

## Sunday, July 29

7:00-9:00 pm Reception and Registration

## Monday, July 30

**8:00 am – 3:00 pm**

***Monday Oral Session***

8:00 am Opening Remarks

**8:15-10:40 am**

***Session Chair – Bob Pollock, Indiana University***

- 8:15-8:40 1. R. Greaves, “The Creation of High-Quality Positron Beams using Traps”
- 8:40-9:05 2. C. Surko, “Low-Energy Positron Physics with Trapped Plasmas and Beams”
- 9:05-9:25 3. L.V. Jørgensen, “Progress on the ATHENA Positron Accumulator”
- 9:25-9:40 *Break*
- 9:40-10:00 4. G. Gabrielse, “First Positron Cooling of Antiprotons, and Prospects for Simultaneous Trapping of Neutrals and Charged Particles”
- 10:00-10:20 5. K.Y. Franzen, “Design and Test of a Beam Line for Extraction of Slow Antiprotons from a Multi-Ring Electrode Ion Trap”
- 10:20-10:40 6. J.J. Bollinger, “A Laser-Cooled Positron Plasma”
- 10:40-10:50 *Break*

**10:50 am – 3:00 pm**

***Session Chair – Dan Dubin, UCSD***

- 10:50-11:15 7. G. Zwicknagel, “Energy Loss of Ions by Collisions with Magnetized Electrons”
- 11:15-11:40 8. E. Takács, “Highly Charged Ion EBIT Plasmas -- Present Understanding and Improved Modeling”
- 11:40-12:05 9. D. Zafjman, “Synchronization Effect in an Ion Trap Resonator”
- 12:05-1:30 pm *Lunch (not provided)*
- 1:30-2:00 10. D.A. Schecter, “2D Vortex Dynamics with a Background Vorticity”
- 2:00-2:30 11. Y. Kiwamoto, “Interaction of Electron Vortices under the Influence of Background Vorticity Distribution”
- 2:30-3:00 12. G. Lapenta, “Non-linear PIC Simulation in a Penning Trap”

1. R. Greaves, "The Creation of High-Quality Positron Beams Using Traps" [**Monday O1**]
2. J.P. Sullivan, S.J. Gilbert, P. Schmidt, L. Barnes, J.S. Marler, S.J. Buckman, and C.M. Surko, "Low-Energy Positron Physics with Trapped Plasmas and Beams"
3. J.P. Sullivan, P. Schmidt, and C.M. Surko, "Design of a Trap for Cryogenic Positron Plasmas in a 5 Tesla Field"
4. B.M. Jelenkovic, J.J. Bollinger, A.B. Newbury, T.B. Mitchell, and W.M. Itano, "A Laser-Cooled Positron Plasma" [**Monday O6**]
5. L.V. Jørgensen, D.P. van der Werf, T.L. Watson, M.J.T. Collier and M. Charlton, "Progress on the ATHENA Positron Accumulator" [**Monday O3**]
6. G. Gabrielse, "First Positron Cooling of Antiprotons, and Prospects for Simultaneous Trapping of Neutrals and Charged Particles" [**Monday O4**]
7. M. Amoretti, C. Carraro, W. Joffrain, V. Lagomarsino, G. Manuzio, G. Testera, and A. Variola, "Electron Plasma for Antiproton Cooling in the ATHENA Experiment"
8. K.Y. Franzen, H. Higaki, T. Ichioka, M. Hori, Z. Wang, N. Kuroda, S. Yoneda, H.A. Torii, K. Komaki and Y. Yamazaki, "Design and Test of a Beam Line for Extraction of Slow Antiprotons from a Multi-Ring Electrode Ion Trap" [**Monday O5**]
9. A. Mohri, T.M. Kojima, N. Oshima, M. Niigaki, and Y. Yamazaki, "System of Slow Highly Charged Ion Beam Generation Using a Cold Positron Plasma Trap at RIKEN"
10. C.A. Ordonez and D.D. Dolliver, "Radial Magnetic Field Confinement of Nonneutral Plasmas for Transport and Antihydrogen Studies"
11. M.D. Tinkle and S.E. Barlow, "Image Charge Forces in Penning Traps"
12. L. Schweikhard, J.J. Drader, S.D.-H. Shi, C.L. Hendrickson, and A.G. Marshall, "Quadrature Detection for the Separation of the Signals of Positive and Negative Ions in Fourier Transform Ion Cyclotron Resonance Mass Spectroscopy"
13. S.E. Barlow, A.E. Taylor and K. Swanson, "Determination of Analytic Potentials from Finite Element Computations"
14. G. Zwicknagel, M. Walter, and C. Toepffer, "Energy Loss of Ions by Collisions with Magnetized Electrons" [**Monday O7**]
15. E. Takács, Z. Berényi, C. Szabó, A.G. Calamai, and J.D. Gillaspay, "Highly Charged Ion EBIT Plasmas - Present Understanding and Improved Modeling" [**Monday O8**]
16. H.B. Pedersen, O. Heber, B. Amarant, and D. Zajfman, "Synchronization Effect in an Ion Trap Resonator" [**Monday O9**]
17. M.M. Schauer, D.C. Barnes, and K.R. Umstadter, "Ion Trapping in the Virtual Cathode of the Penning Fusion Experiment – Ions"

