26th Workshop on MHD Stability Control: MHD control needs for burning plasma devices

Workshop Organizing Chair: Jeffrey Levesque. Local organizer: Vinaya Sathyasheelappa

Invited Presentations (I): 30 minutes (suggested as ~22 minute talk + ~8 minutes for discussion & questions)

Contributed Presentations: 18 minutes (suggested as ~14 minute talk + ~4 minutes for discussion & questions)

Day 1: Friday October 14

Start Time	Duration	Session/Talk Title	Presenter or Chair (I) = Invited, (R) = Remote	Affiliation
8:15	0:30	Check-in		
8:45	0:15	Welcome & Announcements	Jeffrey Levesque	Columbia University, Workshop Program Chair
		Session 1: High Energy	**Chair: Jong-Kyu Park**	
9:00	0:30	SPARC MHD Stability and the Error Field Strategy	Ryan Sweeney (I)	PSFC MIT
9:30	0:18	Thermal ion kinetic effects on pressure-driven MHD modes	Chang Liu	Princeton Plasma Physics Laboratory
9:48	0:18	Framework for predictive modeling of neoclassical tearing mode activity in NSTX-U	James Yang	Princeton Plasma Physics Laboratory
10:06	0:18	Conditions Required for Large MHD Benign Termination Event	Alexander Battey	Columbia University
10:24	0:26	Coffee break		
		Session 2: Machine Learning Application	**Chair: Nik Logan**	
10:50	0:30	Opportunities for physics-informed reduced order models in plasma control	Chris Hansen (I)	University of Washington
11:20	0:18	Data-driven plasma profile control	Joseph Abbate	Princeton Plasma Physics Laboratory
11:38	0:18	Tokamak operation design and control with deep reinforcement learning in KSTAR	Jaemin Seo	Princeton University
11:56	0:18	Investigating the robustness of machine learning-based MHD disruption prediction with synthetic training data	Andrew Maris	Massachusetts Institute of Technology
12:14	1:26	Lunch		
		Session 3: Measurement and Control	**Chair: Brett Chapman**	
13:40	0:30	MHD Mode Tracking Using High Speed Cameras and Deep Learning	Yumou Wei (I)	Columbia University
14:10	0:18	Variable-spectrum mode control of high poloidal beta discharges	Jeremy Hanson	Columbia University
14:28	0:18	Internal/External Decomposition of Measured Magnetic Fields and Possible Applications	Ted Strait	General Atomics
14:46	0:18	Stabilization of small islands produced by NTMs in ITER and other large tokamaks	Allan Reiman (R)	Princeton Plasma Physics Laboratory
15:04	0:26	Coffee break		
		Session 4: Tearing Modes, *Part 1*	**Chair: Gerald Navratil**	
15:30	0:18	Disruption resistance in MST and possible role of resistive wall tearing mode	Brett Chapman	University of Wisconsin - Madison
15:48	0:18	Role of edge-localized neoclassical tearing modes in quiescent H-mode plasmas in the DIII-D tokamak	Qiming Hu (R)	Princeton Plasma Physics Laboratory
16:06	0:18	Early internal detection of tearing modes in high-qmin DIII-D plasmas and correlation with ideal and resistive stability calculations	Mihir Pandya (R)	University of Wisconsin -- Madison
16:24	0:30	m/n = 2/1 NTMs with helical cores and their relation to sawtooth instability in JT-60U	Takahiro Bando (I) (R)	Toyohashi University of Technology
16:54		Discussion / Close		

Day 2: Saturday October 15				
Start Time	**Duration**	**Session/Talk Title**	**Presenter or Chair (I) = Invited, (R) = Remote**	**Affiliation**
		Session Topic 5: Edge and ELMs	**Chair: Stephen Jardin**	
8:30	0:18	Nonlinear System Identification for Model Predictive Control Demonstrated with SOLPS-ITER Simulations	Sebastian De Pascuale	Oak Ridge National Laboratory
8:48	0:18	Adaptive toroidal equilibrium code ATEQ and the X-point effects on the external MHD modes	Linjin Zheng	Institute for Fusion Studies, University of Texas at Austin
9:06	0:30	Adaptive ELM Control using RMP and its Application to Integrated Long-pulse ELM-free Scenarios	SangKyeun Kim (I)	Princeton University/PPPL
9:36	0:18	Theory of nonlinear ELMs as reconnection bursts	Fatima Ebrahimi (R)	Princeton University/ PPPL
9:54	0:26	Coffee break		
		Session 6: Disruption Prediction	**Chair: Ryan Sweeney**	
10:20	0:18	Disruption Event Characterization and Forecasting (DECAF) Overview and Recent Results Including Initial Real-time Application	Steven Sabbagh	Columbia U. / PPPL
10:38	0:18	DECAF locked mode forecaster implementation across machines and in real-time	Juan Riquezes	Columbia University
10:56	0:18	DECAF code cross-device investigation of disruption detection and categorization indicated by abnormal variations in the plasma vertical position and current	Veronika Zamkovska	Columbia University
11:14	0:18	Edge Density Limits as Disruption Forecasters for Spherical Tokamaks	Jack Berkery	PPPLPrinceton Plasma Physics Laboratory
11:32	0:18	A multi-tokamak comparative study of methods for detecting and predicting disruptivity of vertical displacement events	Matt Tobin	Columbia University
11:50	0:10	Group photo		
12:00	1:20	Lunch		
		Session 7: Tearing Modes, *Part 2*	**Chair: Jeff Levesque**	
13:20	0:18	The impact of plasma shaping on the neoclassical tearing mode threshold physics in tokamaks	Alexandra Dudkovskaia (R)	York Plasma Institute
13:38	0:18	How changing the current profile stabilized the ITER Baseline Scenario	Francesca Turco (R)	Columbia University
13:56	0:18	Tearing Modes In DIII-D IBS Discharges, CTMs or NTMs?	James D Callen	University of Wisconsin - Madison
14:14	0:30	The root cause of the 2,1 tearing instability in DIII-D H-mode plasmas	Laszlo Bardoczi (I) (R)	General Atomics
14:44	0:18	Avoidance of NTMs Seeded by Three-Wave Coupling	Nathan Richner	Oak Ridge Associated Universities
15:02	0:28	Coffee break		
		Session 8: Stellarator and Negative Triangularity Tokamak	**Chair: Ted Strait**	
15:30	0:30	Recent progress of MHD study in the Large Helical Device	Yuki Takemura (I)	National Institute for Fusion Science
16:00	0:18	Suppression of MHD instabilities by external RMP in LHD	Shu Ito	Nagoya University
16:18	0:18	Establishing vertical control of diverted Neg-D discharges in DIII-D	A. Oak Nelson	Columbia University
16:36	0:18	MHD Stability of DIII-D Negative Triangularity Plasmas	William Boyes	Columbia University
16:54		Discussion / Close	Jeffrey Levesque	Columbia University, Workshop Program Chair