National Laboratory, Los Alamos, New Mexico
- 4B7 MEASUREMENTS OF ENHANCED ION STOPPING-POWERS IN HIGH TEMPERATURE TARGETS
J. Maenchen, J. Olsen, T. Mehlhorn, D. Johnson, and B. Boatman, Sandia National Laboratories, Albuquerque, New Mexico
- 4B8 SIMULATIONS OF ENHANCED ION STOPPING POWER EXPERIMENTS
T. Mehlhorn, J. Maenchen, J. Olsen, and D. Johnson, Sandia National Laboratories, Albuquerque, New Mexico
- 4B9 PULSED COLLECTIVE ION ACCELERATION IN PHASE MODULATED BEAM CYCLOTRON WAVES
R. Faehl, Los Alamos National Laboratory, Los Alamos, New Mexico
- 4B10 AN ION RING ACCELERATOR WITH PLASMA NEUTRALIZATION
G. Gisler and R. Faehl, Los Alamos National Laboratory, Los Alamos, New Mexico

Tuesday, May 15, 1984
2:00 P.M. (Clark Room)

Oral Session 4C - PLASMA FOCUS
Session Chairperson - G. A. Gerdin

- 4C1 ENERGY ANALYSIS OF THE ION BEAM FROM A PLASMA FOCUS
H. Kilic, V. Nardi and W. Prior, Stevens Institute of Technology, Hoboken, New Jersey
- 4C2 ENERGY SPECTRA OF D+ ION BEAMS, HIGH-Z IMPURITIES AND ION CLUSTERS FROM A PLASMA FOCUS
C. Powell, V. Nardi, Stevens Institute of Technology, Hoboken, New Jersey
- 4C3 TIME STRUCTURE OF THE PARTICLE BEAM SOURCE AND CURRENT SHEATH FILAMENTATION IN THE PLASMA FOCUS
W. Bostick, V. Nardi, W. Prior, A. Bortolotti, ¹F. Mezzetti, ¹Stevens Institute of Technology, Hoboken, New Jersey
¹University of Ferrara, Ferrara, Italy
- 4C4 INVITED PAPER: NONLINEAR PHENOMENA IN THE PLASMA FOCUS
H. Krompholz, ¹C. Haas, G. Herziger, L. Michel, W. Neff, R. Noll, K. Schmitt, B. Weikl, Texas Tech University, Lubbock, Texas
¹Institut fuer Angewandte Physik, Darmstadt, Federal Republic of Germany
- 4C5 OBSERVATION OF ENERGETIC NEUTRALS PRODUCED BY A PLASMA FOCUS
R. Schneider, M. Rhee and J. Smith, ¹University of Maryland, College Park, Maryland
¹Naval Surface Weapons Center, Silver Spring, Maryland
- 4C6 CONSTANT ENERGY PER CHARGE OF IONS PRODUCED IN PLASMA FOCUS AND COLLECTIVE ION ACCELERATION EXPERIMENTS
M. Rhee, R. Schneider and J. Smith, ¹University of Maryland, College Park, Maryland
¹Naval Surface Weapons Center, Silver Spring, Maryland

4C7 TIME SEQUENCES OF THE NEUTRON, γ - AND X-RAY EMISSIONS IN THE FRASCATA PLASMA FOCUS
J. Brzosko, J. Klobukowska, B. Robouch, Associazione EURATOM-ENEA sulla Fusione, Frascati, Italy

4C8 ELECTRON-BEAM DIAGNOSTICS FROM BREMSSTRAHLUNG EMISSION IN THE PLASMA FOCUS
F. Rodriguez-Trelles and A. Banelos, University of Buenos Aires, Buenos Aires, Argentina

4C9 THE INFLUENCE OF AN EXTERNAL MAGNETIC FIELD ON THE DISCHARGE IN THE PLASMA-FOCUS DEVICE
S. Czekał, S. Denus, A. Kaspercuk, A. Szydłowski, J. Wołski, M. Zadrozny, Institute of Plasma Physics and Laser Micromfusion, Warsaw, Poland