18. L. Schweikhard, P. Beiersdorfer, and E. Träbert, "EBIT in the Magnetic Trapping Mode: Mass Spectrometry, Atomic Lifetime Measurements, and Charge Transfer Reactions of Highly Charged Atomic Ions"
19. J.R. Correa, Y. Chang, and C.A. Ordonez, "Charge Sign Effects on Velocity Space Scattering Rates in Strongly Magnetized (e.g., Antihydrogen) Plasmas"
20. T.J. Hilsabeck and T.M. O'Neil, "Linear Stability in Nested Traps"
21. D.A. Schecter, "2D Vortex Dynamics with a Background Vorticity" [*Monday O10*]
22. Y. Kiwamoto, K. Ito, A. Sanpei, Y. Soga, T. Yuyama and T. Michishita, "Interaction of Electron Vortices under the Influence of Background Vorticity Distribution" [*Monday O11*]
23. D. Durkin and J. Fajans, "Physical Mechanism Behind Vortex Crystallization"
24. J. Fajans, E. Sarid, and C. Teodorescu, "Breaking the Azimuthal Symmetry - Jumping Off-Axis or Staying Away from the Axis?"
25. G. Lapenta, G.L. Delzanno, and J.M. Finn, "Non-linear PIC Simulation in a Penning Trap" [*Monday O12*]
26. F. Ames, D. Beck, G. Bollen, O. Forstner, D. Habs, G. Huber, P. Schmidt and the REX-ISOLDE Collaboration, "Bunching and Cooling of Radioactive Ions with REXTRAP"
27. D. Biswas, P. Paasche, T. Valenzuela, and G. Werth, "Collective Motional Resonances and Instabilities of Electron Confinement in a Penning Trap"
28. G.W. Hart and B.G. Peterson, "Interacting Solitons in a Nonneutral Plasma"
29. M. Romé, A.V. Arefiev, I.A. Kotelnikov, and R. Pozzoli, " $l = 1$  Diocotron Instability of Single Charged Plasmas in a Cylindrical Penning Trap with Central Conductor"
30. S.N. Rasband and R.L. Spencer, "Numerical Computation of  $m = 0,1$  Modes in a Cold, Non-Neutral Plasma of Finite Length"
31. S. Kondoh, T. Tatsuno, and Z. Yoshida, "Magnetic Shear Stabilization of Diocotron Instability"
32. T. Jenkins, K. Morrison, R. Davidson, and S. Paul, "Large Amplitude  $m = 1$  Diocotron Mode Measurements in the Electron Diffusion Gauge Experiment"
33. J.H. Yu and C.F. Driscoll, "Experimental Observation of Fluid Echoes in a Non-Neutral Plasma"

