

# 17th International Stellarator/Heliotron Workshop

Princeton Plasma Physics Laboratory

12 - 16 October 2009

## Monday, 12 October

08:00 Buses to PPPL depart from Nassau Inn and Residence Inn

08:15 Buses to PPPL depart from Wyndham hotel

Oral sessions will be in the Melvin B. Gottlieb Auditorium

Posters will be in the lobby of the Lyman Spitzer Building

Registration outside the Auditorium

08:45 Opening remarks

**09:00 Oral session Session Chair: R.Wolf**

I01 Bosch Physics Programme for initial operation of Wendelstein 7-X

I02 Blackwell The Australian National Plasma Fusion Facility: Results and Upgrade Plans

I03 Pankratov Studies of RF discharge plasma behavior in the Uragan-3M and Uragan-2M torsatrons

10:30 Coffee Break

**11:00 Oral session Session Chair: K. Ida**

I04 Helander On plasma rotation and bootstrap currents in stellarators

I05 Lore Neoclassical Electron Transport Barrier in the HSX Stellarator

I05 Ohdachi Density collapse events observed in IDB/SDC plasmas on LHD

I07 Yoshinuma Observations of Impurity Hole on LHD

13:00 Lunch

## 14:00-15:40 Poster session:

P01-01 Stevenson Reconstruction of current-driven equilibria in the Compact Toroidal Hybrid using magnetic diagnostics

P01-02 Hartwell Soft X-Ray Diagnostics on the Compact Toroidal Hybrid Experiment

P01-03 Knowlton Disruptions in current-driven discharges in the Compact Toroidal Hybrid experiment

P01-04 Briesemeister Initial Flow Velocity Measurements Using CHERS on HSX

P01-05 Wilcox Zonal Flow Studies in the HSX Stellarator

P01-06 Likin Confinement of fast ions in the HSX stellarator

P01-07	Zhai	Zeff Measurement from Bremsstrahlung Radiation on HSX
P01-08	Clark	A Computational Study of Impurity Transport with PENTA
P01-09	van Milligen	Tracer transport studies in simulation and experiment
P01-10	Romero	A half field configuration for high beta operation and plasma wall interaction studies at TJ-II
P01-11	Castejon	ECRH-induced convective flux in the TJ-II stellarator
P01-12	Garcia-Regana	Experimental characterization of the BXO Electron Bernstein Emission in the TJ-II Stellarator
P01-13	Krupnik	Development Of The Beam Probe Diagnostics For Electric And Magnetic Fields Investigations For Uran-2M
P01-14	Krupnik	Installation And Calibration Heavy Ion Beam Probe On WEGA Stellarator
P01-15	Krupnik	Recent Measurements In TJ-II Stellarator By HIBP Diagnostic Of The Electric Potential Evolution And Fluctuation In ECRH And NBI Plasmas
P01-16	Ikeda	Production and electron heating of over-dense plasmas by 2.45 GHz electron Bernstein waves on CHS
P01-17	Mizuuchi	Effects of gas-fueling control on plasma performance in Heliotron J
P01-18	Mukai	Electron density profile measurement in Heliotron J with a microwave AM reflectometer
P01-19	Nagasaki	Study of ECCD Physics and Iota Profile Control in Heliotron J
P01-20	Kernbichler	On ECCD efficiency in toroidal plasmas with finite collisionality
P01-22	Bitter	Conceptual design of an X-ray imaging crystal spectrometer for the Large Helical Device
P01-23	Sarasola	First observations of partially neutralized and quasineutral plasmas in the Columbia Non-neutral Torus
P01-24	Brenner	Confinement of Pure Electron Plasmas in the Columbia Non-neutral Torus
<b>16:00</b>	<b>Oral session</b>	<b>Session Chair: D. Gates</b>
I08	Morisaki	Effect of Nonaxisymmetric Perturbation on Profile Formation
C01	Cole	Non-ambipolar particle fluxes and neoclassical viscosity in quasi-symmetry
C02	Schmitt	Modeling and Measurement of Toroidal Currents in the HSX Stellarator
C03	Lopez-Bruna	Local effects of magnetic resonances in ECRH plasmas of the TJ-II Helic
C04	Sugama	Enhancement of Residual Zonal Flows in Helical Systems with Equilibrium Radial Electric Fields

18:15 Buses depart PPPL for reception at the Wyndham Hotel

18:30 Reception at the Wyndham Hotel (park on 'conference side' for the reception)

20:30 Buses depart Wyndham Hotel for Nassau Inn and Residence Inn (no bus to PPPL).