Tuesday, May 15, 1984
2:00 P.M. (Field Room)

Oral Session 4D - PLASMA WAVES, INSTABILITIES, AND ANTENNAS
Session Chairperson - H. Hsuan

- 4D1 ANTENNA-PLASMA COUPLING IN THE ICRF
B. McVey, MIT Plasma Fusion Center, Cambridge, Massachusetts
- 4D2 INVITED PAPER: FOKKER-PLANCK CALCULATIONS FOR JET ICRF HEATING SCENARIOS
J. Scharer, J. Jacquinet and F. Sand, University of Wisconsin, Madison, Wisconsin and Jet Joint Undertaking, Abingdon, England
- 4D3 THE SLEEVE MONOPOLE ANTENNA IN A WARM PLASMA
Y. Morita and S. Egashira, Saga University, Saga-shi, Japan
- 4D4 THIRD-HARMONIC GENERATION OF ELLIPTICALLY POLARIZED WAVES IN ISOTROPIC PLASMAS
F. Verheest, Rijksuniversiteit, Gent, Belgium
- 4D5 STRONG INTERACTION OF LOW POWER ELECTRON BEAMS WITH A PLASMA (SELF-MADE OR AMBIENT)
X. Llobet, W. Bernstein, and K. Wilhelm, ¹Rice University, Houston, Texas
¹Max-Planck-Institut fur Aeronomie, Lindau, Federal Republic of Germany
- 4D6 NON LOCAL THEORY OF BEAM DRIVEN ELECTRON BERNSTEIN WAVES
V. Jain and V. Tripathi, Indian Institute of Technology Delhi, Hauz Khas, New Delhi, India
- 4D7 LOW FREQUENCY ION CYCLOTRON WAVE INSTABILITIES IN AN ELECTRON BEAM-PLASMA SYSTEM
V. Jain and P. Christiansen, ¹Indian Institute of Technology, Hauz Khas, New Delhi, India
¹University of Sussex, Brighton, England
- 4D8 MAJOR RESULTS OF THE ELECTRON CYCLOTRON HEATING EXPERIMENT IN THE PDX TOKAMAK
H. Hsuan, K. Bol, N. Bowen, D. Boyd, A. Cavallo, A. Dimits, J. Doane, G. Elder, M. Goldman, B. Grek, C. Hoot, D. Johnson, A. Kritz, B. Leblanc, P. Manintveld, R. Polman, S. Sesnic, H. Takahashi, F. Tenney, Princeton Plasma Physics Laboratory, Princeton, New Jersey
- 4D9 STRIP SIMULATION OF A WAVEGUIDE FILLED WITH LOW-LOSS PLASMA
R. Prasad, D. Kalluri, ¹and S. Sataindra, ²University of Dar es salaam, Tanzania
¹University of Lowell, Lowell, Massachusetts
²BIT, Ranchi, India

Tuesday, May 15, 1984
2:00 P.M. (Jefferson Room)

Poster Session 4P - MIRRORS AND EBT

- 4P1 ICRF HEATING IN THE TARA TANDEM MIRROR
B. McVey, D. Smith, J. Irby, J. Kesner, R. Klinkowstein, M. Mael, R. Post, E. Seviliano, J. Sullivan, MIT Plasma Fusion Center, Cambridge, Massachusetts
- 4P2 ELECTRON CYCLOTRON HEATING IN THE TARA TANDEM MIRROR EXPERIMENTS
M. Mael, D. Smith, R. Post, J. Irby, J. Kesner, R. Klinkowstein, B. McVey, E. Seviliano, J. Sullivan, MIT, Plasma Fusion Center, Cambridge, Massachusetts
- 4P3 ELECTRON CYCLOTRON EMISSION FROM ENERGETIC ELECTRONS IN TMX-UPGRADE
R. Ellis, R. James, C. Lasnier and T. Casper, ¹University of Maryland, College Park, Maryland
¹Lawrence Livermore National Laboratory, Livermore, California

