

## Theory and Simulation in Disruptions Workshop

Princeton Plasma Physics Laboratory

July 17-19, 2013

### *Program*

#### **JULY 17**

8:00-9:00 Registration  
9:00-9:10 Welcome: S. Prager  
9:10-9:20 Workshop Logistics: A. Bhattacharjee

#### **Session I: ITER Needs**

*Chair: D. Campbell*

9:20-10:00 ITER Needs for Disruption Modeling: M. Lehnen  
10:00-10:40 Impact of ITER-like Wall at JET on Disruptions: Peter De Vries  
10:40-11:00 *Coffee*  
11:00-11:40 Group Discussion on Session I

#### **Session II: Disruption Dynamics**

*Chair: F. Waelbroeck*

11:40-12:20 On the Physics of Onset of Nonlinear Disruptive Instabilities: D. Brennan  
12:20-1:30 *Lunch*  
1:30-02:10 Theory of Non-Axisymmetric Vertical Displacement Events: R. Fitzpatrick  
02:10-02:50 Simulations of Asymmetric VDEs with M3D: Model Validation and Comparison with Experimental Cases: R. Paccagnella  
02:50-03:20 3D Plasma Equilibrium in the Presence of Core-Localized Magnetic Islands in High-Confinement Discharges on DIII-D: B. Tobias  
03:20-03:40 *Coffee*  
03:40-04:20 Group Discussion on Session II

#### **Session III: Halo/Hiro Currents and Forces**

*Chair: R. Hawryluk*

04:20-05:00 Disruption Detection and Halo Currents in NSTX: S. Gerhardt  
05:00-05:40 Experimental Results on Halo and Hiro Currents: T. Hender  
07:00-09:00 Conference Dinner

#### **JULY 18**

08:30-08:50 Summary of Session I: D. Campbell  
08:50-09:10 Summary of Session II: F. Waelbroeck

#### **Session III: Halo/Hiro Currents and Forces (Continued)**

*Chair: R. Hawryluk*

09:10-09:50 Theory of Halo Currents: A. Boozer  
09:50-10:30 Hiro Currents: L. Zakharov  
10:30-10:50 *Coffee Break*  
10:50-11:30 Toroidal Rotation and Halo Current Produced by Disruptions: H. Strauss  
11:30-12:10 Group Discussion on Session III  
12:10-01:30 *Lunch Break*

## JULY 18 (continued)

### **Session IV: Runaway Electrons and Thermal Loads**

*Chair: J. Wesley*

- 01:30-02:10 Understanding Runaway Electron Production and Dissipation on DIII-D: N. Eidietis
- 02:10-02:50 Runaway Electron and Thermal Load Modeling: V. Izzo
- 02:50-03:30 Termination of Disruptions with Runaway Formation in Present Experiments and Consequences for ITER: J. R. Martin-Solis
- 03:30-05:00 Coffee and Poster Session
- 05:00-05:40 Group Discussions on Session IV

## JULY 19

- 08:30-08:50 Summary of Session III: R. Hawryluk
- 08:50-09:10 Summary of Session IV: J. Wesley

### **Session V: Disruption Mitigation**

*Chair: M. Lehnen*

- 09:10-09:50 Toroidal Asymmetries in Mitigated Disruptions using Two Gas Jets on Alcator C-Mod: R. Granetz
- 09:50-10:30 Combined Thermal and Magnetic Energy Mitigation Challenges for ITER: J. Wesley
- 10:30-10:50 *Coffee*
- 10:50-11:20 Avoidance of Neoclassical Tearing Mode Locking and Disruption by Feedback-Driven Accelerating Electromagnetic Torque: M. Okabayashi
- 11:20-12:00 Group Discussion on Session V
- 12:00-1:00 *Lunch*
- 01:00-01:20 Summary of Session V: M. Lehnen

### **Section VI: Integrated Simulations of Disruptions**

*Chair: A. Bhattacharjee*

- 01:20-02:00 Disruption Modeling Status and Opportunities: S. Jardin
- 02:00-02:30 Computational Modeling for Disruption Avoidance: S. Kruger
- 02:30-03:10 Experimental Campaign Coordination: C. Greenfield
- 03:10-03:30 Concluding Remarks and Future Plans: A. Bhattacharjee

## POSTERS

- T. Abrams: Simulations of Deuterium and Helium Massive Gas Injection for NSTX-U and ITER
- M. Beidler: Parametric Study of Incomplete Reconnection in Sawtooth Crashes
- J. Breslau: M3D Simulations of Non-Axisymmetric Vertical Displacement Events in NSTX
- D. Maurer: Strong Non-Axisymmetric 3D Shaping using Stellarator Fields for Plasma Disruption Avoidance and Mitigation