

## §1. Activities on ITER/BA Collaboration

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The ITER international organization has made several technical milestones in 2013. One of them is to decide the use of tungsten divertor from the start of ITER operation. The final design review of tungsten divertor has been completed. Another is to decide the inclusion of in-vessel coils in ITER baseline. The procurement of each component for ITER and the building-up of infrastructure are progressing well. As for the Satellite Tokamak JT-60SA, the tokamak assembly started in the beginning of 2013. The cryostat base has been already set in the tokamak hall and the assembly work is also in progress.

The ITER/BA symposium was also held at Tokyo on 27 November 2013 and technical experts participating in ITER/BA activities reported the progress in the procurement of components for ITER and JT-60SA. People more than 470 persons came together and exchanged information on ITER/BA activities.

We have a collaboration meeting to get information about ITER/BA activities in NIFS and to discuss the collaboration activities (participation in ITPA meetings and the ITER/BA-related meetings), two times per year. The most important task in our group is to promote the participation in ITPA, in which the tokamak physics R&D activities are conducted for the ITER design/construction and for general tokamak research worldwide. The ITPA meetings are composed of seven groups (Transport and Confinement Physics; Energetic Particles; Edge Pedestal Physics; SOL and Divertor Physics; MHD Stability; Integrated Operation Scenarios; Diagnostics). The numbers of participants and presentations from NIFS in the 2013 fiscal year are summarized in Table 1. The total participants amount to 24 persons and there were as many as 12 presentations. The travel expenses for 12 participants in the ITPA meetings were supported with the budget for ITER/BA collaboration. Moreover, our colleagues participated in the two ITER/BA-related meetings shown in Table 2.

We made an annual meeting on ITPA collaboration in January 2014 to share information about the topics in each ITPA group meeting and to advance the contribution from NIFS researchers. We discussed how to progress our ITPA activities in NIFS.

At last, the main topics of our presentations in the ITPA and ITER/BA-related meetings are listed as follow:

- Effects of RMP on particle transport in LHD
- Nonlinear MHD simulations of ELM events
- Alfvén eigenmodes and energetic particle transport in ITER scenarios
- Development of imaging bolometers for magnetic fusion experiments
- Fast ion behaviors during fishbone-like activities on LHD

- Saturation process of the  $n=6$  TAE mode in the benchmark case
- Temporal evolution of EP driven modes during heating power step on LHD
- Identification of magnetic topology with heat pulse propagation in DIII-D and comparison with LHD results
- Dispersion interferometer on LHD
- Temperature impact on the morphologic micro-structural changes at the surface of W exposed in LHD He plasma
- Dynamic retention of long pulse discharges in LHD
- Dust transport analysis in LHD using DUSTT code
- Revised cloud storage structure for light-weight data archiving in LHD

Topical Group	Date (Place)	Participants (Presentations)
Transport and Confinement Physics	22-25 April (Garching)	1 (1)
Edge Pedestal	22-25 April (Garching)	1 (1)
Energetic Particles	22-25 April (Culham)	1 (1)
Diagnostics	4-7 June (San Diego)	1 (1)
Energetic Particles	22-24 Sep. (Beijing)	3 (3)
Transport and Confinement Physics	7-9 Oct. (Fukuoka)	2 (1)
Edge Pedestal	7-9 Oct. (Fukuoka)	1 (0)
Diagnostics	15-18 Oct. (Cadarahe)	1 (1)
Cordinating Committee	9-11 Dec. (Cadarahe)	1 (0)
SOL and Divertor	20-23 Jan. (Kanazawa)	5 (3)
MHD stability	10-14 Mar. (NIFS)	7 (0)
Total		24 (12)

Table 1. ITPA Meetings in 2013FY.

Meeting	Date (Place)	Participants (Presentations)
CODAC and Remote Participation	6-10 Mar. (Hofei)	1 (1)
TCM of REC in BA activities	17-19 Sep. (Barcelona)	1 (0)
Total		2 (1)

Table 2. ITER/BA-related Meetings in 2013FY.