- 4P4 INVESTIGATION OF E-BEAM-ASSISTED ECRH PLASMA STARTUP IN A MAGNETIC MIRROR
W. Getty, R. Gilgenbach and J. Booske, University of Michigan, Ann Arbor, Michigan
- 4P5 DC/AC DRIVEN WAVE PROPAGATION AND MODE CONVERSION IN THE MIX-1 MIRROR SYSTEM
R. Majeski, R. Ellis, M. McCarrick and M. Koepke, University of Maryland, College Park, Maryland
- 4P6 ACTIVE CONTROL OF PLASMA STABILITY AND TRANSPORT FOR MAGNETIC FUSION USING RF POWER
J. McBride, N. Krall¹ and M. Rosenberg,¹ Science Applications Inc., La Jolla, California
¹ JAYCOR, San Diego, California
- 4P7 TANDEM MIRROR MAGNETIC COIL OPTIMIZATION
D. D'ippolito, G. Francis and J. Myra, Science Applications, Inc., Boulder, Colorado
- 4P8 PERFORMANCE OF THE CUSP ANCHOR/PLUGS ON THE RFC-XX TANDEM MIRROR
H. Garner, D. Price, D. Baker, R. Freeman, P. Parks, A. Sleeper, T. Sato,¹ S. Okamura,¹ K. Adati,¹ R. Kumazawa,¹ T. Aoki,¹ and H. Fujita,¹ GA Technologies, Inc., San Diego, California
¹ Institute of Plasma Physics, Nagoya University, Nagoya, Japan
- 4P9 INITIAL VALUE PROBLEM FOR CHARGED PARTICLES IN AXISYMMETRIC MAGNETIC FIELDS
C. Wallace and M. Prelas, University of Missouri, Columbia, Missouri
- 4P10 ANALYTICAL EQUILIBRIA FOR HOT ELECTRON RINGS
M. Prelas and C. Wallace, University of Missouri, Columbia, Missouri
- 4P11 THE MAGNETOHYDRODYNAMIC EQUILIBRIA IN A BUMPY TORUS WITH TOROIDAL CURRENT
R. Juhala and S. Hirshman,¹ McDonnell Douglas Corporation, St. Louis, Missouri
¹ Oak Ridge National Laboratory, Oak Ridge, Tennessee
- 4P12 PULSED HIGH-PRESSURE OPERATION OF BUMPY TORUS
F. Bientosek, W. Ard and J. Pipkins, McDonnell Douglas Corporation, St. Louis, Missouri
- 4P13 CLOSED FLUX SURFACE EBT
J. Pipkins, R. Schmitt and W. Ard, McDonnell Douglas Corporation, St. Louis, Missouri
- Tuesday, May 15, 1984
2:00 P.M. (Jefferson Room)
- Poster Session 4Q - PLASMA HEATING AND CURRENT DRIVE
- 4Q1 THE PRINCETON RF TEST FACILITY
C. Fortgang, D. Hwang,¹ J. Hosea,¹ and R. Motley,¹ McDonnell Douglas Corporation, St. Louis, Missouri
¹ Princeton University, Princeton, New Jersey
- 4Q2 FARADAY SHIELD DESIGN FOR HIGH POWER ICRH APPLICATIONS
J. Mullen, D. Bowers, J. Davis, D. Ruester and T. Smith, McDonnell Douglas Corporation, St. Louis, Missouri
- 4Q3 THE ALCATOR C ICRH HEATING EXPERIMENT
B. Blackwell, J. Moody, R. Parker, M. Porkolab and the Alcator Group, Plasma Fusion Center, MIT, Cambridge, Massachusetts
- 4Q4 ANALYSIS AND DESIGN OF A WAVEGUIDE LAUNCHER IN THE ICRH FOR LARGE TOKAMAKS
H. Romero, N. Lam, J. Scharer and R. Vernon, University of Wisconsin, Madison, Wisconsin
- 4Q5 HEATING IN THE HIGH ION CYCLOTRON HARMONIC FREQUENCY RANGE ON EBT
T. Owens, F. Baity¹ and W. Davis,¹ McDonnell Douglas Astronautics Company
¹ Oak Ridge National Laboratory, Oak Ridge, Tennessee
- 4Q6 LOWER-HYBRID WAVE DETECTION ON VERSATOR II USING MICROWAVE SCATTERING
R. Rohatgi, K-I. Chen, G. Bekefi, S. Luckhardt, M. Mayberry, F. McDermott and M. Porkolab, Plasma Fusion Center, MIT, Cambridge, Massachusetts
- 4Q7 MEASUREMENT OF THE EXTRAORDINARY MODE ABSORPTION AT $\omega = 2\omega_{ce}$ IN THE ISX-B TOKAMAK
