

1993 INTERNATIONAL SHERWOOD FUSION THEORY CONFERENCE

Newport Islander Doubletree Hotel, Newport, RI
March 28 - 31, 1993

REGISTRATION - Newport Islander Doubletree Conference Center

Sunday, March 28 - 4:00pm - 10:00pm
Monday, March 29 - 7:30am - 5:00pm
Tuesday, March 30 - 8:00am - 5:00pm
Wednesday, March 31 - 8:00am - noon

MONDAY MORNING

WELCOME - 8:20am - Dieter Sigmar, Local Chairman

1A Review Talk
8:30am - 9:20am
Presiding: D. Sigmar

1A1. The Theoretical Basis of a Drift-Optimized Stellarator Reactor. H. Wobig.

1B ORAL SESSION
9:30am - 12:00pm
Presiding: F. Waelbroeck

- 1B1. MHD Convection Cells and the Hartmann Number. X. Shan and D. Montgomery.
1B2. Fluid Simulations of grad/Te Driven Turbulence and Transport in Boundary Plasmas. X. Q. Xu and R. H. Cohen.
1B3. Stabilization of the Tearing Mode by Overlap with Driven Alfvén Resonance Islands. J. M. Finn.
1B4. Magnetic Islands and Their Effects in Tokamak Plasmas. C. C. Hegna, J. D. Callen, T. A. Gianakon, W. X. Qu, A. I. Smolyakov, and J. P. Wang.
1B5. Shear Damping of Toroidal Drift Waves. J. B. Taylor, J. W. Connor, and H. R. Wilson.

MONDAY AFTERNOON

1C POSTER SESSION
2:00 - 4:00pm

- 1C1. How to Make a heliotron into a Helias like a Heliac for Reactor Studies. P. R. Garabedian.
1C2. ASPAN: Advanced Spectral Analysis of TFTR Microwave Scattering. A. Sidorenko, K. S. Riedel, N. Bretz, R. Nazikian, and D. J. Thomson.
1C3. Kinetic Ballooning Stability of Experimental Parameters Including Shear Flow and Equilibrium Gradients. M. Kotschenreuther.

- 1C4. Kinetic Effects on TAE and KTAE Modes. C. Z. Cheng and G. Y. Fu.
- 1C5. (Nearly) Portable PIC Code for Parallel Computers. V. K. Decyk.
- 1C6. Statistical and Transport Analysis Using the MFE Database. J. C. Wiley, P. M. Valanju, W. H. Miner, Jr., P. N. Yushmanov, and D. W. Ross.
- 1C7. Far Field ICRF Sheath Formation on Walls and Limiters. J. R. Myra and D. A. D'Ippolito.
- 1C8. Coherent Drift Wave Structures in Sheared Magnetic Fields. P. J. Morrison and W. Horton.
- 1C9. Plasma Polarization and Tokamak Space Charge. R. D. Hazeltine, E. R. Solano, and P. M. Valanju.
- 1C10. Conformal Magnetosonic Waves. S. V. Bulanov and F. Pegoraro.
- 1C11. Application of the Realizable Markovian Closure to a Two-Field Model of Dissipative Drift-Wave Turbulence. J. C. Bowman and J. A. Krommes.
- 1C12. Stability of Toroidal Alfvén Eigenmodes Using an Initial Value Hybrid Code. G. Vlad, S. Briguglio, C. Kar, F. Zonca, and F. Romanelli.
- 1C13. Self-Similar Transport. D. Stevens, H. Weitzner, and G. M. Zaslavsky.
- 1C14. Resistive Ballooning Modes Revisited. S. V. Novakovskii, P. N. Guzdar, J. F. Drake, C. S. Liu, and F. L. Waelbroeck.
- 1C15. Global Wave Modeling of Electron Interactions with Fast Magnetosonic Waves. E. F. Jaeger, D. B. Batchelor, and M. Murakami.
- 1C16. Nonlinear Damping of Drift Waves by Strong Flow Curvature. K. L. Sidikman, B. A. Carreras, L. Garcia, and P. H. Diamond.
- 1C17. 2D nonlinear Dynamics of Four Driven Vortices. A. V. Rogalsky, P. N. Guzdar, J. M. Finn, and J. F. Drake.
- 1C18. Hamiltonian Attractors and Iso-Topological Relaxation in Reduced Magnetohydrodynamics. M. Isichenko and A. V. Gruzinov.
- 1C19. Theoretical Analysis of the Emissions at the Cyclotron Frequency Harmonics of Fusion Produced Alpha Particles. N. R. Asherie and B. Coppi.
- 1C20. Local Shear in General Magnetic Stellarator Geometry. R. E. Waltz and A. H. Boozer.
- 1C21. Investigation of the Effect of External Magnetic Perturbations Upon Divertor Heat Load. B. J. Braams and M. D. Teytel.
- 1C22. Feedback Control of Tokamak Instabilities. A. K. Sen.
- 1C23. Alpha Heating Predictions for DT Supershots. R. V. Budny, M. G. Bell, Z. Chang, E. Fredrickson, H. Park, J. D. Strachan, and S. J. Zweben.
- 1C24. Instantaneous Phase-Space Lyapunov Expansion Rates in Coulombic Many-Body Systems. D. M. Barnett and T. Tajima.
- 1C25. Gyrokinetic $i(\delta)$ Particle Model of Dissipative Trapped Electron Mode Turbulence. J.-N. Leboeuf and R. D. Sydora.
- 1C26. Transport Simulation of Advanced Tokamak Operations. V. S. Chan, Y. R. Lin-Liu, L. L. Lao, H. St John, T. S. Taylor, and A. D. Turnbull.
- 1C27. 3D MHD Simulations of Helicity Injection for Fluctuation Suppression in RFP's. C. R. Sovinec, S. C. Prager, and Y. L. Ho.
- 1C28. Multi-Species, Two-Velocity, One-Space Fokker-Planck Code. D. P. Coster.
- 1C29. Coupling Transport Fluid Codes in 1D and 2D. A. Tarditi, R. H. Cohen, and T. D. Rognlien.
- 1C30. Nonfully Developed Saturated States in the Microtearing Model for Magnetic Edge Turbulence. P. W. Terry, D. E. Newman, and E. Fernandez.
- 1C31. Estimating Tokamak Plasma Transport Scaling via Gyrokinetic Particle Simulation. R. A. Santoro and W. W. Lee.
- 1C32. Current Driven Ballooning Modes in High- $q(o)$, High- $\beta(p)$ Tokamaks. J. J. Ramos.
- 1C33. Nonlinear Studies of Vortex Dynamics in Non-Neutral Plasmas. A. Y. Aydemir.
- 1C34. Diffraction Corrections to Ray Propagation in a Magnetized Plasma. R. E. Aamodt.
- 1C35. Dual Cascade and Minimum Enstrophy State in the Tokamak Scrape-Off Layer. N. Mattor, R. H. Cohen, and X. Q. Xu.
- 1C36. Exploration of Stellarator Orbit Topology Using J**. J. A. Rome.