## Tuesday, 13 October

08:00 Buses to PPPL depart from Nassau Inn and Residence Inn

08:15 Buses to PPPL depart from Wyndham hotel

### 08:30 Oral session

**Session Chair: C. Hidalgo**

- |       |              |  |
|-------|--------------|--|
| PL01  | Yamada       | High beta issues in a helical system   |
| I09   | Cooper       | Drift stabilization of ballooning modes in a high-beta LHD configuration             |
| I10   | Narushima    | Experimental study of effect of poloidal flow on stability of magnetic island in LHD |
| I11   | Pretty       | Results from an international MHD data mining collaboration                          |
| 10:45 | Coffee Break |  |

### 11:15 Oral session

**Session Chair: P. Helander**

- |     |        |  |
|-----|--------|--|
| I12 | Reiman | 3D Equilibrium with Stochastic Regions Having Finite Pressure Gradient   |
| I13 | Hudson | Cantori, chaotic coordinates and temperature gradients in chaotic fields |
| I14 | Hanson | Three-dimensional Equilibrium Reconstruction: the V3FIT Code.            |

12:45 Lunch

### 13:45-15:40 Poster Session

- |        |              |   |
|--------|--------------|---|
| P02-01 | Akiyama      | Status of a stellarator/heliotron H-mode database   |
| P02-02 | Funaba       | Data Servers for the International Stellarator/Heliotron Profile Database (ISHPDB)  |
| P02-03 |              |   |
| P02-04 | Ascasibar    | Global energy confinement studies in TJ-II NBI plasmas  |
| P02-05 | Zurro        | The level of non-thermal velocity fluctuations deduced from Doppler spectroscopy and its role on TJ-II confinement                  |
| P02-06 | Baumgaertel  | Linear and nonlinear gyrokinetic studies of turbulence in stellarator geometry with the GS2 code                                    |
| P02-07 | Kleiber      | Global gyrokinetic simulations for stellarators   |
| P02-08 | Mynick       | Geometry dependence of stellarator turbulence via GENE  |
| P02-09 | Birkenmeier  | Geometrical Magnetic Field Effects on Turbulent Transport   |
| P02-10 | Beidler      | Momentum-Correction Techniques for Stellarators   |
| P02-11 | Maaßberg     | Momentum Correction Technique for Neutral Beam Current Drive  |
| P02-12 | Marushchenko | Momentum Correction Techniques for ECCD   |
| P02-13 | Turkin       | Impact of momentum correction on bootstrap current and ECCD in W7-X   |
| P02-14 | Turkin       | Benchmark of neoclassical thermal transport matrix  |
| P02-15 | Ware         | Neoclassical and anomalous flows in stellarators  |
| P02-16 | Nishimura    | A convergence study for the Laguerre expansion in the moment equation method for neoclassical transport in general toroidal plasmas |

P02-17	Matsuyama	A Monte-Carlo-based calculation of neoclassical flows and viscosity for nonaxisymmetric toroidal plasmas
P02-18	Wakasa	Development of neoclassical transport module for the integrated simulation code in helical plasmas: TASK3D
P02-19	Matsuoka	Comprehensive Understandings on the Effects of Radial Electric Field on the Reduction of Neoclassical Diffusion in Improved Confinement in LHD
P02-20	Bondarenko	Influence of low order rational surfaces on the radial electric field of TJ-II ECH plasmas
P02-21	Satake	Calculation Of Neoclassical Toroidal Viscosity In Toroidal Plasmas With Broken Toroidal Symmetry
P02-22	Reimer	Spectrally resolved Motional Stark-Effect Polarimetry at ASDEX Upgrade
P02-23	Ida	Ion internal transport barrier in Large Helical Device
P02-24	Yokoyama	Considerations from the viewpoints of neoclassical transport towards higher ion-temperature heliotron plasmas