F. McDermott, G. Bekefi, S. Attenberger,¹ D. Batchelor,¹ P. Edmonds,¹ R. Goldfinger,¹ R. Kindsfather,¹ E. Lazarus,¹ M. Murakami,¹ G. Neilson,¹ and A. Wootton,¹ MIT, Cambridge, Massachusetts
¹ Oak Ridge National Laboratories, Oak Ridge, Tennessee
- 4Q8 A PLASMA SWITCH SYNCHRONOUS CLOSING OPERATIONS IN HIGH-VOLTAGE NETWORKS
P. Mourente, COPPE/UFRJ, Rio De Janeiro, Brazil
- 4Q9 EFFECT OF FARADAY SHIELD ON THE PLASMA LOADING FOR ICRH CAVITY COUPLERS
P. Parks, D. Baker, F. Blau, S. Chiu, T. Hino and T. Mau, GA Technologies Inc., San Diego, California
- Tuesday, May 15, 1984
2:00 P.M. (Jefferson Room)
- Poster Session 4R - HIGH POWER MICROWAVE GENERATION
- 4R1 THEORY AND SIMULATION OF THE RIPPLED FIELD MAGNETRON
F. Hartemann, R. Shefer, G. Bekefi and A. Drobot,¹ MIT, Cambridge, Massachusetts
¹ Science Applications, Inc., LaJolla, California
- 4R2 MILLIMETER WAVE RADIATION FROM A ROTATING ELECTRON BEAM IN A RIPPLED MAGNETIC FIELD
G. Bekefi, R. Shefer and W. Destler,¹ MIT, Cambridge, Massachusetts
¹ University of Maryland, College Park, Maryland
- 4R3 A SUBMILLIMETER FREE ELECTRON LASER USING A HIGH QUALITY ELECTRON BEAM
D. Kirkpatrick, R. Shefer and G. Bekefi, MIT, Cambridge, Massachusetts
- 4R4 FREE ELECTRON LASER EXPERIMENT IN RESONANT HELICAL AND AXIAL MAGNETIC FIELDS
J. Fajans, Y. Yin, G. Bekefi, B. Lax, MIT, Cambridge, Massachusetts
- 4R5 MICROWAVE RADIATION AND ELECTRON MOTION IN A UBITRON WITH AN AXIAL GUIDING MAGNETIC FIELD
K. Jacobs and G. Bekefi, MIT, Cambridge, Massachusetts
- 4R6 ABSOLUTE INSTABILITY OF THE FREE ELECTRON LASER
J. Davies, R. Davidson,¹ and G. Johnston,¹ Clark University
¹ MIT, Cambridge, Massachusetts
- 4R7 DISPERSION RELATION OF FREE ELECTRON LASER NEAR CYCLOTRON RESONANCE
R. Davidson and G. Johnston, MIT, Cambridge, Massachusetts
- 4R8 DESIGN CONSIDERATIONS FOR 120 GHZ, 1MW CW GYROTRONS
H. Huey, R. Bier, M. Caplan, K. Felch and H. Jory, Varian Associates, Inc., Palo Alto, California
- 4R9 SELF-CONSISTENT RF FIELD APPROACH FOR COMPLEX CAVITY GYROTRONS
R. Lee, A. Fliflet and M. Read, Naval Research Laboratory, Washington, D. C.
- 4R10 THE NRL QUASI-OPTICAL GYROTRON
T. Hargreaves,¹ S. Park,² R. Seeley,¹ J. McAdoo and M. Read, Naval Research Laboratory, Washington, D. C.
¹ JAYCOR, Alexandria, Virginia
² Omega P, New Haven, Connecticut
- 4R11 EFFICIENCY OF THE GYRO-HARMONITRON OSCILLATOR
S. Ahn and A. Ganguly, Naval Research Laboratory, Washington, D. C.
- 4R12 EXPERIMENTAL STUDY ON THE DISPERSION PROPERTIES OF THE CUSPTRON STRUCTURE
J. Choe, H. Crosby, D. Jablonski, A. Krahl and W. Namkung, Naval Surface Weapons Center, Silver Spring, Maryland
- 4R13 GENERATION OF MICROWAVES BY A SLOW WAVE ELECTRON CYCLOTRON MASER WITH AXIAL INJECTION
R. Michie and J. Vovvoridis, Western Research Corporation, San Diego, California
- Tuesday, May 15, 1984
2:00 P.M. (Jefferson Room)
- Poster Session 4S - FAST OPENING SWITCHES
- 4S1 CROSSATRON FAST OPENING PLASMA SWITCH
R. Schumacher and R. Harvey, Hughes Research Laboratories, Malibu, California
- 4S2 OPERATION OF A CURRENT-MULTIPLIER, INDUCTIVE STORE WITH MULTIPLE EXPLODING FOIL SWITCHING
P. Turchi, G. Bird, C. Boyer, D. Conte, J. Davis, S. Seiler, R & D Associates, Alexandria, Virginia

