

# Conference Presentations

**Sherwood '97**  
The Wisconsin Center, 702 Langdon Street,  
Madison, Wisconsin  
April 28–30, 1997

## Monday Morning

**Welcome:** 8:20 a.m. — J. D. Callen, *Local Arrangements Chairman*

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**1A Review Paper** Lakeshore Room, 8:30 a.m. – 9:30 a.m., J.D. Callen Presiding

**1A01.** J. Nührenberg, *Quasi-symmetries in Toroidal Confinement*

**Coffee:** 9:15 a.m.–11:00 a.m. — Alumni Lounge

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**1B Oral Presentations** Lakeshore Room, 9:30 a.m. – 12:30 a.m., J. Drake Presiding

**1B01.** *Omnigenous non-quasihelical system*  
S.G. Shasharina and John R. Cary

**1B02.** *Stability of a levitated dipole*  
J. Kesner

**1B03.** *The periodically oscillating plasma sphere (POPS)*  
Richard A. Nebel and Daniel C. Barnes

**1B04.** *Electromagnetic enhancement of turbulence and spontaneous transport barrier formation in tokamaks*  
B.N. Rogers and J.F. Drake

**1B05.** *Explosive ballooning modes and high- $\beta$  disruptions*  
Bryan H. Fong and Steven C. Cowley

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**Lunch Break:** 12:00 p.m. – 2:00 p.m.

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## Monday Afternoon

**Special Session** Lakeshore Room, 1:15 p.m. – 2:00 p.m., M. Crisp Presiding  
*The New NERSC (National Energy Research Scientific Computing Center) at LBNL*  
Horst D. Simon

**Beverages:** 3:00 p.m. – 5:00 p.m. — Alumni Lounge and Lee Lounge

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**1C Poster Presentations** Alumni Lounge, 2:00 p.m. – 4:00 p.m.

**1C01.** *Feasibility study of finite difference approach to kinetic neutral modeling in edge plasmas*  
M.L. Adams, S.I. Krasheninnikov, O.V. Batishchev, D.J. Sigmar

Posters: Monday, 2:00 p.m. – 4:00 p.m.

- 1C02. *Long mean free path electron heat conduction modifications*  
Peter J. Catto
- 1C03. *Theory of ion and impurity transport in edge plasmas*  
P. Helander, F. Wising, Peter J. Catto and R.D. Hazeltine
- 1C04. *Radiation front jumps in a tokamak divertor*  
S.I. Krasheninnikov, A.A. Batishcheva and D.J. Sigmar
- 1C05. *Simulation of neutral gas transport in a detached divertor using non-linear Monte-Carlo code*  
A. Yu. Pigarov and S. I. Krasheninnikov
- 1C06. *Theoretical interpretation of experimental results from linear machine NAGDIS II*  
D.J. Sigmar, A. Yu. Pigarov, S.I. Krasheninnikov, S. Takamura, N. Ohno and N. Ezumi
- 1C07. *Divertor scaling law simulations*  
D.A. Knoll, Peter J. Catto and S.I. Krasheninnikov
- 1C08. *Study of Balmer spectrum and near photo-recombination edge in Alcator C-Mod divertor plasmas*  
J.L. Terry, A. Yu. Pigarov and B. Lipschultz
- 1C09. *Reversed shear transport barriers*  
W. Horton
- 1C10. *3D effects in turbulent compressible shear flows over toroidal cavities in the neutral gas blanket divertor region*  
George Vahala, Linda Vahala and Joseph Morrison
- 1C11. *Effect of neutrals on SOL & divertor stability*  
D.A. D'Ippolito and J.R. Myra
- 1C12. *Kinetic analysis of instabilities in tokamak plasmas*  
Aaron J. Redd, Arnold H. Kritz, Glenn Bateman, Gregory Rewoldt and Jon Kinsey
- 1C13. *Fokker-Planck simulation of lower hybrid current drive in the reversed field pinch*  
E. Uchimoto, R.W. Harvey, A.P. Smirnov, S.C. Prager, J.S. Sarff and M.R. Stoneking
- 1C14. *Fokker-Planck simulation of parallel electron transport in TdeV tokamak*  
M. Shoucri, I. Shkarofsky, B. Stansfield, C. Boucher, G. Pacher, O.V. Batishchev, A. A. Batishcheva, S.I. Krasheninnikov and D.J. Sigmar
- 1C15. *Noncanonical Hamiltonian theory with applications to linear and nonlinear waves, conservation laws and variational structure*  
Jonas Larsson
- 1C16. *A filament model for resistive wall mode feedback stabilization*  
M. Okabayashi, N. Pomphrey, R. Hatcher and R. Woolley
- 1C17.  *$\alpha$ -dynamo effect of Alfvén waves and current drive in reversed field pinches*  
C. Litwin and S.C. Prager
- 1C18. *Improved theory of neoclassical electrical conductivity in a tokamak plasma*  
C.S. Chang
- 1C19. *Effects of intense pulsed LH waves in tokamaks: nonlinear wave coupling, electric fields, plasma rotation and backward current*  
V. Petrzilka, J.A. Tataronis, R. Kílma and L. Krlín

Posters: Monday, 2:00 p.m. – 4:00 p.m.