- 1C37. Plasma Potentials Generated by Microwaves Incident on a Magnetic Gradient: Theory and Computer Simulation. R. F. Post and D. J. Larson.
- 1C38. A Toroidal Gyrokinetic Poisson Solver. J. Li, W. W. Lee, and S. E. Parker.
- 1C39. Charged-Particle Stopping Powers in Inertial Confinement Fusion Plasmas. R. D. Petrasso and C-K. Li.
- 1C40. Nonlinear Two Fluid Theory of Propagating Magnetic Structures. T. J. Schep, F. Pegoraro, and J. Rem.
- 1C41. Low-Frequency Short-Wave-Length Electromagnetic Fluctuations in a Plasma and Anomalous Heat Conductivity. M. O. Vakoulenko.
- 1C42. Parallel Deposition, Sorting, and Reordering Methods in the Hybrid Ordered Plasma Simulation (HOPS) Code. D. V. Anderson and D. E. Shumaker.
- 1C43. Local Ideal Stability of Realistic Field-Reversed Configuration (FRC) Equilibria. L. C. Steinhauer.
- 1C44. Changes in the Tokamak Current During MHD Activity. A. H. Boozer.
- 1C45. Numerical Simulation of Drift Turbulence in the Presence of Sheared Flows Parallel and Perpendicular to the Magnetic Field. X. N. Su, W. Horton, and J. Q. Dong.
- 1C46. Non Linear Drift Wave Turbulence. X. Garbet, L. Laurent, and A. Samain.
- 1C47. Global Alpha-Alfven Wave Dispersion Relation and Rosetta Stone. C. L. Hedrick, J-N. Leboeuf, and D. A. Spong.
- 1C48. Vorticity Model of MHD Jets and Conservation of Canonical Circulation. P. M. Bellan.
- 1C49. Nonlinear Mode Conversion. L. Friedland, A. N. Kaufman, and J. J. Morehead.
- 1C50. Convective Momentum Transport, Shock Viscosity, and the L-H Transition in Tokamaks. C. E. Crume, Jr., K. C. Shaing, and C. T. Hsu.
- 1C51. Nonlinear Formalism for Plasma Turbulence Characterized by Two Different Scale Lengths. E. K. Maschke.
- 1C52. Magnetic Field Effects on Ballooning Modes in Classical Fluids. E. Hameiri and A. Lifschitz.
- 1C53. Onset of the Sawtooth Crash. F. L. Waelbroeck.
- 1C54. Partially Linearized Gyrokinetic Simulations with Ion-Ion Collisions. B. I. Cohen, A. M. Dimits, and T. B. Kaiser.
- 1C55. Stochastic Ripple Losses of Fast Ions on TFTR. M. H. Redi, M. C. Zarnstorff, R. B. White, and R. J. Goldston.