**Tuesday, July 31**

**8:15 am – 3:00 pm**

***Tuesday Oral Session***

**8:15-10:35 am**

***Session Chair — Lutz Schweikhard, Univ. of Mainz***

- 8:15-8:45 am 1. J.P. Holder, “Cold Highly Charged Ions in a Penning Trap: Experiment and Simulation”
- 8:45-9:05 2. G. Marx, “The SHIPTRAP Project: A Capture and Storage Facility at GSI for Heavy Radionuclides from Ship”
- 9:05-9:25 3. M. Wada, “Development of an RF Ion Guide for Trapping Energetic Radioactive Nuclear Ions”
- 9:25-9:40 *Break*
- 9:40-10:05 4. H. Totsuji, “Structure and Madelung Energy of Spherical Coulomb Clusters”
- 10:05-10:35 5. M. Drewsen, “Multi-Species Ion Coulomb-Crystals and their Applications”
- 10:35-10:50 *Break*

**10:50 am – 3:00 pm**

***Session Chair – John Bollinger, NIST***

- 10:50-11:15 6. Y. Hayashi, “Formation and Structural Transitions of 3D Coulomb Crystals in Dusty Plasmas”
- 11:15-11:40 7. J. Goree, “Waves in a 2D Dusty Plasma Crystal”
- 11:40-12:05 8. M. Zuzic, “PKE-Nefedov: The First Basic Science Experiment on the International Space Station”
- 12:05-1:30 pm *Lunch (not provided)*
- 1:30-1:55 9. T.B. Mitchell, “Stick-Slip Dynamics with the Rotating Wall in Stressed Laser-Cooled Ion Crystals”
- 1:55-2:20 10. U. Schramm, “Crystalline Ion Beams in PALLAS”
- 2:20-2:45 11. J.P. Schiffer, “Latent Heat and Shell Structure in Simulations of Ion Clusters”
- 3:45-3:00 *GROUP PICTURE*

1. J.P. Holder, L. Gruber, D.A. Church, and D. Schneider, “Cold Highly Charged Ions in a Penning Trap: Experiment and Simulation” [*Tuesday O1*]
2. G. Marx, W. Quint and H.-J. Kluge, “The SHIPTRAP Project: A Capture and Storage Facility at GSI for Heavy Radionuclides from Ship” [*Tuesday O2*]
3. M. Wada, *et al.*, “Development of an RF Ion Guide for Trapping Energetic Radioactive Nuclear Ions” [*Tuesday O3*]
4. H. Totsuji, T. Kishimoto, C. Totsjui, and K. Tsuruta, “Structure and Madelung Energy of Spherical Coulomb Clusters” [*Tuesday O4*]
5. M. Drewsen, Liv Hornekaer, N. Kjaergaard, K. Molhave, A.-M. Thommesen, Z. Videsen, A. Mortensen and F. Jensen, “Multi-Species Ion Coulomb-Crystals and their Applications” [*Tuesday O5*]
6. Y. Hayashi, “Formation and Structural Transitions of 3D Coulomb Crystals in Dusty Plasmas” [*Tuesday O6*]
7. J. Goree, S. Nunomura, V. Nosenko, S. Hu, X. Wang, and A. Bhattacharjee, “Waves in a 2D Dusty Plasma Crystal” [*Tuesday O7*]
8. J.M. Kriesel, J.J. Bollinger, T.B. Mitchell, and L.B. King, “Laser Induced Wakes in Ion Crystals”
9. A.P. Nefedov, ... M. Zuzic, *et al.*, “PKE-Nefedov: The first basic science experiment on the International Space Station” [*Tuesday O8*]
10. D. Goldbeck, R.A. Quinn, M. Zuzic, and G.E. Morfill, “Crystallization of a 3D Plasma Crystal”
11. T.B. Mitchell, J.J. Bollinger, W.M. Itano, and D.H.E. Dubin, “Stick-Slip Dynamics with the Rotating Wall in Stressed Laser-Cooled Ion Crystals” [*Tuesday O9*]
12. U. Schramm, T. Schätz, and D. Habs, “Crystalline Ion Beams in PALLAS” [*Tuesday O10*]
13. H. Totsuji, C. Totsuji, T. Kishimoto, and K. Tsuruta, “Dusty Plasmas and Mixtures under Microgravity: Molecular Dynamics Simulation”
14. N. Kjaergaard, K. Mølhave, and M. Drewsen, “Coulomb Ion Crystals in a Pulse-Excited Linear Paul Trap”
15. R.A. Quinn, D. Samsonov, D. Goldbeck, M. Zuzic, and G.E. Morfill, “Crystallization of a Monolayer Plasma Crystal”
16. J. Schiffer, “Latent Heat and Shell Structure in Simulations of Ion Clusters” [*Tuesday O11*]
17. G.W. Mason and R.L. Spencer, “Instability of the  $m = 1$  Self-Shielding Diocotron Mode in Finite-Length Nonneutral Plasmas” [*Thursday O3*]

