

**The 11th Meeting of the ITPA MHD Topical Group,
IEA Large Tokamak workshop on "Control of ELMs and RWM"(W68),
US-Japan workshop on "MHD Behavior and Control of Burning Plasma"**

February 25 - 29, 2008, ITER conference room
Naka Fusion Institute, Japan Atomic Energy Agency

February 25 (Monday)

9:00 Opening

- Welcome address T Tsunematsu
- Opening address T Hender
(also T Ozeki, T Evans, Y Kamada , M Okabayashi, K Yamazaki)
- Information of schedule and logistics local organizer

9:40 High beta operation (Chair: N Ivanov)

- 9:40 - Operation above the no-wall limit in DIII-D E Strait
- 10:05 - Recent results of RWM study in JT-60U high-beta plasmas G Matsunaga

(Coffee Break) 10:30-11:00

- 11:00 - 3D effects on RWMs in ITER and ASDEX Upgrade S Günter
- 11:25 - JET high beta operation T Hender

11:50 Lunch (need ticket)

13:00 RWM control (Chair: M Okabayashi)

- 13:00 - Error field correction in DIII-D E Strait
- 13:25 - Challenges of the RWM Feedback at low rotation M Okabayashi
- 13:50 - Determination of Error Field Resonant Harmonics
from Dynamic Magnetic Measurements V Pustovitov
- 14:15 - Critical beta analyses of JT-60SA plasma G Kurita
- 14:40 - Wall-unlocking of tearing modes by feedback control P Zanca
- 15:05 - Suppression of error-field-induced magnetic islands by Alfvén
resonance effect M Furukawa

(Coffee Break) 15:30-15:50

15:50 RWM and related code development update

- 15:50 - CarMa RWM control calculations Y Liu
- 16:15 - RWM modeling with the inclusion of self consistent kinetic terms Y Liu
- 16:40 - Extension of MARG2D to RWM S Tokuda
- 17:05 - Summary of CEMM SciDAC center activity on the modeling
of ELMs, RWMs, NTMs, pellet injection, and error field S Jardin

17:30 Adjourn

18:30 Reception at Akogi-Club

February 26 (Tuesday)

8:30 Status of ELM issues (Chair: J Menard)

8:30 - Introduction: Present issues of ELM study

8:50 - Present status of ELM control in ITER

Y Kamada
M Shimada
(40+20 min)

(Coffee Break) 9:50-10:10

10:10 ELM mitigation and control

10:10 - ELM control experiments on JET

10:35 - ELM control and physics on JT-60U

11:00 - MAST ELM control experiments and future plans

11:25 - Magnetic modeling of ELM mitigation with the EFCCs on JET

Y Liang
K Kamiya
E Nardon
E Nardon

11:50 Lunch

13:00 ELM mitigation and control (cont.) (Chair: M Shimada)

13:00 - ELM suppression using RMP in DIII-D plasmas
with ITER similar shapes

13:25 - Perturbed equilibrium modeling of RMP for ITER

13:50 - Plasma response on RMPs

T Evans
J Menard
M Becoulet

14:15 Type I ELM behavior and stability

14:15 - Overview of ELM stability and control results from NSTX

14:40 - Correlation between ELMing pedestal and ITB in JT-60U

J Menard
Y Kamada

(Coffee Break) 15:05-15:30

15:30 - Effect of equilibrium properties on the structure of the edge

MHD modes in tokamaks

N Aiba

15:55 - ELM-like activities induced by pressure driven modes

at the edge of LHD plasmas

F Watanabe

16:20 Discussion on ELM mitigation & control

All (Chair: T Evans)
(60 min)

17:20 Summary of IEA Large Tokamak Workshop

T Evans & Y Kamada
(20 min)

17:40 Adjourn

18:00 Bus to Hotel

February 27 (Wednesday)

9:00 High energy particles (Chair: K Yamazaki)

(9:00-10:40 Parallel session on disruption mitigation at meeting room in ITER building)

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|-------|---|------------|
| | | J Wesley |
| 9:00 | - Experimental Study of Interactions between fast ions and EPM
using a Directional Probe | K Nagaoka |
| 9:25 | - NSTX energetic particle research | J Menard |
| 9:50 | - Fast ion behavior during TAE in LHD | M Nishiura |
| 10:15 | - High energy particle study in DIII-D | E Strait |

(Coffee Break) 10:40-11:00

11:00 Disruption & vertical stability (Chair: T Hender)

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|-------|---------------------------------------|------------|
| 11:00 | - ITER Plasma vertical stabilization | Y Gribov |
| 11:35 | - Progress on ITER Disruption Studies | M Sugihara |

12:00 Lunch

13:00 Disruption & vertical stability (cont.) (Chair: T Hender)