- 1C20. *Improved  $\delta f$ -discretization scheme for nonlinear gyrokinetic particle simulations*  
R. Zorat and M. Tessarotto
- 1C21. *Diamagnetic effects on flow-shear MHD equilibria*  
J.L. Johnson, M. Tessarotto, R.B. White and R. Zorat
- 1C22. *Data compression and information retrieval via symbolization*  
X.Z. Tang and E.R. Tracy
- 1C23. *Gyrokinetic particle simulation of small-scale magnetic islands in high temperature tokamak plasmas*  
R.D. Sydora
- 1C24. *Confinement of alpha particles in monotonic and reversed magnetic shear plasmas on TFTR*  
M.H. Redi, R.B. White, S.H. Batha, F.M. Levinton, S.S. Medley, M.P. Petrov and M.C. Zarnstorff
- Poster Presentations** Lee Lounge, 2:00 p.m. – 4:00 p.m.
- 1C25. *Status and plans for the NIMROD code development project*  
C.R. Sovinec, A.H. Glasser, R.A. Nebel, T.A. Gianakon, A.E. Koniges, M.W. Phillips, S.J. Plimpton and D.D. Schnack
- 1C26. *Numerical analysis of the NIMROD formulation*  
A.H. Glasser and C.R. Sovinec
- 1C27. *Parallel structure and performance of the NIMROD code*  
Steve Plimpton, Carl Sovinec, Dan Barnes and Alice Koniges
- 1C28. *Fast electrons generated by lower hybrid waves at the tokamak plasma edge*  
J.A. Tataronis, V. Petrzilka, V. Fuchs and L. Krlín
- 1C29. *A mixed, shear dependent Bohm-Gyro-Bohm transport model*  
G. Vlad, M. Marinucci, F. Romanelli, A. Cherubini, M. Erba, V. Parail and A. Taroni
- 1C30. *RF effects on neoclassical theory and the bootstrap current in tokamaks*  
S.D. Schultz, A. Bers and A.K. Ram
- 1C31. *Comparative transport model testing using the ITER and DIII-D profile databases*  
J.E. Kinsey, R.E. Waltz and D.P. Schissel
- 1C32. *MHD burgerlence: a model of compressible MHD turbulence*  
J. Fleischer and P.H. Diamond
- 1C33. *Wave emission from mode conversion regions*  
Yu. Krasniak, E.R. Tracy and A.N. Kaufman
- 1C34. *Nonlinear stability of tearing modes*  
C. Ren, T.H. Jensen and J.D. Callen
- 1C35. *Evidence for non power-law scalings of confinement parameters and inward transport of thermal energy*  
B. Coppi and W. Daughton
- 1C36. *Confinement at low aspect ratio*  
M. Kotschenreuther, W. Dorland and Q.P. Liu

Posters: Monday, 2:00 p.m. – 4:00 p.m.

- 1C37.  *$\delta f$  simulation of the nonlinear evolution of toroidicity-induced Alfvén eigenmodes with various collisional effects*  
Yang Chen and Roscoe White
- 1C38. *New approach to non-Hamiltonian particle gyrokinetic theory*  
M. Tessarotto, M. Pozzo, R.B. White and R. Zorat
- 1C39. *Modulation instability of electron waves in magnetized plasma*  
V.I. Lapshin and V.I. Maslov
- 1C40. *UEDGE plasma simulations with Monte Carlo neutrals*  
M.E. Rensink, L. Lodestro, G.D. Porter, T.D. Rognlien and D.P. Coster
- 1C41. *Interchange instabilities in a partially ionized plasma*  
W. Daughton, P. Catto, B. Coppi and S. Krasheninnikov
- 1C42. *High mode number ballooning stability in stellarator configurations*  
C.C. Hegna and N. Nakajima
- 1C43. *Alfvén waves and wave-induced transport near an X-point*  
J.R. Myra and D.A. D'Ippolito
- 1C44. *Finite orbit width and Larmor radius effects of fast particle drive on low- $n$  TAE stability*  
C.Z. Cheng, N.N. Gorelenkov and G.Y. Fu
- 1C45. *Investigations of the magnetic field structure of EPEIUS: a proposed low-aspect ratio toratron-tokamak hybrid*  
J.C. Wiley, A.J. Wootton, D.W. Ross, W.H. Miner, Jr., P.M. Valanju and S.B. Zheng
- 1C46. *Stability of low-shear Alfvén eigenmodes*  
J.W. Van Dam, B.N. Breizman, J. Candy, H.A. Holties, G.T.A. Huysmans and S. Sharapov
- 1C47. *Effects of plasma inertia on stability of magnetic islands*  
A.I. Smolyakov
- 1C48. *Electron cyclotron current drive for stabilization of neoclassical tearing modes in ITER*  
R.W. Harvey, F. Perkins and M.N. Rosenbluth

