

# Joint Meeting of US-Japan MHD Workshop "Toward development of integrated studies of 3D magnetic field effects in fusion devices" and 31st ITPA MHD Disruption and Control Topical Group

*March 5-9, 2018, Naka Fusion Institute, QST*

## March 5, Monday

9:00 - 9:30	Registration, Internet connection, Logistics etc.	Local organizer
9:30 - 9:40	Opening remark	MASAMUNE, Sadao & OKABAYASHI, Michio
<b>Session 1: Overview</b>		<b>Chair: S. Masamune</b>
9:40 - 10:20	MHD instabilities in the deuterium experiments of LHD	OHDACHI, Satoshi
10:20 - 11:00	Stability and Disruption Avoidance Research at DIII-D	STRAIT, Edward J.
11:00 - 11:20	<i>Coffee Break</i>	
<b>Session 2</b>		<b>Chair: E.J. Strait</b>
11:20 - 11:50	Comparison between a relaxation theory and experiments of Single Helical RFP states	MASAMUNE, Sadao
11:50 - 12:20	Simultaneous excitation of the snake-like oscillations and the $m/n = 1/1$ resistive interchange modes around the $iota = 1$ rational surface just after hydrogen pellet	BANDO, Takahiro
12:20 - 12:50	Avoiding sawteeth in high beta DIII-D discharges by flux pumping, helical core or ECCD inside $q=1$	TAYLOR, Nicholas Zane
12:50 - 14:00	<i>Lunch</i>	
<b>Session 3</b>		<b>Chair: K.Y. Watanabe</b>
14:00 - 14:30	Effects of toroidal rotation on tokamak equilibrium and potentially on VDE	LI, Haolong
14:30 - 15:00	Calculation of tokamak equilibrium of high-beta reduced MHD via simulated annealing	FURUKAWA, Masaru
15:00 - 15:30	Numerical analysis of MHD instabilities for high beta plasmas in inward shifted LHD configurations	SATO, Masahiko
15:30 - 16:00	<i>Coffee Break</i>	
<b>Session 4</b>		<b>Chair: M. Furukawa</b>
16:00 - 16:30	Behavior of the resonant magnetic perturbation in LHD detached plasmas	NARUSHIMA, Yoshiro
16:30 - 17:00	Investigation of magnetic topology on spontaneous transition phenomena for high beta plasma of Large Helical Device	SUZUKI, Yasuhiro
17:00	<i>Adjourn</i>	

## March 6, Tuesday

<b>Session 5</b>		<b>Chair: S. Ohdachi</b>
9:00 - 9:30	Impact and Scaling of Core $n=2$ Nonaxisymmetric Field Penetration in DIII-D and EAST	LOGAN, Nikolas, Christopher
9:30 - 10:00	Dependence of the RMP penetration threshold on collisionality and ion species in the LHD	WATANABE, Kiyomasa, Y
10:00 - 10:30	Effects of toroidal rotation on neoclassical toroidal viscosity torque in tokamak edge pedestal induced by resonant magnetic perturbation	YAN, Xingting (remote)
10:30 - 10:50	<i>Coffee Break</i>	

	<b>Session 6</b>	<b>Chair: M. Okabayashi</b>
10:50 - 11:20	Nonlinear simulation of locked modes with rotating 3D fields in tearing stable/unstable plasmas	INOUE, Shizuo
11:20 - 11:50	Study of locking mechanism of locked-mode-like instability in LHD	TAKEMURA, Yuki
	<b>Session 7</b>	<b>Chair: G. Matsunaga</b>
11:50 - 12:20	Effect of bulk-to-hot particle mass ratio on MHD stability	SHIRAIISHI, Junya
12:20 - 12:50	Studies of fast-ion-driven MHD instabilities in stellarators/heliotrons	YAMAMOTO, Satoshi
12:50 - 14:00	<i>Lunch</i>	
	<b>Session 8</b>	<b>Chair: S. Sakakibara</b>
14:00 - 14:30	Rotational Stabilization of Resistive Wall Modes in CFETR Baseline Scenarios	HAN, Rui
14:30 - 15:00	Reconstruction of 3D SXR emissivity structure with integral photography technique -possible application to 3D tearing mode structure in toroidal plasmas-	SANPEI, Akio
15:00 - 15:30	<i>Coffee Break</i>	
15:30 - 16:00	MHD Instabilities Leading to Large-radius Internal Transport Barrier Collapse in High Betap Low Torque High qmin DIII-D Reversed Shear Discharges	WANG, Zhengxiong
16:00 - 16:30	Surface Current Approximation of Magnetization Currents of Magnetic Materials in Tokamak Devices for the Correction of their Effects on Magnetic Diagnostics	IIO, Shunji
16:30 - 17:30	<i>Discussion</i>	ALL
17:30	<i>Adjourn</i>	

## March 7, Wednesday

	<b>JT-60SA session</b>	<b>Chair: D. Humphreys</b>
9:00 - 9:50	JT-60SA overview	KAMADA, Yutaka
9:50 - 10:30	MHD research on JT-60SA	MATSUNAGA, Go
10:30 - 10:50	<i>Coffee Break</i>	
10:50 - 11:30	EU activities on MHD in preparation of JT-60SA scientific exploitation	BOLZONELLA, Tommaso
11:30 - 11:50	<i>Discussion</i>	ALL
11:50 - 12:50	<i>JT-60SA TOUR</i>	
12:50 - 14:00	<i>Lunch</i>	
	<b>ITPA: Overview</b>	<b>Chair: V. Pustovitov</b>
14:00 - 14:40	Status of ITER project and high priority needs in area of MHD and magnetic control	GRIBOV, Yury
14:40 - 15:00	ITER disruption issues	LEHNEN, Michael
15:00 - 15:30	JET strategy for disruption avoidance and plasma termination	BARUZZO, Matteo
15:30 - 16:00	Opportunities for MHD studies in the DTT experiment	MARTIN, Piero (remote)
16:00 - 16:30	<i>Coffee Break</i>	