<b>15:40</b>	<b>Oral session</b>	<b>Session Chair: B. Blackwell</b>
C05	Canik	ELM triggering by non-axisymmetric magnetic fields in NSTX
C06	Park	Ideal Perturbed Equilibria in Tokamaks and Control of External Magnetic Perturbations
C07	Terranova	Self-organized helical equilibria in the RFX-mod reversed field pinch
C08	Carralero	Radial and Parallel Transport Fast Camera Observation on LHD SOL Region
C09	Nishino	Peripheral turbulence measurement in Heliotron J using fast cameras
C10	Otte	Overdense Plasma Operation in WEGA Stellarator
C11	Sunn-Pedersen	Overview of results from the CNT stellarator and future plans

18:15 Tour of NCSX components and NSTX  
(no high heels, open-toed shoes, or sandals allowed)

19:00 Buses depart PPPL for Nassau Inn, Wyndham, Residence Inn (no group event for dinner)

## Wednesday, 14 October

08:00 Buses to PPPL depart from Nassau Inn and Residence Inn

08:15 Buses to PPPL depart from Wyndham hotel

### 08:30 Oral session

**Session Chair: A. Komori**

PL02

Finken

Role of Resonant Magnetic Perturbations in Tokamaks

I16

Jakubowksi

Influence of the magnetic topology on transport in the plasma boundary with resonant magnetic perturbation at DIII-D

I17

Unterberg

Particle Exhaust and Scrape-off Layer Conditions During Resonant Magnetic Perturbations in Deuterium and Helium Discharges on DIII-D

I18

Solomon

Effect of Non-axisymmetric Fields on Toroidal Rotation Dynamics

10:45

Coffee Break

### 11:15 Oral session

**Session Chair: I. Pankratov**

I19

Tabares

Energy and Particle balance studies in the full lithiated TJ-II stellarator

I20

Masuzaki

Edge heat transport in the helical divertor configuration in LHD

I21

Ding

Particle Transport due to Stochastic Magnetic Field in a High-Temperature Plasma

12:45

Lunch

### 13:45-15:40 Poster Session

P03-01

Feng

On Particle Control of the W7-X Divertor

P03-02

Nold

Inter-machine edge turbulence data base

P03-03

Canik

Divertors for quasi-symmetric stellarators

P03-04

Geiger

Effects of Toroidal Currents on the Magnetic Configuration of W7-X

P03-05

Geiger

Magnetic Diagnostics and Plans for Equilibrium Reconstruction at W7-X

P03-06

Gobbin

Numerical reconstruction of spontaneous helical equilibria in RFX-mod

P03-07

Sakakibara

Remarks on Finite Beta Effects in International Stellarator/Heliotron Scaling

P03-08

Sakakibara

Study of MHD Characteristics by Magnetic Axis Control in high-beta plasmas of LHD

P03-09

Watanabe

Characteristics of edge MHD modes and ELM activities observed in LHD plasmas

P03-10

Okamura

Modification of LHD magnetic configurations based on the boundary shape control for improving confinement properties