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|-------|--|-------------|
| 13:00 | - Experimental Evaluation of Current Decay Time
during Disruption in JT-60U Tokamak | M Okamoto |
| 13:25 | - EU studies on ITER vertical stability | A Portone |
| 13:50 | - Ramp-up, flat-top and disturbance simulations using
DINA-CH-CRONOS | J Lister |
| | - Cross-code verification for plasma control | J Lister |
| 14:15 | - DIII-D studies on ITER vertical stability ? | D Humphreys |
| 14:40 | - Disruption runaway research on Alcator C-Mod | R Granetz |

(Coffee Break & moving to the JT-60 building) 15:20-16:00

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|--|-----|
| - Discussion of ITPA Joint Experiment on vertical stability
(use TV conference system; 16:00-17:30) | All |
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(JT-60 tour 16:00-)

17:30 Adjourn

18:00 Bus to Hotel

Note: TV conference system is not available at the ITER building.

Conference room with TV conference system is reserved at the JT-60 building.

February 28 (Thursday)

9:00 Status of NTM control and study of magnetic island (Chair: S Günter)

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|------|--|-------------|
| 9:00 | - NTM physics in DIII-D | E Strait |
| 9:25 | - Spontaneous dynamics of magnetic island depending on
beta and collisionality in LHD | Y Narushima |
| 9:50 | - Experiments and simulation on NTM stabilization in JT-60U | A Isayama |

(Coffee Break) 10:15-10:40

10:40 Understanding of NTM, Sawtooth, and island evolution

- | | | |
|-------|--|------------|
| 10:40 | - Requirement to the frequency of EC modulation
for NTM stabilization in ITER | T Oikawa |
| 11:05 | - NTMs and rotational stabilization | A Sen |
| 11:30 | - NTM simulation by TOTAL code | K Yamazaki |

11:55 Lunch

13:00 Understanding of NTM, Sawtooth, and island evolution (cont.) (Chair: T Ozeki)

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|-------|---|-------------|
| 13:00 | - The M3D-C1 approach to calculating 2F equilibrium and stability | S Jardin |
| 13:25 | - Multi-scale interaction between drift wave and NTM | M Yagi |
| 13:50 | - Survey of latest developments in NTM theory | S Konovalov |
| | - STELEC 3D ECH full wave code modelling for NTM suppression in ITER | S Konovalov |
| 14:15 | - Simulating complete sawtooth cycles:
A proposal for an ITPA test problem | S Jardin |

(Coffee Break) 14:40-15:05

15:05 Helical systems / RFP / ST

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|-------|---|------------|
| 15:05 | - High-beta plasma with a peaked pressure profile induced
by the pellet injection in the LHD | S Ohdachi |
| 15:55 | - MHD Phenomena in a Low-Aspect-Ratio RFP | S Masamune |
| 16:20 | - Recent RFX-mod efforts and plans on mode control | P Martin |
| 16:45 | - Non-inductive formation of spherical torus by ECH/ECCD
in the LATE device | M Uchida |

17:10 Summary of US-Japan MHD Workshop

M Okabayashi & K Yamazaki
20 min

17:30 Adjourn

18:00 Bus to Hotel

February 29 (Friday)

- 9:00 ITPA News** T Hender (~15 min)
- Disruption & vertical stability (cont.)**
- Further analysis of disruption database and future plans J Wesley
 - ITER disruption mitigation J Wesley
 - Mission and priorities of the new EFDA MHD Topical Group (15 min) P Martin
 - ITPA Joint Experiment for Vertical Stability Control Status Update D. Humphreys
- 13:00 Joint ITPA/IEA experiments - status and plans for next**
- MDC-1 Disruption mitigation by massive gas jets
 - MDC-2 Joint experiments on resistive wall mode physics
 - MDC-3 Joint experiments on neoclassical tearing modes (including error field effects)
 - MDC-4 Neoclassical tearing mode physics aspect ratio comparison
 - MDC-5 Comparison of sawtooth control methods for neoclassical tearing mode suppression
 - MDC-8 Current drive prevention/stabilization of NTMs
 - MDC-10 Measurement of damping rate of intermediate toroidal mode number Alfvén Eigenmodes
 - MDC-11 Fast Ion Losses and redistribution from local AEs
 - MDC-12 Non-resonant Magnetic Braking
 - MDC-13 Vertical Stability Physics and performance limits in Tokamaks with highly elongated plasmas
 - MDC-14 Rotation effects on neoclassical tearing modes
- 15:00 Discussion on the ITPA high priority research list**
- Discussion on the next meetings**
- AOB**
- 16:00 End of meeting**
- Bus to Hotel**

