

US-Japan CT2016 Workshop Program

August 22 – 24, 2016
at the Hotel Irvine, Irvine, California
Theater room

30 min/presentation (25 min talk + 5 min Q&A)

8/22 (Mon) - AM

Opening:

8:45 AM Opening Remarks: Toshi Tajima

Session 1: Transport & Confinement

Chair 1.1: Masaaki Yamada

9:00 AM Horton, Wendell (*Univ. of Texas at Austin*)
Comparison of the electron thermal transport between tokamaks and the C-2U FRC

9:30 AM Kishimoto, Yasuaki (*Kyoto Univ.*)
Tokamak/Stellarator vs. FRC: Transport and Other Fundamentals

10:00 AM Guttenfelder, Walter (*PPPL*)
Transport at high beta in spherical tokamaks

10:30 AM Break (20 min)

Chair 1.2: Wendell Horton

10:50 AM Trask, Erik (*TAE*)
Overview of Tri Alpha Energy's Experimental Program and Recent Progress on Transport Analysis

11:20 AM Schmitz, Lothar (*UCLA*)
Suppressed Ion-Scale Turbulence in the C-2/C-2U FRC – Recent Experimental and Simulation Results

11:50 AM Lau, Calvin (*UCI*)
Electrostatic drift-waves in the FRC: destabilized in the scrape-off layer, robust stabilization in the core

12:20 PM Lunch Break (1 hr 20 min)

8/22 (Mon) - PM

Session 2: Overview & Fusion/Reactor Research

Chair 2: Colleen Nehl

- 1:40 PM McGuire, Thomas (*Lockheed Martin*)
Overview of the Lockheed Martin Compact Fusion Reactor (CFR) Program
- 2:10 PM Raman, Roger (*Univ. of Washington*)
Overview of Transient CHI Plasma Start-up Research in NSTX-U
- 2:40 PM Santarius, John (*Univ. of Wisconsin-Madison*)
Aspects of Advanced Fuel FRC Fusion Reactors
- 3:10 PM **Break (20 min)**
- 3:30 PM Laberge, Michel (*General Fusion*)
Plasma compression experiments at General Fusion
- 4:00 PM Paluszek, Michael (*Princeton Satellite Systems*)
Fusion-enabled Pluto orbiter and lander

Discussion 1: Transport & Fusion Research

Chair: Toshi Tajima

- 4:30 PM Discussion (~1 hour)
- 5:30 PM **Session Closed**

Reception & Banquet:

- 6:00 PM Reception (~1 hour)
- 7:00 PM Banquet

8/23 (Tue) - AM

Session 3: Spheromak-1 & Reconnection

Chair 3: Michel Tuszewski

- 9:00 AM Yamada, Masaaki (*PPPL*)
Laboratory studies of magnetic reconnection: How can they be applied to CT research?
- 9:30 AM Belova, Elena (*PPPL*)
2D and 3D hybrid simulations of spheromak merging
- 10:00 AM Kaminou, Yasuhiro (*Univ. of Tokyo*)
Hall effect on flow structure in counter-helicity spheromak merging
- 10:30 AM **Break (20 min)**
- 10:50 AM Omelchenko, Yuri (*Trinum Research*)
Asynchronous 3D HYPERS simulations of compact toroids and magnetoplasmas: spheromak merging, FRC formation, magnetized shocks, laser-produced plasmas and turbulence
- 11:20 AM Haw, Magnus (*Caltech*)
Extreme ultra-violet burst, particle heating, and whistler wave emission in fast magnetic reconnection induced by kink-driven Rayleigh-Taylor instability and measurements of forces, flows, and collimation in toroidal current channels
- 11:50 AM **Lunch Break (1 hr 40 min)**

8/23 (Tue) - PM

Session 4: FRC-1 & RFP

Chair 4.1: Shigefumi Okada

1:30 PM Asai, Tomohiko (*Nihon Univ.*)
Topological Transition and Inductive Current Drive of a Translated Field-Reversed Configuration

2:00 PM Steinhauer, Loren (*TAE*)
Hybrid FRC equilibria with fully-kinetic ions and fluid electrons

2:30 PM Cohen, Samuel (*PPPL*)
Long-pulse operation of the PFRC-2 device

3:00 PM Break (20 min)

Chair 4.2: Masayoshi Nagata

3:20 PM Magee, Richard (*TAE*)
Fast ion physics in the C-2U beam driven FRC

3:50 PM McCollam, Karsten (*Univ. of Wisconsin-Madison*)
Two-fluid magnetic relaxation in RFPs and initial CT injection experiments at WiPAL

4:20 PM Masamune, Sadao (*Kyoto Inst. of Technology*)
Evaluation of CT injection to RFP for performance improvement and reconnection studies

4:50 PM Break (10 min)

Discussion 2: Current and Future of Compact-Toroid Research

Chair: Loren Steinhauer

5:00 PM Discussion (~1 hour)

6:00 PM Session Closed

**8/24 (Wed) -
AM**

Session 5: Spheromak-2, Helicity injection & Flow

Chair 5.1: Loren Steinhauer

- 9:00 AM Hossack, Aaron (*Univ. of Washington*)
Sustainment of stable spheromaks with imposed-dynamo current drive
- 9:30 AM Howard, Stephen (*General Fusion*)
Experimental results from the SPECTOR device at General Fusion
- 10:00 AM Nagata, Masayoshi (*Univ. of Hyogo*)
Multipole plasmoid formation and flux closure during transient-CHI start-up process on HIST
- 10:30 AM **Break (20 min)**

Chair 5.2: Yasuaki Kishimoto

- 10:50 AM You, Setthivoine (*Univ. of Washington*)
A field theory approach to plasma self-organization
- 11:20 AM von der Linden, Jens (*Univ. of Washington*)
Investigating the Dynamics of Canonical Flux Tubes
- 11:50 AM Kaur, Manjit (*Swarthmore College*)
Accelerated Taylor State Plumes on SSX
- 12:20 PM **Lunch Break (1 hr 20 min)**

**8/24 (Wed) -
PM**

Session 6: FRC-2, Spheromak-3 & Compact Toroids

Chair 6.1: Sadao Masamune

1:40 PM Necas, Ales (*TAE*)
PIC Simulation of Thermal Distribution Driven Non-Maxwellian by Neutral-Beam Injection in a High Beta Plasma

2:10 PM Swanson, Charles (*PPPL*)
Extracting electron energy distributions from PFRC X-ray spectra

2:40 PM Sieck, Paul (*Woodruff Scientific*)
Design Point for a 1 MW Fusion Neutron Source

3:10 PM **Break (20 min)**

Chair 6.2: Samuel Cohen

3:30 PM O'Bryan, John (*Univ. of Maryland, Baltimore County*)
Numerical investigation of design and operational parameters on CHI spheromak performance

4:00 PM Matsumoto, Tadafumi (*Nihon Univ.*)
Compact Toroid Injection into C-2U FRCs for Particle Refueling

4:30 PM Takahashi, Toshiki (*Gunma Univ.*)
MHD and Hybrid Simulation Study of FRC Plasmas

Closing:

5:00 PM **Closing Remarks: Tomohiko Asai / Toshi Tajima**