1D POSTER SESSION
4:00 - 6:00pm

- 1D1. Bulk Ion Gyrokinetic Effect in the 3D Hybrid Particle/Fluid Code, MH3D-K. W. Park, G. Y. Fu, L. E. Sugiyama, W. W. Lee, D. Monticello, and S. E. Parker.
- 1D2. An Explanation for the Cause and Energy Source of Solar Flare Production - A New Mechanism of Thermonuclear Reaction. H-Z. Wang and G-Q. Wang.
- 1D3. Exceeding the Brillouin Limit: A Novel Path to Inertial-Electrostatic Confinement of a Single-Species Plasma. L. Turner and D. C. Barnes.
- 1D4. Symbolic Signal Processing. A. B. Rechester and R. B. White.
- 1D5. Two-Dimensional Numerical Simulation of Drift Waves and Trapped Ion Modes. O. T. Kingsbury and R. E. Waltz.
- 1D6. On Magnetohydrodynamic Modes Driven by Energetic Particles in Tokamaks. L. Chen, S. T. Tsai, and F. Zonca.
- 1D7. An Analytically-Based Method for Rapid Evaluation of MeV Ion Loss in Tokamaks with Low-n Perturbations. H. E. Mynick.
- 1D8. Eikonal Theory of Gyroresonant Case-van Kampen Modes in Tokamak Geometry. E. R. Tracy, A. N. Kaufman, A. J. Brizard, and D. R. Cook.
- 1D9. Anomalous Perturbative Transport in Tokamaks due to Drift-Wave Turbulence. A. A. Thoul, P. L. Similon, and R. N. Sudan.
- 1D10. Neutral-Plasma Interaction in the Long Mean-Free-Path Limit. M. D. Calvin, R. D. Hazeltine, and P. M. Valanju.

