9th International Workshop on Non-neutral Plasmas

PROGRAM

Tuesday 17 June 2008

08:15-08:30  Welcome by Dean G. Navratil
             Opening Remarks by T. Pedersen, conference organizer

Session 1: Collective Modes and Transport Physics I
Chair: C. Roberson, Office of Naval Research
08:30-09:00  D. Dubin, Univ. of California San Diego
            Theory and Simulations of Electrostatic Field Error Transport
09:00-09:30  M. Anderson, Univ. of California San Diego
            Collisional Damping of Plasma Waves on a Pure Electron Plasma
09:30-09:50  M. Romé, University degli Studi Milano
            Relativistic Effects on the Radial Equilibrium of Nonneutral Plasmas
09:50-10:30 coffee break

Session 2: Collective Modes and Transport Physics II
Chair: T. Pedersen, Columbia University
10:30-11:00  F. Anderegg, Univ. of California San Diego
            Electron Acoustic Waves in Pure Ion Plasmas
11:00-11:20  Y. Yeliseyev, Kharkov Inst. of Physics and Tech.
            Stability of a Nonneutral Plasma Cylinder Consisting of Magnetized Cold
            Electrons and a Small Density Fraction of Ions Born at Rest: Nonlocal
            Analysis
11:20-11:40  D. Eggleston, Occidental College
            Using Variable Frequency Asymmetries to Probe the Magnetic Field
            Dependence of Radial Transport in a Malmberg-Penning Trap
11:40-12:00 R. Heidemann, Max-Planck Inst. für Extraterrestriche Physik
            Heartbeat Instability in the PK-3 Plus Laboratory
12:00-13:30 lunch

Session 3A: Collective Modes and Transport Physics III
Chair: H. Himura, Kyoto Inst. of Tech.
13:30-14:00  A. Kabantsev, Univ. of California San Diego
            Trapped-Particle-Mediated Asymmetry-Induced Transport and Damping
            with Quadrupole Separatrix Perturbations
14:00-14:20  Y. Kawai, Kyoto Univ.
            Turbulent Cascade in Vortex Dynamics of Magnetized Pure Electron
            Plasmas
Session 3B: Beam Physics
Overview of Intense Beam Simulation Experiments Performed Using the
Paul Trap Simulator Experiment (PTSX)
14:50-15:20  **J. Wurtele**, Univ. of California Berkeley
Brightness and Phase Space Constraints in Free-Electron Lasers
15:20-15:40  **G. Maero**, GSI, Darmstadt
Investigations on Cooling Mechanisms of Highly Charged Ions at
HITRAP
15:40-16:00  refreshment break

Session 4: Poster Session I
16:00-18:00  **Collective Modes and Transport, Beam Physics, Strongly Coupled
and Dusty Plasmas**
All speakers in sessions 1-6 are invited to present posters in this session.
Posters can be put up Monday evening or Tuesday morning and taken
down on Wednesday during the lunch break.

Wednesday 18 June 2008

Session 5: Strongly Coupled and Dusty Plasmas I
**Chair: L. Schweikhard**, Ernst-Moritz-Arndt-Universität, Greifswald
08:30-09:00  **M. Drewsen**, Univ. of Aarhus
Ion Coulomb Crystals in RF Traps: Properties and Applications in Cavity
QED
09:00-09:30  **D. Porras**, Max-Planck Inst. for Quantum Optics
Quantum Computation and Quantum Simulation with Coulomb Crystals
09:30-09:50  **M. Rubin-Zuzic**, Max-Planck Inst. für Extraterrestriche Physik
PK-3 Plus – Investigation of Complex Plasmas on the International Space
Station
09:50-10:30  coffee break

Session 6: Strongly Coupled and Dusty Plasmas II
**Chair: D. Eggleston**, Occidental College
10:30-11:00  **S. Sturm**, Johannes Gutenberg-Universität Mainz
Investigation of Space-Charge Phenomena in Gas-Filled Penning Traps
11:00-11:20  **M. Dietrich**, Univ. of Washington
Barium Ions for Quantum Computation
11:20-11:40  **R. Sätterlin**, Max-Planck Inst. für Extraterrestriche Physik
Lane Formation in Complex Plasmas
11:40-12:00  **S. Apolinario**, Universiteit Antwerpen
Melting Processes in Anisotropic Coulomb Balls
12:00-13:30  lunch
Session 7: Toroidal Plasmas
   Chair: T. O’Neil, Univ. of California San Diego
 13:30-14:00 J. Marler, Aarhus Univ.
   Achieving Long Confinement in a Toroidal Electron Plasma
 14:00-14:30 H. Himura, Kyoto Inst. of Tech.
   Recent Progress on Toroidal Non-neutral Plasmas Confined on Heliotron Magnetic Surfaces
 14:30-15:00 T. Pedersen, Columbia Univ.
   Confinement and Transport in the CNT Stellerator
 15:00-15:20 Q. Marksteiner, Columbia Univ.
   Studies of a Parallel Force Balance Breaking Instability in a Stellerator
 15:20-15:45 refreshment break

Session 8: Poster Session II:
 15.45-18:00 Toroidal Plasmas, Antimatter Physics, Ultracold Neutral Plasmas and Special Topics
   All speakers in sessions 7-12 are invited to present posters during this session. Posters can be put up during the lunch break on Wednesday and left up for the duration of the conference.