18. G.G.M. Coppa and P. Ricci, “Non-Collisional Kinetic Model to Study the Diocotron Instability in a Penning Trap”
19. G.G.M. Coppa, A. D'Angola, G.L. Delzanno, and G. Lapenta, “Rigorous Fluid Model for 3D Analysis of the Diocotron Instability”
20. G.L. Delzanno, V. Pariev, G. Lapenta, and J.M. Finn, “Diocotron Spectrum with Compression Effects”
21. M. Amoretti, D. Durkin, J. Fajans, R. Pozzoli, and M. Romé, “Experimental and Numerical Study of Asymmetric Vortex Merger in a Pure Electron Plasma”
22. A. Sanpei, K. Ito, Y. Soga and Y. Kiwamoto, “Characteristics and Generation Mechanism of Holes in an Extended Electron Vortex”
23. A.A. Kabantsev, J. Yu, and C.F. Driscoll, “Formation and Stability of a Tripolar Electron Vortex in a Background Shear Flow”
24. K. Ito, A. Sanpei and Y. Kiwamoto, “Electron Vortex Dynamics and Two-Dimensional Field Analysis”
25. M. Amoretti, G. Bettega, F. Cavaliere, M. Cavenago, F. De Luca, R. Pozzoli, and M. Romé, “Status of the ELTRAP Project”
26. H. Himura, Z. Yoshida, C. Nakashima, H. Saito, J. Morikawa, and M. Fukao, “Flowing Electron Plasmas as Modified Current Source” [*Thursday 05*]
27. M.R. Stoneking, “Electron Plasma Confinement in a Partially Toroidal Trap” [*Thursday 06*]
28. O. Grulke, F. Greiner, T. Klinger, and A. Piel, “Comparative Experimental Study of Large-Scale Fluctuation Structures in a Toroidally Magnetized Low-Beta Plasma” [*Thursday 07*]
29. S. Paul, K. Morrison, R. Davidson, and T. Jenkins, “ $m = 1$  Diocotron Mode Damping in the Electron Diffusion Gauge (EDG) Experiment”
30. K. Morrison, R. Davidson, S. Paul, and T. Jenkins, “Investigation of the Expansion Rate Scaling of Plasmas in the Electron Diffusion Gauge Experiment”
31. Q. Quraishi and S. Robertson, “Classical Diffusive Transport Studies in an Annular Malmberg-Penning Trap”
32. S. Robertson and Q. Quraishi, “A New Annular Penning Trap for Transport Studies”

**6:30-10:00 pm**

***Banquet at Birch Aquarium***

***[ Bus leaves Warren Apartments Shuttle Stop at 6:15 pm ]***

Wednesday, August 1

**8:15 am – 3:00 pm**

**Wednesday Oral Session**

**8:15-10:35 am**

**Session Chair – Ron Davidson, Princeton Plasma Physics Laboratory**

- 8:15-8:40 am 1. L. Serafini, “Relativistic Quasi-laminar Electron Beams: A Survey of Beam Dynamics Related Issues”
- 8:40-9:05 2. B. Hafizi, “Kinetic Effects in High Gain Free-Electron Lasers”
- 9:05-9:20 *Break*
- 9:20-9:45 3. U. Eisenbarth, “Efficient Laser Cooling of a Fast Stored Ion Beam by a One-Dimensional Optical Molasses”
- 9:45-10:10 4. R.W. Hasse, “Multiple Coulomb Ordered Strings of Ions in a Storage Ring”
- 10:10-10:35 5. D.L. Eggleston, “Amplitude Scaling of Asymmetry-Induced Transport”
- 10:35-10:50 *Break*