- 1D11. Self-Consistent Theory of Magnetic Diffusion and the Turbulent Dynamo. A. V. Gruzinov and P. H. Diamond.
- 1D12. A 3D Fokker-Planck Code for Studying Transport Along the Magnetic Field Lines. O. Sauter, R. W. Harvey, and M. G. McCoy.
- 1D13. The VH-mode at JET. D. P. O'Brien, B. Balet, N. Deliyakis, C. M. Greenfield, and P. M. Stubberfield.
- 1D14. Stationary 3D Vlasov Plasma Equilibria. D. R. Martin and D. V. Anderson.
- 1D15. Neoclassical Kinetic Theory Near the Edge of a Diverted Tokamak Plasma. E. R. Solano and R. D. Hazeltine.
- 1D16. 3-D Monte Carlo Simulations of Fast Ion Confinement for Stellarators with the Radial Electric Field. K. Hanatani.
- 1D17. Feasibility of Driving Perpendicular Rotation in Core Plasma by Off-Axis Neutral Beam Injection to Suppress Microturbulence. A. B. Hassam.
- 1D18. The H Confinement Regime as a State of Topological Incompatibility with Transport Inducing Normal Modes. B. Basu and B. Coppi.
- 1D19. Time-Advance Algorithms Based on Hamilton's Principle. H. R. Lewis and P. J. Kostelec.
- 1D20. DT Simulation of ICRF Heated Supershots in TFTR using TRANSP. R. C. Goldfinger, D. B. Batchelor, C. K. Phillips, R. V. Budny, G. W. Hammett, J. C. Hosea, D. M. McCune, J. E. Stevens, J. R. Wilson, and Team. TFTR.
- 1D21. Dynamics and Control of $m=2$ Islands in TEXT. X. H. Wang, A. Bhattacharjee, D. D. Schnack, D. C. Sing, A. J. Wootton, M. E. Austin, D. L. Brower, J. Y. Chen, R. F. Gandy, and C. X. Xu.
- 1D22. Diffraction and Gaussian $n(\text{parallel})$ Effects in Lower Hybrid Wave Propagation in Tokamaks. L. Vahala and G. Vahala.
- 1D23. Finite Mean-Free-Path Effects in Tokamak Scrape-Off Layers. R. H. Cohen, T. D. Rognlien, X. Q. Xu, I. B. Bernstein, and Q. Chen.
- 1D24. Simulating Density and Temperature Modulation in Oscillating Gas Puff Experiments. D. W. Ross, B. Richards, and J. C. Wiley.
- 1D25. Reconnection of Magnetic Field Lines in a Turbulent Flow. R. G. Kleva.
- 1D26. Lower Hybrid Current Drive in the Presence of ICRF Waves. A. K. Ram, A. Bers, and V. Fuchs.
- 1D27. Range of Objectives of the Ignitor Experiment. M. Nassi, B. Coppi, P. Detragiache, and L. E. Sugiyama.
- 1D28. RF Enhanced Bootstrap Current with CQL3D. R. W. Harvey, M. G. McCoy, P. A. Politzer, V. S. Chan, and K. Kupfer.
- 1D29. Effects of Ion Diamagnetic Flow on Shock Formation in Poloidally rotating Tokamak Plasmas. K. C. Shaing and C. T. Hsu.
- 1D30. Trapped-Particle Effects in the Nonlinear Evolution of Magnetic Islands. J. D. Callen, A. I. Smolyakov, and C. C. Hegna.
- 1D31. Finite Banana Orbit Effects in the Presence of Mini-Magnetic Islands. J. P. Wang, C. C. Hegna, and J. D. Callen.
- 1D32. Simulations of interacting Bootstrap-Current-Driven Magnetic Islands. T. A. Gianakon, C. C. Hegna, and J. D. Callen.
- 1D33. Diverting Alpha-Particle Power to Tail Ions in a Reactor. N. J. Fisch and J-M. Rax.
- 1D34. Radial Transport and the Dynamics of the Transition to Neutralizer Regimes in Gas-Fueled Divertors. R. T. Ratt, A. V. Gruzinov, P. H. Diamond, A. E. Koniges, and G. G. Craddock.
- 1D35. Modeling the ICRF-Edge Interaction in H-Modes. D. A. D'Ippolito, J. R. Myra, J. Jacquinet, and M. Bures.
- 1D36. Effect of Clumps on the Frequency Spectrum of Trapped Electron Driven Drift Wave Turbulence. A. S. Ware and P. W. Terry.
- 1D37. Three-Dimensional Field Solution for the Quiet Implicit PIC Method. R. A. Nebel and D. C. Barnes.
- 1D38. On the FLR Stabilization of High Poloidal Mode Number External Kinks. S. Migliuolo, B. Rogers, and B. Coppi.
- 1D39. The Effect of an Axial Current on Particle Loss Cone in an Axially Symmetric Mirror. S. Ma, J. M. Dawson, and W. J. Nunan.

- 1D40. Toroidal Drift Waves with an Equilibrium Velocity Field. S. Sen.
- 1D41. Anomalous Momentum Transport from Drift Waves. R. R. Dominguez and G. M. Staebler.
- 1D42. Resonance Parallel Viscosity in the Banana Regime in Poloidally Rotating Tokamak Plasmas. N. Dominquez, K. C. Shaing, and C. T. Hsu.
- 1D43. Reconstruction of Ideal MHD Equilibria with Anisotropic Pressure and Aximuthal Mass Flow from Measurements. L. Bai and M. E. Mauel.
- 1D44. Shear Flow Generation by Reynolds Stress and Suppression of Resistive g Modes. H. Sugama and W. Horton.
- 1D45. A Transmission/Escape Probabilities Model for Neutral Particle Transport in the Outer Regions of a Diverted Tokamak. W. M. Stacey.
- 1D46. Nonlinear Evolution of Alpha-Particle-Driven Alfvén Turbulence and Associated Transport. F. Wising, F. Y. Gang, and D. J. Sigmar.
- 1D47. Ultra High Beta Transport and Stability. S. C. Cowley.
- 1D48. A Study of the Guiding Center Approximation. Q. Yao and A. H. Boozer.
- 1D49. Plasma Transport in Mixed Magnetic Topologies. C. C. Hegna and J. D. Callen.
- 1D50. Radiative Divertor Simulations. M. E. Rensink, S. L. Allen, D. N. Hill, T. B. Kaiser, and T. D. Rognlien.
- 1D51. The Neumann Problem in Toroidal Domains Solved by an Integral Equation Technique for the Surface Current. P. Merkel.
- 1D52. Parallel Flow Gradient Driven Instability. L. A. Charlton, B. A. Carreras, and P. H. Diamond.
- 1D53. Radial Diffusion of a Minority Species in a Tokamak due to ICRH. L. Vacca.
- 1D54. A Comparison of the Two-Fluid $m=1$ Stability Criterion to Sawtooth Behavior in TFTR. L. Zakharov, S. Migliuolo, and B. Rogers.