Thursday 19 June 2008

Session 9: Antimatter Physics I
   Chair: C. Surko, Univ. of California San Diego
 08:30-09:00 H. Saitoh, Atomic Physics Lab., RIKEN
   Radial Compression of a Non-neutral Plasma in a Non-uniform Magnetic Field of a Cusp Trap
 09:00-09:30 D. Le Sage, Harvard Univ.
   First Antihydrogen Production within a Penning-Ioffe Trap
 09:30-10:00 J. Fajans, Univ. of California Berkeley
   First Attempts at Antihydrogen Trapping in ALPHA
 10:00-10:40 coffee break

Session 10: Antimatter Physics II
   Chair: C. F. Driscoll, Univ. of California San Diego
 10:40-11:10 J. Danielson, Univ. of California San Diego
   Attracting Fixed Points and Strong-Drive Compression of Single-Component Plasmas
 11:10-11:40 T. Weber, Univ. of California San Diego
   Creation of Finely Focused Beams from Single-Component Plasmas
 11:40-12:00 N. Kuroda, Inst. of Physics, Univ. of Tokyo
   Radial Compression of Antiproton Cloud for Production of Ultraslow Antiproton Beams
 12:00-13:00 break
 13:00- excursion
Friday 20 June 2008

Session 11: Special Topics and Ultracold Neutral Plasmas I

Chair: M. Drewsen, University of Aarhus

08:30-09:00  J. Pétri, Centre d’étude des Environnements Terrestre et Planétaires
Electrodynamics of Neutron Star Magnetospheres: An Example of Non-neutral Plasma in Astrophysics

09:00-09:30  E. Nikolaev, Inst. for Energy Problems of Chemical Physics, Moscow
Supercomputer Modeling of Ion Cloud Motion in Mass Spectrometers

09:30-10:00  G. Raithel, Univ. of Michigan
Plasma Dynamics and Recombination in a High-Magnetic Field Atom and Plasma Trap

10:00-10:30  coffee break

Session 12: Special Topics and Ultracold Neutral Plasmas II

Chair: J. Bollinger, National Inst. of Standards and Tech., Boulder

10:30-11:00  T. Killian, Rice Univ.
Expansion and Equilibration of Ultracold Neutral Plasmas

11:00-11:30  T. Pohl, Harvard Univ.
Low-temperature Atom Formation in Ultracold Neutral Plasmas

11:30-12:00  S. Rolston, Univ. of Maryland
Ultracold Plasma Expansion and Instabilities

12:00-12:30  C. Roberson, Office of Naval Research (Ret)
Non-neutral Plasma Physics at Twenty

12:30-14:00  lunch

14:00-16:00  optional tour of the Columbia Plasma Physics Laboratory
Poster session I: Collective Modes and Transport, Beam Physics, Strongly Coupled and Dusty Plasmas
(presenting author in bold)

F. Anderegg and C. Driscoll
Measurements of Correlation-Enhanced Collision Rates

G. Bettega, et al.,
Excitation of High Order Diocotron Modes in the ELTRAP Device

M. Romé and I. Kotelnikov,
Effect of a Weak Tilted Magnetic Field on the Equilibrium of Nonneutral Plasmas in a Malmberg-Penning Trap

K.N. Stepanov and Yu N. Yeliseyev
Drift Motion of Charged Particle in Electromagnetic Field of Magnetic Pumping under Cherenkov and Cyclotron Resonance Conditions

Yu N. Yeliseyev, et al.
Studying Nonneutral Plasma at Kharkov National University

M. Aramaki, et al.
Observation of String Ion Cloud in a Linear RF Trap

N. Shiga, W.M. Itano, and J.J. Bollinger
Spectroscopy of Ground State $^9\text{Be}^+$ Ions in a 4.5 T Penning Trap

S. Mitic, et al.
Local Properties of Complex Plasma Structures

R. Heidemann, et al.
Solitary Rarefaction Wave in Three-Dimensional Complex Plasma

K. Nellissen, et al.
Structural Properties of Binary Colloidal Systems Confined in Quasi-one-dimensional Channel

K. Nellissen, et al.
Dissipation in a 2D Classical Cluster
### Poster session II: Toroidal Plasmas, Antimatter Physics, Ultracold Neutral Plasmas and Special Topics
(presenting author in bold)

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<td>On the Formation of Antihydrogen (or Hydrogen) Atom</td>
<td>E. Lodi Rizzini, L. Venturelli, and N. Zurlo</td>
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<td>Inside Nature’s Smallest Black Body</td>
<td>A. Kurcz, A. Capolupo, and A. Beige</td>
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<td>Effects of Different Plasma Source on the Growth of Bacteria</td>
<td>A. Ahmeda, A. Elamin, F. Shareef, and N. Hashad (withdrawn)</td>
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<td>Studies of Enhanced Confinement in the Columbia Non-neutral Torus</td>
<td>P. W. Brenner, et al.</td>
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<td>Numerical Studies of Transport in the Columbia Non-neutral Torus</td>
<td>B. Durand de Gevigny, T.S. Pedersen, and A.H. Boozer</td>
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<td>Pure Electron Equilibrium and Transport Jumps in the Columbia Non-neutral Torus</td>
<td>M. Hahn, et al.</td>
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<td>Modeling Wall Probe Signals in a Toroidal Electron Plasma</td>
<td>M.R. Stoneking, Bao Ha, and J.P. Marler</td>
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<td>Fluorescence Spectroscopy and Ion Temperature Evolution in Ultracold Neutral Plasmas</td>
<td>J.A. Castro, H. Gao, and T.C. Killian</td>
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<td>King Model for electrons in a finite size ultracold plasma</td>
<td>D. Vrincenau</td>
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