4S3 COUPLING OF A PLASMA EROSION OPENING SWITCH TO LOADS
R. Meger, J. Neri, W. Oliphant, P. Ottinger, ¹ and
T. Renk, Naval Research Laboratory, Washington, D. C.
¹ JAYCOR, Inc., Alexandria, Virginia

Wednesday, May 16, 1984
9:30 A.M. (Atrium B Room)

Oral Session 5C - HIGH POWER MICROWAVE GENERATION
Session Chairperson - L. E. Thode

4S4 PLASMA PRODUCTION FROM FLASHBOARDS FOR OPENING SWITCH
APPLICATIONS
T. Renk and B. Weber, ¹ Naval Research Laboratory,
Washington, D. C.
¹ JAYCOR, Inc., Alexandria, Virginia

5C1 EFFECTS OF DIODE CLOSURE AND ELECTRON SCATTERS ON THE GENERATION
OF MICROWAVES IN A VIRTUAL CATHODE CONFIGURATION
T. Kwan, L. Thode and B. DeVolder, Los Alamos National
Laboratory, Los Alamos, New Mexico

4S5 COMPUTATIONAL MODELING OF EXPLODING FOIL FUSES AND
COMMUTATOR SWITCHES FOR MULTIMEGAMPERE CURRENTS
I. Lindemuth, A. Greene, D. Weiss, T. Oliphant and
J. Brownell, Los Alamos National Laboratory, Los
Alamos, New Mexico

5C2 VIRCATOR STUDIES AT LAWRENCE LIVERMORE NATIONAL LABORATORY
R. Scarpetti, Jr., S. Burkhart, R. Lundberg, Lawrence
Livermore National Laboratory, Livermore, California

4S6 ONE-DIMENSIONAL MAGNETOHYDRODYNAMIC SIMULATIONS OF
EXPLODING FOIL OPENING SWITCHES
W. McCullough, Air Force Weapons Laboratory, Kirtland
AFB, New Mexico

5C3 OBSERVATION OF KU-BAND MICROWAVE RADIATION PRODUCED BY A
RELATIVISTIC BACKWARD WAVE OSCILLATOR (BWO)
G. Leifeste, R. Miller, L. Eagley, W. Ballard, J. Poukey,
J. Swegle and A. Bromborsky, ¹ Sandia National Laboratories,
Albuquerque, New Mexico
¹ Harry Diamond Laboratories