TUESDAY MORNING

2A Review Talk
8:30am - 9:20am
Presiding: C. Karney

- 2A1. Edge Plasma Issues in Divertor Design Illuminated by DIII-D Results. R. D. Stambaugh.

2B ORAL SESSION
9:30am - 12:00pm
Presiding: A. Hassam

- 2B1. Theory of Modulational Interaction of Trapped Ion Convective Cells and Drift Wave Turbulence. V. D. Shapiro, P. H. Diamond, V. Lebedev, G. Soloviev, and V. Shevchanko.
- 2B2. Alternate Fusion - Continuous Inertial Confinement. D. C. Barnes, L. Turner, and R. A. Nebel.
- 2B3. Calculation of an Effective Fast Electron Diffusion Coefficient from 2-D Hard X-ray Images from PBX-M. S. E. Jones, S. Bernabei, R. Kaita, J. Kesner, S. Luckhardt, F. Rimini, and S. Von Goeler.
- 2B4. Developments in the Gyrofluid Approach to Tokamak Turbulence Simulations. G. W. Hammett, M. A. Beer, W. Dorland, S. C. Cowley, and S. A. Smith.
- 2B5. Alpha-Particle-Driven Nonideal Toroidal Alfvén Eigenmodes. J. Candy and M. N. Rosenbluth.

TUESDAY AFTERNOON

2S SPECIAL SESSION - EDGE PHYSICS

4:00-6:00pm

Presiding: H. Weitzner

- 2S1. The Radial Electric Field Near a Separatrix in Diverted Tokamaks. F. L. Hinton.
- 2S2. Numerical Models for the Edge Plasma. B. J. Braams.
- 2S3. Turbulence in Tokamak Scrape-Off Layers. R. H. Cohen.
- 2S4. A Survey of Problems in Divertor and Edge Plasma Theory. H. Weitzner.

TUESDAY EVENING

2C POSTER SESSION

8:00-10:00 pm

- 2C1. Divertor Target Geometry Effects on Tokamak Edge Plasmas. M. S. Day, F. Najmabadi, and R. W. Conn.
- 2C2. An Investigation of the Large Growth Rate Limit of Tearing Modes. J. M. Greene and R. L. Miller.
- 2C3. Origin of Radiation Emission Induced by Fusion Produced Products. B. Coppi and N. R. Asherie.
- 2C4. Computer Simulation of Transport Driven Current in Tokamaks. W. J. Nunan and J. M. Dawson.
- 2C5. Gyrokinetic Simulation in a General Metric. M. J. LeBrun and T. Tajima.
- 2C6. Influence of Trapped Thermal Particles on Global $n=1$ Modes in High Temperature Tokamak Plasmas. T. M. Antonsen, Jr. and A. Bondeson.
- 2C7. Identification and Solution of the Generic Linear Mode Conversion Problem in One Dimension. W. G. Flynn and R. G. Littlejohn.
- 2C8. A Generic Coordinate System and a Set of Generic Variables for the MFE Database. W. H. Miner, Jr., D. W. Ross, E. R. Solano, P. M. Valanju, and J. C. Wiley.
- 2C9. Three Religious Rules of Nonlinear Physics. V. V. Yankov.
- 2C10. Non-Vanishing Fast-Ion Bootstrap Current on Axis. R. P. Gormley, C. T. Hsu, and D. J. Sigmar.
- 2C11. Bootstrap Current of Transition Particles. S. G. Shasharina, P. N. Yushmanov, and J. R. Cary.
- 2C12. Visualization Strategies in Tokamak Fluid Turbulence Studies. G. D. Kerbel and R. E. Waltz.
- 2C13. Quasistatically Evolved Toroidal Equilibria. J. A. Crotinger, S. W. Haney, L. L. LoDestro, and L. D. Pearlstein.
- 2C14. Neoclassical Theory of Poloidal and Toroidal Rotations. A. A. Galeev, A. B. Hassam, C. S. Liu, and R. Z. Sagdeev.
- 2C15. Dynamics of Fluid Models for Collisional and Collisionless Drift-Wave Turbulence. G. G. Craddock, A. E. Koniges, J. A. Crotinger, P. H. Diamond, D. E. Newman, and P. W. Terry.
- 2C16. Atomic Physics Modifications of Braginskii for Divertor and Edge Plasmas in Tokamaks. P. J. Catto.
- 2C17. Simulation of Radiative Divertor Flame Fronts and Supersonic Flow. R. B. Campbell, D. A. Knoll, and P. R. McHugh.
- 2C18. Stochasticity and Reconnection in an Area Preserving Nontwist Map. D. Del-Castillo-Negrete and P. J. Morrison.
- 2C19. The Role of Self-Consistent Lagrangian Chaos in Benard and Interchange Convection. K. Hermiz and J. M. Finn.
- 2C20. Beam and Impurity Effects on the Ion Temperature Gradient Mode. J. Q. Dong, J. Y. Kim, and W. Horton.
- 2C21. What is Thermodynamic Equilibrium for a Non-Neutral Plasma in a DC Magnetic Field. H. Chen and D. Montgomery.