P03-11

Sato

Simulation study of MHD stability beta limit in LHD by TASK3D

P03-12

Schlutt

Investigation of equilibrium plasma beta limits in 3-D magnetic topologies

P03-13

Yanagi

Design integration on split and segmented-type helical coils for FFHR

P03-14

Brown

Improved W7-X current lead temporary support and assembly arrangement

P03-15

Dodson

Configuration space control for Wendelstein 7-X

P03-16

Deng

Energetic-Electron-Driven Instability in the Helically Symmetric Experiment

P03-17

Frederickson

Modeling fast ion transport in TAE avalanches in NSTX

P03-18	Okada	Heating Position Dependence of Energy Spectra of Fast Ions Generated by ICRF Heating in Heliotron J
P03-19	Kubo	Collective Thomson Scattering of 77 GHz High Power ECRH Beam in LHD
P03-20	Seki	Monte-Carlo Study of Perpendicularly Injected High-Energy Particles using Real Coordinate System in LHD
P03-22	Pomphrey	Improving the tokamak and RFP with 3-D fields, and use of stellarator tools for their study
P03-23	Bergerson	Non-Axisymmetric Helical Structures in the MST Reversed-Field Pinch
P03-24	Evans	Overview of the DIII-D non-axisymmetric center post coil design and physics basis
<b>15:40</b>	<b>Oral session</b>	<b>Session Chair: T. Evans</b>
I22	Masamune	Transition to helical RFP state and associated change in magnetic stochasticity in a low-aspect-ratio RFP
C12	Heitzenroeder	NCSX Construction Accomplishments
C13	Goto	Core Plasma Design of a Heliotron Reactor
C14	Schauer	Extrapolation of the W7-X magnet system to reactor size
C15	Garabedian	QAS Design of The Demo Reactor ( <i>presented by McFadden</i> )
C16	Bromberg	Stellarator configuration improvement using high temperature superconducting monoliths

18:150 Buses depart PPPL for hotels, *pause 10 minutes at hotels*, then proceed to:

19:00 Conference Banquet at Prospect House on Princeton University campus.

20:30 Buses depart Prospect House for Nassau Inn, Wyndham, Residence Inn and PPPL.

## Thursday, 15 October

08:00 Buses to PPPL depart from Nassau Inn and Residence Inn

08:15 Buses to PPPL depart from Wyndham hotel

### **08:30 Oral session Session Chair: D. Anderson**

PL03 Hirsch Overview of LH-transition experiments in helical devices

I23 Estrada L-H transition experiments in TJ-II

I24 Sano Study of Improved Confinement Modes in Heliotron J

I25 Xanthopoulos Turbulence in 3D geometry

10:45 Coffee Break

### **11:15 Oral session Session Chair: A. Dinklage**

I26 Ramisch Investigation of turbulent transport and shear flows in the edge of fusion plasmas

I27 Pedrosa Long-range correlations during plasma transitions in the TJ-II stellarator

I28 Tamura Characteristics of nonlocally-coupled transition of the heat transport in LHD

12:45 Lunch (pick up box lunches)

13:15 Buses depart PPPL for excursion to New York.

13:30 Buses depart PPPL for excursion to West Orange.

19:00 Buses return from West Orange, stop at Nassau Inn, Wyndham, Residence Inn and PPPL.

21:30 Buses return from New York, stop at Nassau Inn, Wyndham, Residence Inn and PPPL.

## Friday, 16 October

08:00 Buses to PPPL depart from Nassau Inn and Residence Inn

08:15 Buses to PPPL depart from Wyndham hotel

### 08:30 Oral session

**Session Chair: T. Mizuuchi**

PL04	Toi	Interplay between Energetic Particles and Alfvén Eigenmodes in Toroidal Plasmas
I29	Spong	Energetic particle-driven instabilities in general toroidal configurations
I30	Isobe	Effect of energetic-ion-driven MHD instabilities on energetic-ion-transport in Compact Helical System and Large Helical Device
I31	Kobayashi	Energetic particle transport in NBI plasmas of Heliotron J
10:45	Coffee Break	

### 11:15 Oral session

**Session Chair: M. Zarnstorff**

I32	Murakami	Optimization study of ICRF heating in the LHD and HSX configurations
I33	Heidbrink	Measurements of Fast-ion Transport by Instabilities in Tokamaks
I34	Suzuki	3D effect on stochastic field in non-axisymmetric tori
12:30	Closing remarks	
13:00	Lunch	

14:30 Bus departs PPPL for Wyndham

14:30-18:00 CWGM meets in B-318

17:00 Buses depart PPPL for Nassau Inn, Wyndham, Residence Inn

18:00 Buses depart PPPL for Nassau Inn, Wyndham, Residence Inn after CWGM

### Device Overview Posters (up all week)

P-D01	Mizuuchi	Overview of Heliotron J
P-D02	Otte	Overview of WEGA
P-D03	Bosch	Overview of W7-X
P-D04	Hidalgo	Overview of TJ-II
P-D05	Knowlton	Overview of CTH
P-D06	Talmadge	Overview of HSX
P-D07	Pedersen	Overview of CNT
P-D08	Yamada	Overview of LHD
P-D09	Blackwell	Overview of H-1
P-D10	Pankratov	Overview of Urugans
P-D11	Stroth	Overview of TJ-K
P-D12	Kitajima	Overview of TU-Heliac