Wednesday, May 16, 1984
8:30 A.M. (Mississippi Ballroom)

REVIEW PAPER

Chairperson, M. KUSHNER

JOHN COBURN
IBM CORPORATION
SAN JOSE, CALIFORNIA

"THE ROLE OF ION BOMBARDMENT IN
PLASMA-ASSISTED ETCHING"

Wednesday, May 16, 1984
9:30 A.M. (St. Louis Room)

Oral Session 5A - PLASMA FOCUS
Session Chairperson - V. Nardi

5A1 MICROWAVE EMISSION FROM THE DENSE PLASMA FOCUS
M. Tanis, G. Gerdin, University of Illinois, Urbana,
Illinois

5D2 THE ROLE OF SURFACE CHEMISTRY IN COLD CATHODE DISCHARGES
D. Bacon, E. Kane and A. Drobot, Science Applications,
Inc., McLean, Virginia

5A2 THE DENSE PLASMA FOCUS AS AN OPENING SWITCH
F. Venneri and G. Gerdin, University of Illinois, Urbana,
Illinois

5D3 ION SEPARATION IN ANODE PLASMA FORMATION
D. Colombant and S. Goldstein, ¹ Naval Research Laboratory,
Washington, D. C.
¹ JAYCOR, Inc., Alexandria, Virginia

5A3 INVITED PAPER: TIME AND SPACE HISTORY OF TURBULENCE IN THE
PLASMA FOCUS USING LASER SCATTERING TECHNIQUES
R. Kirk, ¹ M. Forrest, D. Muir, ¹ and N. Peacock,
Culham Laboratory, Abingdon, Oxon, England
¹ Royal Holloway College, University of London, England

5D4 LITHIUM ION SOURCE DEVELOPMENT FOR LIGHT-ION FUSION
R. Gerber, Sandia National Laboratories, Albuquerque,
New Mexico

5A4 ELECTRON BEAM PRODUCTION BY A PLASMA FOCUS
J. Smith, C. Luo, ¹ R. Schneider, ¹ and M. Rhee, ¹
Naval Surface Weapons Center, Silver Spring, Maryland
¹ University of Maryland, College Park, Maryland

5D5 LITHIUM NITRATE FLASHOVER PLASMA SOURCES FOR LITHIUM ION
BEAMS
G. Mills, E. Burns and D. Johnson, Sandia National
Laboratories, Albuquerque, New Mexico

5A5 SPECTRAL OPTIMIZATION OF HYPOCYCLOIDAL-PINCH ARRAY AS LASER
PUMP SOURCE
J. Lee and K. Han, Hampton Institute, Hampton, Virginia

5D6 ION SOURCE STUDIES ON THE NEREUS ACCELERATOR
K. Bieg, E. Burns, D. Johnson, M. Sweeney, R. Lujan and
L. Dorrell, Sandia National Laboratories, Albuquerque,
New Mexico

5A6 STUDY OF MATHER-TYPE DENSE PLASMA FOCUS AS A NEW OPTICAL
PUMP FOR LASERS
J. Fanning and K. Kim, University of Illinois, Urbana,
Illinois

5D7 PHOTON GENERATION OF LITHIUM PLASMAS FOR ION DIODES
G. Tisone, J. Rice and R. Gerber, Sandia National
Laboratories, Albuquerque, New Mexico

5A7 BREAK-DOWN STAGE IN A 20 kV COAXIAL GUN
J. Feugeas, M. Massa and O. Von Pamel, Institute of
Physics of Rosario, Argentina

5D8 INTENSE UV SOURCES FOR LIGHT ION BEAM FUSION
G. Mills and J. Woodworth, Sandia National Laboratories,
Albuquerque, New Mexico