- 2C22. Isotope Effect and Charge-Exchange Energy Loss. P. M. Valanju, R. D. Hazeltine, and M. D. Calvin.
2C23. Ponderomotive Force Induced by Wave Absorption. V. I. Krivenski.
2C24. Inertial-Electrostatic Confinement Studies. T. N. Tiouririne, R. A. Nebel, L. Turner, W. D. Nystrom, R. W. Bussard, G. H. Miley, Y. Yamamoto, J. Bates, and H. R. Lewis.
2C25. 3D Toroidal Gyrokinetic Simulation of ITG Driven Turbulence. S. E. Parker, W. W. Lee, and R. A. Santoro.
2C26. Ballooning Modes in Linked Mirror Configurations. H. V. Wong, H. L. Berk, V. I. Ilgisonis, and V. P. Pastukhov.
2C27. Arbitrary Mode Number Boundary Layer Theory for Non-Ideal Toroidal Alfvén Modes. H. L. Berk, R. R. Mett, and D. M. Lindberg.
2C28. Instability due to Axial Shear and Surface Impedance. Y. Tsidulko, H. L. Berk, and R. H. Cohen.
2C29. Solution of the Drift-Kinetic Equation for Global Plasma Modes and finite Particle Orbit Widths. F. Porcelli, R. Stankiewicz, W. Kerner, and H. L. Berk.
2C30. Gyrokinetic Simulations in Toroidal Geometry. A. M. Dimits and J. A. Byers.
2C31. Finite Beta Induced Gaps in the Toroidal Alfvén Spectrum. M. S. Chu, W. W. Heidbrink, E. J. Strait, and A. D. Turnbull.
2C32. Anomalous Energy Pinch in Turbulent Transport. A. I. Smolyakov and J. D. Callen.
2C33. Anomalous Electron Streaming due to Electrostatic Modes in Tokamak Plasmas. S. D. Schultz, A. Bers, and A. K. Ram.
2C34. Nonlinear Gyrofluid Simulation and Analysis: ITG Turbulence. W. Dorland, G. W. Hammett, M. A. Beer, and T. S. Hahn.
2C35. Thermal Runaway Due to Fast Ion Friction Driven Heat Pinch. Y.-B. Kim and F. L. Hinton.
2C36. Monte-Carlo Simulation Studies of Effects of Radial Electric Field on Particle Motion in the Tokamak Plasma. H. Xiao, Y. Z. Zhang, H. Ye, R. D. Hazeltine, and P. M. Valanju.
2C37. Effects of Rational Surface Density on Resistive g Turbulence. A. D. Beklemishev, H. Sugama, and W. Horton.
2C38. Bootstrap Current Induced by Neutral Beam Injection. C. T. Hsu, K. C. Shaing, R. P. Gormley, and D. J. Sigmar.
2C39. Shear Flow Generation and Turbulence Suppression by Resistive Ballooning and Resistive Interchange Modes. P. N. Guzdar and J. F. Drake.
2C40. Tearing Mode Stability in Tokamaks with Shaped Plasma Cross-Sections. R. Fitzpatrick, R. J. Hastie, T. J. Martin, and C. M. Roach.
2C41. Space-Time Statistics of Drift Wave Turbulence. W. Horton.
2C42. Increasing the Capabilities of Preische's Post-Processor for PEST. J. L. Johnson, J. Manickam, and M. S. Chance.
2C43. A Model of Energy Transport Based on Alfvén-Wave Filaments. G. J. Morales.
2C44. Distributed Plasma Simulation Using C++ and ESP. G. Furnish and M. G. Gray.
2C45. Onsager Symmetries for Nonequilibrium Steady States. J. A. Krommes and G. Hu.
2C46. The Transport of Toroidal Momentum in TFTR Plasmas and Relevant Collective Modes. D. R. Ernst, B. Coppi, S. D. Scott, and Team. TFTR.
2C47. The Reconstruction of Equilibrium in TFTR with use of EMEQ Code. N. Pomphrey and L. Zakharov.
2C48. Differential Algebraic Plasma Simulation. J. Koga and T. Tajima.
2C49. Energetic Particle Drive for TAE and Kinetic TAE Modes in a Low-Shear Tokamak. S. E. Sharapov and B. N. Breizman.
2C50. On the Relationship Between Marfes and Density Limits. J. P. Freidberg, J. A. Wesson, and C. Kurz.
2C51. Quench Protection in Superconducting Magnets. A. Shajii and J. P. Freidberg.
2C52. Smoothing Spline Analysis of Plasma Profiles. K. Imre and K. S. Riedel.
2C53. Calculations in the Tokamak Vacuum Region: $\Delta W(v)$ and Diagnostic Capabilities. M. S. Chance.
2C54. The Magnetohydrodynamic Clump Instability in Tokamaks. Y. Yuan and A. Bhattacharjee.