**10:50 am – 3:00 pm**

**Session Chair – Roy Gould, CalTech**

- 10:50-11:15 6. J. Fajans, “Quadrupole Induced Resonant Particle Transport”
- 11:15-11:40 7. E. Sarid, “Decay of the Diocotron Rotation and Transport in a New Low-Density Asymmetry-Dominated Regime”
- 11:40-12:05 8. A.A. Kabantsev, “Trapped Particle Asymmetry Modes in Non-Neutral Plasmas”
- 12:05-1:30 pm *Lunch (not provided)*
- 1:30-2:00 9. Z. Yoshida, “Relaxed States in Spinning Systems - Non-Neutral and Strongly Diamagnetic Plasmas”
- 2:00-2:30 10. T.C. Killian, “Ultracold Neutral Plasmas”
- 2:30-3:00 11. T.M. O’Neil, “Numerical Simulation of Ultracold Neutral Plasma Clouds”

1. L. Serafini, "Relativistic Quasi-laminar Electron Beams: A Survey of Beam Dynamics Related Issues" [*Wednesday O1*]
2. B. Hafizi and C.W. Roberson, "Kinetic Effects in High Gain Free-Electron Lasers" [*Wednesday O2*]
3. U. Eisenbarth, B. Eike, P. Friedmann, M. Grieser, R. Grimm, U. Schramm, D. Schwalm, M. Weidemüller, and S. Wricke, "Efficient Laser Cooling of a Fast Stored Ion Beam by a One-Dimensional Optical Molasses" [*Wednesday O3*]
4. R.W. Hasse, "Multiple Coulomb Ordered Strings of Ions in a Storage Ring" [*Wednesday O4*]
5. D.L. Eggleston and B. Carrillo, "Amplitude Scaling of Asymmetry-Induced Transport" [*Wednesday O5*]
6. E. Gilson and J. Fajans, "Quadrupole Induced Resonant Particle Transport" [*Wednesday O6*]
7. E. Sarid, E. Gilson, and J. Fajans, "'Decay of the Diocotron Rotation and Transport in a New Low-Density Asymmetry-Dominated Regime" [*Wednesday O7*]
8. A.A.Kabantsev, C.F. Driscoll, T.J. Hilsabeck, T.M. O'Neil, and J.H. Yu, "Trapped Particle Asymmetry Modes in Non-Neutral Plasmas" [*Wednesday O8*]
9. Z. Yoshida and Proto-RT Group, "Relaxed States in Spinning Systems - Non-Neutral and Strongly Diamagnetic Plasmas" [*Wednesday O9*]
10. M.J. Lim, S.D. Bergeson, R. Dumke, T.C. Killian, S. Kulin, and S.L. Rolston, "Ultracold Neutral Plasmas" [*Wednesday O10*]
11. S. Kuzmin and T.M. O'Neil, "Numerical Simulation of Ultracold Neutral Plasma Clouds" [*Wednesday O11*]
12. D. Feldbaum, S.K. Dutta, A. Walz-Flannigan, J.R. Guest, and G. Raithel, "Spectroscopy of Rydberg Atoms in Non-Neutral Cold Plasmas"
13. J.R. Danielson, F. Anderegg, K.M. Rigg, and C.F. Driscoll, "Linear and Nonlinear Landau Damping of Trivelpiece-Gould Modes in Non-Neutral Plasmas"
14. F. Anderegg, N. Shiga, J.R. Danielson, C.F. Driscoll, and D.H.E. Dubin, "Thermal Excitation of Trivelpiece-Gould Modes in a Pure Electron Plasma" [*Thursday O1*]
15. R.W. Gould, "Thermal Excitation of Modes in Nonneutral Plasmas" [*Thursday O2*]
16. M.T. Nakata, G.W. Hart, and B.G. Peterson, "Using the Plasma Noise Spectrum to Measure the Parallel Temperature in a Nonneutral Plasma"
17. Y. Chang and C.A. Ordonez, "Two-Temperature Equilibration Rate for a Strongly Magnetized (e.g., Antihydrogen) Plasma"