***Disruption: Current quench***

***Chair: M. Lehnen***

16:30 - 17:00	Current quench analysis during initial phase of current quench in DIII-D tokamak
17:00 - 17:30	Experimental investigations on current quench in KSTAR
17:30	<i>Adjourn</i>
19:00	<i>Meeting Banquet</i>

SHIBATA, Yoshihide  
BAK, Jun-Gyo

**March 8, Thursday**

***Tearing modes, magnetic islands, sawteeth (1)***

***Chair: R.J. La Haye***

9:00 - 9:30	Slow sawtooth crash controlled by localized ECCD on the KSTAR
9:30 - 10:00	How exactly the islands are formed by fast internal events (sawteeth, fishbones, etc.)?
10:00 - 10:30	Toroidally coupled tearing modes in plasma disruption on the KSTAR
10:30 - 10:50	<i>Coffee Break</i>

YUN, Gunsu  
IGOCHINE, Valentin  
KIM, Gnan

***Disruption: Modeling, prediction etc.***

***Chair: S. Kononov***

10:50 - 11:20	Progress on Disruption Modeling
11:20 - 11:50	Gas assimilation and diffusion in AUG RE beams
11:50 - 12:10	First results from a real time disruption prediction algorithm running in the DIII-D plasma control system
12:10 - 12:40	Automatic disruption mitigation with liquid metal plasma-facing components
12:40 - 13:40	<i>Lunch</i>

JARDIN, Stephen C.  
PAUTASSO, Gabriella  
GRANETZ, Robert &  
REA, Cristina  
SHIMADA, Michiya

***VDE, Axisymmetric control***

***Chair: A. Portone***

13:40 - 14:10	DINA simulations of ITER disruptions and VDEs
14:10 - 14:40	Progress in validation of ATEC model for AVDEs
14:40 - 15:10	Enhancement of vertical stabilizations in KSTAR: A case study and its implications to earliest ITER
15:10 - 15:40	MDC-18 Update: Axisymmetric Control and Noise Analyses
15:40 - 16:00	<i>Coffee Break</i>

KONOVALOV, Sergey  
ROCCELLA, Riccardo  
HAN, Sang-hee  
HUMPHREYS, David, Allan

***Disruption: Disruption force, halo current***

***Chair: R. Roccella***

16:00 - 16:30	Local and integral disruption forces on the tokamak wall
16:30 - 17:00	Asymmetric SOL currents during MHD and disruptions in HBT-EP
17:00 - 17:30	Reduction of sideways wall force in ITER and JET disruptions
17:30	<i>Adjourn</i>

PUSTOVITOV, Vladimir  
LEVESQUE, Jeffrey, Peter  
STRAUSS, Henry (remote)

## March 9, Friday

### ***Tearing modes, magnetic islands, sawteeth (2)***

**Chair: A. Isayama**

9:00 - 9:30	Measurements of the key role of multiple, small locked edge islands in triggering tokamak disruption	DU, Xiaodi (remote)
9:30 - 10:00	Control of neoclassical tearing modes by radio frequency current drive in reversed magnetic shear configuration	LIU, Tong
10:00 - 10:30	Forecasting ECCD Stabilization of NTMs in ITER: Review of Experiments with a Comparison	LA HAYE, Robert, John
10:30 - 10:50	MDC-8 report "Current drive prevention/stabilisation of NTMs"	LA HAYE, Robert, John

10:50 - 11:10 *Coffee Break*

### ***Disruption: Runaway electrons***

**Chair: G. Pautasso**

11:10 - 11:40	Effects of MHD instabilities on runaway electrons	MATSUYAMA, Akinobu
11:40 - 12:10	WG-13 report on RE energy dissipation	LEHNEN, Michael
12:10 - 12:30	MDC-23 report "Formation, suppression and mitigation of runaway electrons during disruptions"	GRANETZ, Robert

12:30 - 13:30 *Lunch*

### ***3D effects, locked mode***

**Chair: Y. Gribov**

13:30 - 14:00	Measurement and modeling of perpendicular viscosity in a stochastic magnetic field	CHAPMAN, Brett, Edward
14:00 - 14:30	MDC-19 Summary for Low-n and Low-torque Error Field Correction Criteria	PARK, Jong-Kyu
14:30 - 15:00	Effect of HFS error fields and their corrections on MHD mode locking and on H-mode plasma performance in the COMPASS tokamak	MARKOVIC, Tomas
15:00 - 15:30	Evolution of error-field induced locked mode with the presence of non-resonant field in KSTAR	KIM, Jayhyun

15:30 - 15:50 *Coffee Break*

### ***Summary/ Closing session***

15:50 - 16:20	JEX/WG/JA summary report	PUSTOVITOV, Vladimir
16:20 - 17:00	<i>Discussion</i>	ALL
17:00 - 17:30	ITPA Summary, Next Meeting	

*End of meeting*

### **Information for remote participation**

FusionTV Channel 3 will be used. Connection details are as follows:

Presentation: <https://tv.euro-fusion.org/channel3/home>

Presentation Password: Please ask local organizers

Video-conference nr. (H.323): 004910097920063

ISDN: +49-30-20097920063 (ConferenceID = 97920063)