WEDNESDAY MORNING

3A Review Talk
8:30am - 9:20am
Presiding: P. Terry

3A1. Numerical Models of Weather and Climate. C. E. Leith.

3B ORAL SESSION
9:30am - 10:30am
Presiding: A. Lifschitz

3B1. Destabilization of the Internal Kink by Energetic-Circulating Ions. R. Betti and J. P. Freidberg.
3B2. Tight Aspect-Ratio Tokamaks: Theory and Experiment. A. Sykes, J. W. Connor, R. Duck, K. Gibson, M. Gryaznevich, T. C. Hender, J. Hugill, D. C. Robinson, M. F. Turner, M. Walsh, and H. R. Wilson.

3C POSTER SESSION
10:30am - 12:30pm

- 3C1. Influence of Local Density and Temperature Gradients on Internal Modes in High Temperature Plasmas. P. Detragiache.
3C2. A Comparison of the Performance of a Fluid Code on the C90 and the iPSC/860. V. E. Lynch, B. A. Carreras, B. Curtis, J. B. Drake, and J-N. Leboeuf.
3C3. Fluid Equations for Plasmas with a Strong Radial Electric Field and Steady Flow. C. S. Chang and H. R. Strauss.
3C4. Effects of Flux Surface Jitter on Electrostatic Drift Waves. M. G. Prahovic, A. Y. Aydemir, and R. D. Hazeltine.
3C5. Nonlinear Gyrofluid Simulations of Toroidal ITG Turbulence. M. A. Beer, G. W. Hammett, W. Dorland, and S. C. Cowley.
3C6. A Moving Finite Element Model of the Tokamak Scrapeoff Region. A. H. Glasser and A. P. Kuprat.
3C7. A Moving Finite Element Model of the Incompressible Kelvin-Helmholtz Instability. A. P. Kuprat and A. H. Glasser.
3C8. Nonlinear Gyrofluid Models of Shear Alfvén Instabilities in Ignited and Beam Heated Toroidal Plasmas. D. A. Spong, C. L. Hedrick, and B. A. Carreras.
3C9. A Fokker-Planck Equation for Moderately Coupled Plasmas. C-K. Li and R. D. Petrasso.
3C10. Radial Electric Field Influence on the Neoclassical Orbits in Tokamaks. S. I. Krasheninnikov and P. N. Yushmanov.
3C11. Symmetry Groups and Solutions of Plasma Fluid Models. R. Acevedo and P. J. Morrison.
3C12. Ideal MHD Analysis of Advanced Regime Tokamaks. J. Manickam and A. Bondeson.
3C13. Fuel and Helium Confinement in Fusion Reactors. W. A. Houlberg and S. E. Attenberger.
3C14. Neoclassical Tearing Dynamo and Self-Sustainment of a Bootstrapped Tokamak. A. Bhattacharjee and Y. Yuan.
3C15. Unification of Fully Implicit Fluid Edge-Plasma Transport Codes. T. D. Rognlien, R. B. Campbell, T. B. Kaiser, D. A. Knoll, P. R. McHugh, J. L. Milovich, M. E. Rensink, and G. R. Smith.
3C16. Stability Threshold of TAE Modes. G. Y. Fu and C. Z. Cheng.
3C17. Fast Ion Physics Related to Cyclotron Emission. K-R. Chen.