Posters: Monday, 4:00 p.m. – 6:00 p.m.

- 1D07. *Kinetic simulation of the radial electric field evolution in tokamak plasmas*  
S.V. Novakowski, C.S. Liu and R.Z. Sagdeev
- 1D08. *Sheared  $E \times B$  flow stabilization of global MHD modes*  
B.A. Carreras, J.N. Leboeuf and D.A. Spong
- 1D09. *Electromagnetic Landau fluid models of collisionless plasmas*  
P.B. Snyder, G.W. Hammett, M.A. Beer and W. Dorland
- 1D10. *An electron cyclotron heating and current drive approach for low temperature startup plasmas utilizing O-X-EBW mode conversion*  
D.B. Batchelor and T.S. Bigelow
- 1D11. *Forced magnetic field line reconnection in electron-magnetohydrodynamics*  
K. Avinash, S.V. Bulanov, T. Esirkepov, P. Kaw, F. Pegoraro, P.V. Sasorov and A. Sen
- 1D12. *Drift wave simulations of JET L- and H-mode discharges*  
P. Strand, H. Nordman and J. Weiland and J.P. Christiansen
- 1D13. *Simulations on the feedback stabilization of neoclassical MHD tearing modes*  
T.A. Gianakon, X. Garbet, G. Giruzzi, M. Zabiego, J.D. Callen and C.C. Hegna
- 1D14. *Optimization of formation of flux core and gun spheromaks*  
R.A. Gerwin, J.M. Finn, A.H. Glasser and C.R. Sovinec
- 1D15. *Issues in nonlinear gyrokinetic simulations of tokamak turbulence and transport*  
A.M. Dimits and B.I. Cohen
- 1D16. *Toroidicity effects and induced convection in the tokamak SOL*  
R.H. Cohen and D.D. Ryutov
- 1D17. *Kinetic study of parallel transport in SOL plasma*  
O.V. Batishchev, P.J. Catto, S.I. Krasheninnikov and D.J. Sigmar
- 1D18. *Analysis of localized electron heating and current drive via mode converted ion Bernstein waves in Alcator C-Mod*  
P.T. Bonoli, P.J. O'Shea, A. Hubbard, M. Porkolab, Y. Takase, S. Wukitch and M. Brambilla
- 1D19. *Edge plasma in a spheromak*  
E.B. Hooper, R.H. Cohen and D.D. Ryutov
- 1D20. *Reversed field pinch transport due to Suydam instabilities*  
A. Bruno and J.P. Freidberg
- 1D21. *A class of high  $\beta_p$  equilibria in strongly shaped finite-aspect-ratio tokamak plasmas*  
Y.R. Lin-Liu, R.L. Miller, V.S. Chan, P.A. Politzer and A.D. Turnbull
- 1D22. *Classification and Casimir invariants of Lie-Poisson brackets*  
J.-L. Thiffeault and P.J. Morrison
- 1D23. *Nonaxisymmetric studies of vertical displacement events*  
A.Y. Aydemir
- 1D24. *Toroidal effects on adiabatic R-compression in tokamaks*  
M.V. Gorelenkova, E.A. Azizov, N.N. Gorelenkov and A.N. Romannikov

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1D **Poster Presentations** Alumni Lounge, 4:00 p.m. – 6:00 p.m.