5A8 ATTENUATION OF THE MAGNETIC PROBE SIGNAL IN DENSE PLASMAS
F. Gratton and N. Fuentes, Universidad de Buenos Aires,
Buenos Aires, Argentina

PANEL ON ION SOURCES FOR LIGHT ION FUSION

Chairperson: J. Pace VanDevender

Participants: N. Hoffman, R. A. Gerber, J. B. Greenley,
S. Goldstein

5A9 SOFT X-RAY ANALYSIS OF A DENSE PLASMA FOCUS
F. Venneri and G. Gerdin, University of Illinois, Urbana,
Illinois

Wednesday, May 16, 1984
9:30 A.M. (Jefferson Room)

Poster Session 5P - PLASMA DIAGNOSTICS

- 5P1 INFRARED CAMERA/FOIL BOLOMETER MEASUREMENTS OF POWER DEPOSITION ON THE VACUUM VESSEL WALL IN DOUBLET III
T. Petrie, A. Mahdavi and L. Rottler, GA Technologies Inc., San Diego, California
- 5P2 RESONANCE RAYLEIGH SCATTERING ON A BARIUM PLASMA
T. Nee, National Bureau of Standards, Washington, D. C.
- 5P3 FAST ELECTRON TEMPERATURE DIAGNOSTIC FOR ALCATOR C
S. Fairfax, R. Parker, J. Rice, Massachusetts Institute of Technology, Cambridge, Massachusetts
- 5P4 NONDISPERSIVE X-RAY SPECTROSCOPY AND IMAGING OF PLASMAS USING A CHARGE COUPLED DEVICE (CCD)
K. Marsh, C. Joshi, J. Janesick[†] and S. Collins,[†]
UCLA, Los Angeles, California
[†] Jet Propulsion Laboratory, Pasadena, California
- 5P5 NANOSECOND AND SUBNANOSECOND X-RAY FRAMING CAMERAS
W. Stygar, J. Chang, C. Ekdahl, T. Lockner, G. Leffeste, J. Cuny,[†] and P. Taylor,[†] Sandia National Laboratories, Albuquerque, New Mexico
[†] ITT Electro-Optical Products Division
- 5P6 LASER INTERFEROMETER ARRAY FOR BIG DEE
E. Fairbanks, GA Technologies Inc., San Diego, California
- 5P7 CATHODE PLASMA MEASUREMENTS IN A MITL BY HOLOGRAPHIC INTERFEROMETRY
G. Allen, H. Davis, R. Stinnett, T. Hussey, G. Mastin and D. Ghiglia, Sandia National Laboratories, Albuquerque, New Mexico
- 5P8 FAR-INFRARED POLARIMETRY/INTERFEROMETRY FOR INTERNAL MAGNETIC FIELD MEASUREMENT ON ZT40M
R. Erickson, P. Forman and F. Jahoda, Los Alamos National Laboratories, Los Alamos, New Mexico
- 5P9 MEASUREMENT OF LARGE CURRENTS WITH OPTICAL FIBERS
B. Neyer, J. Chang and J. Foesch, Sandia National Laboratories, Albuquerque, New Mexico
- 5P10 HIGH SPEED MULTI-CHANNEL DATA RECORDING ON A PULSED POWER ACCELERATOR
W. Filter, J. Chang and C. Martinez, Sandia National Laboratories, Albuquerque, New Mexico
- 5P11 MULTI-CHANNEL DATA RECORDING OF MARX SWITCH CLOSURES
G. Lockwood, L. Ruggles and G. Ziska,[†] Sandia National Laboratories, Albuquerque, New Mexico
[†] K-TECH
- 5P12 COMPUTER-AIDED REDUCTION OF PLASMA DATA
S. Shariati, University of Tennessee, Knoxville, Tennessee

Wednesday, May 16, 1984
9:30 A.M. (Jefferson Room)