18. A. Herlert, L. Schweikhard, and M. Vogel, “Charge-Changing Reactions and their Influence on the Ion Motion in a Penning Trap”
19. D.H.E. Dubin, “Shear Reduction of 2D Vortex Diffusion: Theory, Simulation and Experiments”  
*[Thursday 04]*
20. F. Anderegg, C.F. Driscoll, and D.H.E. Dubin, “Shear-Limited Test Particle Diffusion in 2-Dimensional Plasmas”
21. H. Himura, Z. Yoshida, M. Fukao, J. Morikawa, and Y. Ogawa, “Nonneutralized Two-Fluid Plasma Experiment”
22. T. Tamano and I. Katanuma, “Confinement Properties of Non-neutral and Neutral Plasmas in an Axially Symmetric System”
23. Y. Ogawa, J. Morikawa, H. Nihei, D. Ozawa, and Z. Yoshida, “Design of a Toroidal Device with a High Tc Super-Conducting Coil for Non-Neutral Plasma Trap”
24. C. Nakashima, Z. Yoshida, H. Himura, M. Fukao, J. Morikawa, and H. Saito, “Injection of Electrons into a Toroidal Trap Using Chaotic Orbits Near Magnetic Null”
25. N. Uhlmann and G. Zwicknagel, “Intrabeam Scattering and Halo Formation in Intense Ion Beams”
26. G. Otto and C. Chen, “Three Dimensional Sheet Charged Particle Beams”
27. D.F. Gordon, B. Hafizi, C.W. Roberson, and P. Sprangle, “Self-Compensation for the Axial Velocity Spread in a Wiggler Field”
28. R. Stowell and R.C. Davidson, “Two-Stream Instabilities in Guiding Center Plasmas for Antihydrogen Recombination Schemes”
29. R.C. Davidson, P.C. Efthimion, R. Majeski, and H. Qin, “Paul Trap Simulator Experiment (PTSX) for Simulating Intense Nonneutral Beam Propagation”
30. W. Manheimer, “Microwave Tubes as Non-Neutral Plasma Laboratories”
31. A.A. Vedenov and E.N. Nikolaev, “Forms and Oscillation Modes of Ion Clouds in the Linear RF-only Quadrupole Traps”
32. D.S. Todd and R.E. Pollock, “An Experiment to Transfer Angular Momentum from a Helical Low Energy Proton Beam to a Trapped Electron Plasma”
33. V.G. Molinari, F. Rocchi and M. Sumini, “Kinetic Description of a Degenerate, Rotating, Non-Neutral Electron Plasma in External Magnetic Fields in the Framework of the Thomas-Fermi-Dirac Theory”
34. R. Blümel, “Quantum Mechanics of the Dynamic Kingdon Trap”
35. T. Pasquini and J. Fajans, “Continuously Injected Plasmas from an Equipotential Photocathode”

**7:30-9:30 pm**

**SURKO / DRISCOLL LABS OPEN HOUSE**

**Mayer Hall: Rooms 2202—2226, 5237 (Driscoll); 4301, 4405 (Surko)**

Thursday, Aug. 2

**8:15 am – 3:00 pm**

**Thursday Oral Session**

**8:15-10:20 am**

**Session Chair – Roberto Pozzoli, University of Milan**

- 8:15-8:40 am 1. F. Anderegg, “Thermal Excitation of Trivelpiece-Gould Modes in a Pure Electron Plasma: Experiments”
- 8:40-9:05 2. R.W. Gould, “Thermal Excitation of Modes in Nonneutral Plasmas: Theory”
- 9:05-9:20 *Break*
- 9:20-9:50 3. G.W. Mason, “Instability of the  $m = 1$  Self-Shielding Diocotron Mode in Finite-Length Nonneutral Plasmas”
- 9:50-10:20 4. D.H.E. Dubin, “Shear Reduction of 2D Vortex Diffusion: Theory, Simulation and Experiments”
- 10:20-10:35 *Break*

**10:35 am – 3:00 pm**

**Session Chair – Chuck Roberson, U.S. Office of Naval Research**

- 10:35-11:05 5. H. Himura, “Flowing Electron Plasmas as Modified Current Source”
- 11:05-11:35 6. M.R. Stoneking, “Electron Plasma Confinement in a Partially Toroidal Trap”
- 11:35-12:05 7. O. Grulke, “Comparative Experimental Study of Large-Scale Fluctuation Structures in a Toroidally Magnetized Low-Beta Plasma”
- 12:05-1:30 pm *Lunch (not provided)*

**1:30-3:00 pm**

**Round Table Discussion**

**3:45-5:15 pm**

**Tour of DIII-D  
Bus leaves Warren Apartments Shuttle Stop at 3:30 pm**