- 1D01. *ICRF heating and current drive in high and low beta tokamaks*  
J.E. Scharer, M.H. Bettenhausen and R.S. Sund
- 1D02. *Stimulated Brillouin scattering of an electromagnetic wave in a strongly magnetized plasma*  
N.K. Jaiman and V.K. Tripathi
- 1D03.  *$E \times B$  shearing rate in a stellarator with quasi-helical symmetry*  
T.S. Hahn
- 1D04. *The effect of impurity charge state evolution on the stability of radiative modes*  
Daniel R. McCarthy, A.E. Booth, J.E.J. Hutchinson and Sergei Krasheninnikov
- 1D05. *L and H modes in the guiding center plasma*  
G. Knorr and B. Krane
- 1D06. *Progress to a theory for rotational shear stabilization*  
R.E. Waltz, R.L. Dewar and X. Garbet

**Poster Presentations** Lee Lounge, 4:00 p.m. – 6:00 p.m.

- 1D25. *Stellarator optimization methods for Small Aspect Ratio Toroidal Hybrid (SMARTH) devices*  
S.P. Hirshman, D.A. Spong, J.C. Whitson, D.B. Batchelor, B.A. Carreras, V.E. Lynch, J.F. Lyon and J.A. Rome
- 1D26. *Numerical study of the nonlinear saturation of double tearing modes*  
E.K. Maschke, M. Berroukeche and B. Saramito
- 1D27. *SOL instabilities and anomalous transport localized in divertor legs*  
D.D. Ryutov and R.H. Cohen
- 1D28. *The shear Alfvén wave spectrum in a resistive MHD plasma without magnetic shear*  
R. Torasso, J.A. Tataronis and S. Rauf
- 1D29. *Global nonlinear calculations of ion temperature gradient driven turbulence*  
V.E. Lynch, J.N. Leboeuf, B.A. Carreras and L. Garcia
- 1D30. *Global nonlinear gyrokinetic simulations with self-consistent  $E_r$  shear and pressure profile variation*  
Scott E. Parker, T.S. Hahm and W.W. Lee
- 1D31. *Experiment-Theory Comparison of Neoclassical Tearing Modes and Extrapolation to ITER*  
Z. Chang, E. Fredrickson, R. Budny, K. McGuire, G. Taylor and M. Zarnstorff
- 1D32. *CORSICA: A Comprehensive Tokamak Simulation Code*  
J.A. Crotinger, R.H. Cohen, S.W. Haney, T.B. Kaiser, L.L. LoDestro, N. Mattor, L.D. Pearlstein, T.D. Rognlien, A.I. Shestakov, G.R. Smith, A.G. Tarditi and X.Q. Xu
- 1D33. *Fluid equations for the self-consistent description of fluctuations and transport in tokamak plasmas*  
J.J. Martinell, P.N. Guzdar and A.B. Hassam
- 1D34. *Theoretical features of relativistic particle gyrokinetic dynamics*  
M. Pozzo and M. Tessarotto
- 1D35. *Toroidal transport via radiative collisionality*  
Satish Puri
- 1D36. *Thermal lattice Boltzmann (TLBE) simulations of variable Prandtl number turbulent flows*  
Min Soe, George Vahala, Pavol Pavlo, Hudong Chen and Linda Vahala
- 1D37. *Feedback stabilization of the resistive shell mode in tokamaks*  
Richard Fitzpatrick
- 1D38. *Nonlinear coherent energization of magnetized ions in two or more electrostatic waves*  
A.K. Ram, D. Benisti and A. Bers
- 1D39. *Neoclassical electron and ion transport in toroidally rotating plasmas*  
H. Sugama and W. Horton
- 1D40. *Linear growth rates and nonlinear saturation amplitudes of TAE modes destabilised by ICRF heating*  
H. Vernon Wong and H.L. Berk
- 1D41. *Interaction of self-generated phase-space holes and clumps*  
H.L. Berk, J. Candy and B.N. Breizman
- 1D42. *Nonlinear dynamics of the fishbone*  
J. Candy, F. Porcelli, H.L. Berk and B.N. Breizman
- 1D43. *Radial mode coupling saturation of a flute mode*  
A. Ponomarev and A.K. Sen

Posters: Monday, 4:00 p.m. – 6:00 p.m.