- 3C18. Kinetic Simulation of $\eta(i)$ Modes and Transport in Tokamaks. M. G. Gray, M. J. LeBrun, T. Tajima, G. Furnish, Y. Kishimoto, and W. Horton.
- 3C19. Poloidal Flow Generation in the Evolution of Trapped Electron Drift Instabilities in the Collisionless and Semicollisional Regime. R. D. Sydora and J. M. Dawson.
- 3C20. Neoclassical Rotation of Impure Plasma in Tokamaks. C. S. Liu and S. V. Novakovskii.
- 3C21. Divertor Design Study Using LEDGE and DEGAS. T. B. Kaiser, M. E. Rensink, T. D. Rognlien, and D. N. Hill.
- 3C22. Lower Hybrid Current Drive in Shaped Tokamaks. J. Kesner.
- 3C23. Anomalous Sources of Radial Electric Fields in Tokamaks. V. Smerdyakov, N. Mattor, and P. H. Diamond.
- 3C24. Edge Turbulence from the Tokamak Core. I. Raskolnikov, N. Mattor, and P. H. Diamond.
- 3C25. Optimized Parallel Convolutions for Non-Linear Fluid Models of Tokamak (η i) Turbulence. J. L. Milovich, G. Tomaschke, and G. D. Kerbel.
- 3C26. Three Dimensional Simulations of the Parallel Velocity Shear Instability. D. R. McCarthy, J. F. Drake, and P. N. Guzdar.
- 3C27. Kinetic Treatment of Magnetosonic Wave Reflection by Minority Gyroresonant Ballistic Waves in Tokamak Geometry. A. N. Kaufman, A. J. Brizard, and D. R. Cook.
- 3C28. Progress in Triangular Magnetohydrodynamics. D. D. Schnack and Z. Mikic.
- 3C29. Numerical Simulation of Bootstrap Current. Y. Wu and R. B. White.
- 3C30. Nonlinear Dynamics of the $m=1$ Instability and Fast Sawtooth Collapse in High-Temperature Plasmas. X. Wang and A. Bhattacharjee.
- 3C31. Numerical Investigation of the Ion-Temperature-Gradient Stability of DII-D Plasmas in Various Modes of Energy Confinement. A. J. Brizard, J. Fitzpatrick, T. K. Fowler, X. Q. Xu, K. H. Burrell, and T. H. Osborne.
- 3C32. $m=1$ Resistive Internal Reconnection in a Two Fluid Approximation. L. E. Sugiyama and W. Park.
- 3C33. Neutral Gas Transport Modeling with DEGAS 2. C. Karney and D. Stotler.
- 3C34. Fastwac for full Wave Current Drive Calculations. P. E. Moroz.
- 3C35. Modelling of Ultra High Recycling Divertors with the PLANET-TD Code. M. Petravac and G. Bateman.
- 3C36. Fast Wave Flow Drive in a Two-Ion-Component Plasma. F. Y. Gang and D. J. Sigmar.
- 3C37. Resonant Interaction of Alphas with TAE-Modes. B. N. Breizman, C. T. Hsu, and D. J. Sigmar.
- 3C38. Instability near the Minority Ion Cyclotron Resonance. D. A. Russell, R. E. Aamodt, and C. N. Lashmore-Davies.
- 3C39. MHD Simulation on an Unstructured Mesh. H. R. Strauss and D. W. Longcope.
- 3C40. An Analytical Model of Coupled Fluctuation and Flow Dynamics in Self-Regulating Turbulence. P. H. Diamond, Y. Liang, and B. A. Carreras.
- 3C41. Dynamo and Diffusion Processes in a Reversed Field Pinch. T. Amano and A. Nagata.
- 3C42. Effective Resistivity and Heat Conduction in a Stochastic Magnetic Field. Ph. Ghendrih, H. Capes, F. Nguyen, and A. Samain.
- 3C43. Wave Kinetic Description of Lower-Hybrid Absorption in Tokamaks. K. Kupfer, D. Moreau, and X. Litaudon.
- 3C44. Model for ICRF Fast Wave Current Drive in Self-Consistent MHD Equilibria. P. T. Bonoli, R. C. Englade, M. Porkolab, and M. E. Fenstermacher.
- 3C45. Parallel Computation and the Basis System. G. R. Smith.
- 3C46. Microinstability Studies of Advanced Tokamak Configurations. G. Rewoldt and W. M. Tang.
- 3C47. A New Interpretation of the Ballooning Mode Representation Formalism. J. Y. Kim.
- 3C48. MHD Properties of Advanced Plasma Configurations. S. C. Jardin, C. Kessel, J. Manickam, D. Monticello, W. Nevins, W. Park, J. J. Ramos, A. Reiman, L. Zakharov, and C. Wang.
- 3C49. Neoclassical MHD Modified Eigenmode Equations for Internal Kink Modes in Tokamak Plasmas. Q. X. Qu and J. D. Callen.
- 3C50. The Importance of Three-Dimensional Effects for Antenna Modeling. M. D. Carter, D. B. Batchelor, and D. C. Stallings.
- 3C51. Plasma Energy for Electromagnetic Perturbations. B. A. Shadwick and P. J. Morrison.
- 3C52. Alfvén-wave Current Drive and Magnetic Field Stochasticity. C. Litwin and C. C. Hegna.

- 3C53. Two-Dimensional Eigenmode Analysis of Long-Wavelength Microinstabilities in Rotating Axisymmetric Plasmas. M. Artun, W. M. Tang, and G. Rewoldt.