Poster Session 5Q - PLASMA WAVES, INSTABILITIES, AND ANTENNAS

- 5Q1 EXPERIMENTS ON ION ACOUSTIC TYPED DOUBLE LAYERS
C. Chan, M. Cho, T. Intrator and N. Hershkowitz, University of Wisconsin, Madison, Wisconsin
- 5Q2 NON LINEAR SELF CONTRACTION OF ELECTRON WAVE PACKETS
T. Intrator, C. Chan and N. Hershkowitz, University of Wisconsin, Madison, Wisconsin
- 5Q3 SPACE-TIME STATISTICS AND PARTICLE TRANSPORT
S. Levinson, E. Powers, C. Ritz and R. Bengtson, University of Texas at Austin, Austin, Texas
- 5Q4 WAVE-WAVE-COUPLING AND ENERGY FLOW IN A TOKAMAK EDGE PLASMA
C. Ritz, S. Levinson, E. Powers and R. Bengtson, University of Texas at Austin, Austin, Texas
- 5Q5 THE CLASSICAL PIERCE DIODE: USING PARTICLE SIMULATIONS ON LINEAR & NONLINEAR BEHAVIOR AND FINAL STATES
T. Crystal, S. Kuhn and C. Birdsall, University of California, Berkeley, California
- 5Q6 AXIAL EQUILIBRIA OF COLLISIONLESS SINGLE-ENDED Q-MACHINES: PARTICLE SIMULATIONS VERSUS THEORY AND EXPERIMENT
S. Kuhn, P. Gray, T. Crystal and C. Birdsall, University of California, Berkeley, California

- 5Q7 LIE GROUP INVARIANCE OF THE VLASOV EQUATION FOR $\vec{E} \perp \vec{B}_0$
B. Shrauner, Washington University, St. Louis, Missouri
- 5Q8 CHAOTIC BEHAVIOR IN A BEAM PLASMA SYSTEM
R. McCowan and J. Walsh, Dartmouth College, Hanover, New Hampshire
- 5Q9 ION ACOUSTIC SOLITARY WAVES NEAR DOUBLE LAYERS
H. Kuehl and K. Imen, University of Southern California, Los Angeles, California
- 5Q10 TO THE NONLINEAR THEORY OF SURFACE WAVES IN BOUNDED PLASMA
I. Peneva, I. Dukov, A. Kondratenko,[†] I. Sarhad,[†]
Higher Pedagogical Institute, Shoumen, Bulgaria
[†] Kharkov University, Kharkov, USSR

Wednesday, May 16, 1984
9:30 A.M. (Jefferson Room)

Poster Session 5R - COMPUTER METHODS

- 5R1 AN IONIZATION BALANCE MODEL FOR NON-EQUILIBRIUM PLASMAS
Y. Lee, Lawrence Livermore National Laboratory, Livermore, California
- 5R2 EFFICIENT MAPPING ALGORITHMS BETWEEN FLUX COORDINATES AND REAL-SPACE COORDINATES FOR TOROIDAL PLASMAS
S. Attenberger, W. Houlberg and S. Hirshman, Oak Ridge National Laboratories, Oak Ridge, Tennessee
- 5R3 ARGUS: A THREE-DIMENSIONAL PLASMA SIMULATION MODEL
A. Mankofsky, L. Seftor, C. Chang, A. Mondelli and A. Drobot, Science Applications, Inc., McLean, Virginia
- 5R4 A 3D FINITE ELEMENT CALCULATION OF THE TRANSIENT MAGNETIC FIELD IN THE STRIP-TO COAXIAL-LINE TRANSITION REGION
T. Agrawal and R. Gupta,[†] HBTI, Kanpur, India
[†] NRC, Ottawa, Canada
- 5R5 AN "ELECTRONIC SHOTBOOK" FOR EASY DATA RETRIEVAL
R. Lerche, J. Auerbach, B. DeMartini and R. Carey, Lawrence Livermore National Laboratory, Livermore, California
- 5R6 A NEW, THERMODYNAMICALLY CONSISTENT, HYBRID INTEGRAL EQUATION FOR MULTICOMPONENT PLASMAS
F. Rogers and H. DeWitt, Lawrence Livermore National Laboratory, Livermore, California