- 1D44. *The 'moving-contact' plasma-wall instability and the appearance of halo currents*  
A. Caloutsis and C.G. Gimblett
- 1D45. *Momentum transport and radial electric field in high temperature plasmas*  
D.R. Ernst
- 1D46. *Nonlinear Landau damping in plasma and fluid*  
M.B. Isichenko
- 1D47. *Hybrid MHD-gyrokinetic simulations of drift Alfvén-ballooning modes*  
E.V. Belova, M.K. Hudson and R.E. Denton
- 1D48. *Equilibrium flux surfaces in MHD*  
A. Reiman, L-P Ku and D. Monticello

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**Tuesday Morning**

- 2A **Review Paper** Lakeshore Room, 8:30 a.m. – 9:30 a.m., V. Chan Presiding
- 2A01. R. Granetz, *Disruptions in Tokamaks*
- Coffee:** 9:15 a.m.–11:00 a.m. — Alumni Lounge and Lee Lounge

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- 2B **Oral Presentations** Lakeshore Room, 9:30 a.m.–10:30 a.m., W. Dorland Presiding
- 2B01. *Nonlinear 3D simulations of disruptions in NCS discharges in DIII-D*  
A.M. Popov, M.S. Chu, Y.Q. Liu, B.W. Rice and A.D. Turnbull
- 2B02. *Fokker-Planck simulations of knock-on runaway electron generation in tokamaks*  
S.C. Chiu, V.S. Chan, R.W. Harvey and M.N. Rosenbluth

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- 2C **Poster Presentations** Alumni Lounge, 10:30 a.m. – 12:30 p.m.
- 2C01. *Nonlinear interaction of the low-frequency electromagnetic excitations in the plasma edge and anomalous diffusion*  
Maxim O. Vakulenko
- 2C02. *Three-dimensional computation of drift Alfvén turbulence*  
B. Scott
- 2C03. *Toroidal resistive MHD steady states contain vortices*  
Jason W. Bates and David Montgomery
- 2C04. *An integral equation approach to modelling of the observed phenomena of fast nonlocal heat transport in a tokamak*  
A.B. Kukushkin
- 2C05. *Optimization of the magnetic field structure of EPEIUS: a proposed low-aspect ratio torsatron-tokamak hybrid*  
W.H. Miner, Jr., D.W. Ross, P.M. Valanju, J.C. Wiley, A.J. Wootton, S.P. Hirshman, D.A. Spong and J.C. Whitson

Posters: Tuesday, 10:30 a.m. – 12:30 p.m.

- 2C06. *Necessary and sufficient instability condition for inviscid shear flow*  
P.J. Morrison and N. Balmforth
- 2C07. *Fractal and multifractal properties of exit times and Poincaré recurrences*  
V. Afraimovich and G.M. Zaslavsky
- 2C08. *Inductance operator and feedback stabilization of wall modes*  
Allen H. Boozer
- 2C09. *The M3D (Multi-Level 3D) project for plasma simulation*  
W. Park, G.Y. Fu, H.R. Strauss and L.E. Sugiyama
- 2C10. *3D MHD simulations on an unstructured mesh*  
H.R. Strauss and W. Park
- 2C11. *Two-fluid toroidal effects on tokamak plasmas*  
L.E. Sugiyama and W. Park
- 2C12. *Three dimensional particle/magnetohydrodynamic simulation of energetic particle driven MHD modes in tokamak plasma*  
G.Y. Fu and W. Park
- 2C13. *Transport modeling for EPEIUS: a small aspect-ratio torsatron-tokamak hybrid*  
D.W. Ross, W.H. Miner, Jr., P.M. Valanju, J.C. Wiley, A.J. Wootton, D.A. Spong, S.P. Hirshman and J.C. Whitson
- 2C14. *Nonlinear terms of fluctuation-averaged fluid equations as source of plasma rotation*  
C.R. Gutierrez-Tapia and J.J. Martinell
- 2C15. *Unstructured adaptive grid technique to solve 2D and 3D elliptic boundary problems*  
S. Galkin
- 2C16. *Rotation damping and ITG modes*  
F.L. Hinton, M.N. Rosenbluth and R.E. Waltz
- 2C17. *Study of confinement and stability in KSTAR*  
B.J. Lee, J.Y. Kim, KSTAR team, D.Y. Lee, C.S. Chang, H.K. Park, C.K. Kessel and J. Manickam
- 2C18. *Studies of kinetic effects in highly radiating divertor plasmas with the Monte Carlo Impurity (MCI) transport model*  
T.E. Evans and D.F. Finkenthal
- 2C19. *Nonlinear MHD calculations of coherent modes in weak negative shear discharges*  
E.D. Held, J.N. Leboeuf and B.A. Carreras
- 2C20. *Nonlinear simulations of tearing modes with a resistive wall and plasma rotation*  
J.M. Finn and C.R. Sovinec
- 2C21. *Ripple induced stochasticity around the divertor scrape-off layer*  
J.J.E. Herrera, D.Kh. Morozov, E. Chávez
- 2C22. *Neoclassical transport in advanced tokamaks configurations*  
Z. Lin, W.M. Tang and W.W. Lee
- 2C23. *Routes to anomalous transport in the standard map*  
S. Benkadda, S. Kassibrakis, R.B. White and G.M. Zaslavsky
- 2C24. *Equilibrium quantities on an arbitrary flux surface - a generalized  $s - \alpha$  model*  
R.L. Miller, Y.R. Lin-Liu, M.S. Chu, J.M. Greene and R.E. Waltz

**Poster Presentations** Lee Lounge, 10:30 a.m. – 12:30 p.m.

- 2C25. *The Quasi-Optical Grill (QOG): lower hybrid current drive in tokamaks in the 3-8 GHz range - IGNITOR and TdV*  
Josef Preinhaelter, Alain Cote, Linda Vahala and George Vahala
- 2C26. *Simple estimate of bootstrap suppression of field-error-induced islands in a quasi-toroidal stellarator*  
Rob Goldston
- 2C27. *Interaction of converted ion-hybrid waves with neonatal alphas: a modular approach*  
A.N. Kaufman, J.J. Morehead and E.R. Tracy
- 2C28. *Stability of Pegasus — ideal MHD and neoclassical MHD*  
S.E. Kruger, C.C. Hegna and J.D. Callen
- 2C29. *Modular coil representation for optimized stellarator devices*  
J.C. Whitson, S.P. Hirshman and D.A. Spong
- 2C30. *Synthetic experimental diagnostics: a simulation example*  
B.I. Cohen, L.L. LoDestro, J.A. Crotinger, T.A. Casper and E.B. Hooper
- 2C31. *MHD stability with kinetic effects*  
W. Dorland, M. Kotschenreuther and Q.P. Liu
- 2C32. *Beta limits in toroidal-resistive-rotating plasmas surrounded by a resistive shell*  
R. Betti and E. Fedutenko
- 2C33. *Single particle motion in axisymmetric symmetric systems with large safety factor*  
K. Imre and H. Weitzner
- 2C34. *Stability of small-wavelength tearing modes in a high-beta toroidal plasma*  
F.L. Waelbroeck, R.L. Miller and M. Chu
- 2C35. *Particle simulation for super ion-acoustic double layer*  
Hisanori Takamaru, Tetsuya Sato, Ritoku Horiuchi and Kunihiko Watanabe
- 2C36. *Control of large events in a SOC system*  
H. Chen, D.E. Newman and B.A. Carreras
- 2C37. *Centrifugally confined plasmas for fusion*  
A.B. Hassam
- 2C38. *Burgers turbulence, intermittency and non-universality*  
S.A. Boldyrev
- 2C39. *Orbit squeezing and confinement improvement in tokamaks*  
K.C. Shaing, R.D. Hazeltine and M.C. Zarnstorff
- 2C40. *MHD waves and plasma transport at the dayside magnetopause*  
Jay R. Johnson and C.Z. Cheng
- 2C41. *Alpha particle redistributions due to sawtooth oscillations*  
Y. Zhao and R.B. White
- 2C42. *Spectrum of contained interacting modes and their excitation by high energy fusion products*  
G. Penn and B. Coppi
- 2C43. *Particle simulation study of collisionless driven reconnection*  
Ritoku Horiuchi
- 2C44. *Solution and application of the multiple species parallel force balance equations for tokamak plasmas*  
W.A. Houlberg

Posters: Tuesday, 10:30 a.m. – 12:30 p.m.

- 2C45. *Eigenmode solution of ballooning equation with sheared rotation*  
L. Zakharov
- 2C46. *Near threshold transport in the standard map*  
R.B. White, S. Benkadda, S. Kassibrakis and G.M. Zaslavsky
- 2C47. *Wake fields in plasma channels with arbitrary transverse density profiles*  
B.A. Shadwick, J.S. Wurtele and G. Shvets
- 2C48. *Magnetic shear reduction and ballooning instabilities during the sawtooth crash*  
Y. Nishimura, C.C. Hegna and J.D. Callen

Lunch Break: 12:30 p.m. – 2:00 p.m.

### Tuesday Afternoon

Free afternoon: no formal conference agenda

3:00 – 5:00 p.m.

Open House at the UW-Madison Plasma/Fusion Experiments:  
MST (Reversed Field Pinch), HSX (Stellarator), and Pegasus/Medusa (Low Aspect Ratio Tokamak)

### Tuesday Evening

#### Evening Buffet Dinner Featuring Wisconsin Specialties

Main Lounge and Lee Lounge  
6:15 p.m. – 7:30 p.m.  
Cash Bar from 6:00 p.m. in the Main Lobby

Beverages: 8:00 p.m.–9:00 p.m. — Alumni Lounge and Lee Lounge

- 2D **Oral Presentations** Lakeshore Room, 7:30 p.m. – 9:30 p.m., R. Cohen Presiding
- 2D01. *Alfvén eigenmode stability and alpha particle transport in JET tritium discharges*  
W. Kerner, D. Borba, J. Candy, S. Pinches and S. Sharapov
- 2D02. *2-D high-n analysis of toroidicity induced Alfvén eigenmodes*  
N.N. Gorelenkov, C.Z. Cheng, G.Y. Fu, G. Rewoldt and W.M. Tang
- 2D03. *Spontaneous hole-clump pair creation in a weakly unstable plasma*  
N.V. Petviashvili, H.L. Berk and B.N. Breizman
- 2D04. *Detached divertor plasmas with time variation*  
T.D. Rognlien, G.D. Porter, M.E. Rensink and F. Wising

### Wednesday Morning

3A **Review Paper** Lakeshore Room, 8:30 a.m. – 9:30 a.m., J.M. Finn Presiding

3A01. P.H. Roberts, *The Dynamo within the Earth*

Coffee: 9:15 a.m.–11:00 a.m. — Alumni Lounge and Lee Lounge

3B **Oral Presentations** Lakeshore Room, 9:30 a.m. – 10:30 a.m., A. Reiman Presiding

3B01. *Finite temperature effects on collisionless magnetic reconnection*  
F. Pegoraro, E. Cafaro, D. Grasso, F. Porcelli and A. Saluzzi

3B02. *Decorrelation dynamics, spectra, and transport in drift-Alfvén turbulence*  
E. Fernandez and P.W. Terry

3C **Poster Presentations** Alumni Lounge, 10:30 a.m. – 12:30 p.m.

3C01. *Landau-fluid equations, the stochastic oscillator and masses with springs: model closure problems*

S.A. Smith and G.W. Hammett

3C02. *Induced eddy current patterns on tokamak conducting shell and their implications on active feedback stabilization of external MHD modes*

D.-Y. Lee, M.S. Chance, J. Manickam, N. Pomphrey and M. Okabayashi

3C03. *Changes in the dynamics of turbulent transport in the presence of a sheared flow*

U.S. Bhatt, D.E. Newman, J.N. Leboeuf and B.A. Carreras

3C04. *Symbolic analysis of chaotic signals and turbulent fluctuations*

M. Lehrman, A.B. Rechester and R.B. White

3C05. *Experiences migrating a large Fortran plasma simulation code to a parallel computing environment using C++ and object oriented design methods*

Dave Nystrom and Geoff Furnish

3C06. *Control of internal transport barriers in reverse shear and weak shear discharges*

D.E. Newman, B.A. Carreras, D. Lopez-Bruna and P.H. Diamond

3C07. *Magnetohydrodynamic stability of tokamak discharges with negative central shear*

J.N. Leboeuf, V. E. Lynch and B.A. Carreras

3C08. *Optimization and confinement properties of Small Aspect Ratio Tokamak/stellarator Hybrid (SMARTH) devices*

D.A. Spong, S.P. Hirshman and J.S. Whitson

3C09. *Neoclassical transport in MHH2*

Harry E. Mynick

3C10. *Theory of semi-collisional nonlinear kink-tearing modes and sawtooth collapse in tokamaks*

A. Bhattacharjee and Xiaogang Wang

3C11. *Low collisionality stellarator steady states*

H. Weitzner

3C12. *W7-X equilibria with magnetic islands using the PIES code*

S. Arndt, D.A. Monticello and A.H. Reiman

Posters: Wednesday, 10:30 a.m. – 12:30 p.m.

- 3C13. *Localized interchange stability criterion for a toroidally rotating tokamak*  
M.S. Chu and R.L. Miller
- 3C14. *Internal modes in well confined plasmas*  
F. Bombarda, B. Coppi and S. Migliuolo
- 3C15. *Macroscopic stability of  $n = 1$  internal modes in ITER plasmas*  
P. Detragiache
- 3C16. *Sawtooth stability of plasmas in Alcator C-Mod*  
S. Migliuolo, B. Coppi and F. Bombarda
- 3C17. *Assessment of the theory-based multi-mode transport model*  
Glenn Bateman, Arnold H. Kritz, Aaron J. Redd, Jon Kinsey and Jan Weiland
- 3C18. *Modeling of MHD stability for Tore Supra discharges with LHCD*  
M. Zabiego, E. Joffrin, A. Soubert, X. Garbet and T.A. Gianakon
- 3C19. *Forced reconnection and mode-locking due to time-dependent error fields in rotating plasmas*  
Xiaogang Wang and A. Bhattacharjee
- 3C20. *Numerical simulation of the MRX experiment*  
D.D. Schnack and M. Yamada
- 3C21. *Exact Landau fluid equations*  
Nathan Mattor and Scott Parker
- 3C22. *Full MHD simulations of moderate- $n$  ballooning modes with the XTOR code*  
H. Lütjens and J.F. Luciani
- Poster Presentations** Lee Lounge, 10:30 a.m. – 12:30 p.m.
- 3C23. *On finite- $\eta$ , shear Alfvén instabilities in toroidal plasmas*  
Liu Chen, R.A. Santoro and F. Zonca
- 3C24. *Kinetic modeling of detached plasmas in the PISCES-A linear machine*  
L. Schmitz and O.V. Batishchev
- 3C25. *Relaxation theory of a two-fluid plasma*  
Loren Steinhauer
- 3C26. *Outward momentum transport and inward coupled particle flow in accretion disks and laboratory plasmas*  
P.S. Coppi and B. Coppi
- 3C27. *PIES analysis of DIII-D ITER-like discharges*  
D.A. Monticello, S. Deshpande, A.H. Reiman, S. Jardin, J. Manickam, L. Lao, T.S. Taylor, E.J. Strait, R. La Haye and A. Turnbull
- 3C28. *The dynamics of transitions in models of internal transport barriers*  
D. Lopez-Bruna, D.E. Newman, B.A. Carreras and P.H. Diamond
- 3C29. *Enhanced flexibility of EPEIUS: a small aspect-ratio torsatron-tokamak hybrid with extra TF and VF coils*  
P.M. Valanju, D.W. Ross, W.H. Miner, Jr., C. Wiley and A.J. Wootton
- 3C30. *Self-organized critical gradient transport theory - comparison with the stellar transport*  
T. Tajima, W. Horton, G. Hu and Y. Kishimoto
- 3C31. *On the way to a stellarator-spheromak*  
Paul E. Moroz

Posters: Wednesday, 10:30 a.m. – 12:30 p.m.

- 3C32. *Bounce-averaged fast wave current drive calculations in general toroidal geometries*  
J.C. Wright, C.K. Phillips and P.T. Bonoli
- 3C33. *Comparison of C++ and Fortran 90 for object-oriented scientific programming*  
John R. Cary, S.G. Shasharina, Julian C. Cummings, John V.W. Reynders and Paul J. Hinker
- 3C34. *MHD stability analysis of shear optimised discharges in JET*  
G.T.A. Huysmans, B. Alper, G. Cottrell, D. Kadau, D. O'Brien and W. Zwingmann
- 3C35. *Hamiltonian formulation of magnetic field-lines with symmetry and relabeling symmetry in fluid systems*  
Nikhil Padhye and P.J. Morrison
- 3C36. *Singular Hamiltonian equations and explosive non-periodic phenomena*  
D. Laveder and B. Coppi
- 3C37. *Suppression and control of ideal and resistive MHD instabilities*  
J. Manickam
- 3C38. *Boundary effects on the Alfvén wave resonance*  
Eliezer Hameiri
- 3C39. *Using adaptive grids to simultaneously simulate stiff confinement models and MHD evolution in the ONETWO transport code*  
H.E. St. John, J.E. Kinsey and R.E. Waltz
- 3C40. *Low  $n$  kink stability of low aspect ratio toroidal confinement systems*  
A.D. Turnbull, R.L. Miller, Y.R. Lin-Liu, J.R. Ferron, L.L. Lao, V.S. Chan, M.S. Chu, D. Pearlstein and O. Sauter
- 3C41. *Global modeling of non-axisymmetric disruptions and halo currents in tokamaks*  
J. McCarrick and J.P. Freidberg
- 3C42. *Development of implicit 3D fluid turbulence code in SOL plasmas with X-point geometry*  
X.Q. Xu, R.H. Cohen and T.D. Rognlien
- 3C43. *Arnold diffusion in the standard map*  
Halima Ali, Richard Truesdale, Alkesh Punjabi and Allen Boozer
- 3C44. *The low MN map for a single-null divertor tokamak*  
Arun Verma, Terry Smith, Alkesh Punjabi and Allen Boozer
- 3C45. *The shear Alfvén wave in asymmetric MHD equilibria*  
A. Salat and J.A. Tataronis
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