

5. Japan-China Cooperation in Area of Magnetic Fusion Energy Research and Development and Related Fields

Collaboration between MEXT and MOST has been started since 2008. The official title of this collaboration is “Joint Working Group (JWG) for Implementation Arrangement between the MEXT of Japan and MOST of China”. Following five collaborative items are prepared for this program; 1) execution in collaborative research, 2) exchange of technological information, data and knowledge, 3) education and training, 4) exchange of devices, instruments and materials, and 5) holding joint meeting, seminar and workshop. SWIP and ASIPP are the two main Chinese institutes for the implementation of this arrangement. JAEA and NIFS are the two Japanese implementing organizations.

The first JWG was held at Chengdu in 2008. The 2nd JWG and the 3rd one were held at Tokai (in 2009) and Shangri La (in 2010). The 4th JWG was held at Nagoya Garden Palace Hotel in 2011, and it was hosted by NIFS. Structure of the JWG is shown in Fig. 1. History of JWG meetings is summarized in Table 1.

In the JWG-4 meeting, the activities and the collaboration results in 2010 were introduced from two bureaus and four institutes during this meeting: 1) recent activities of MEXT, JAEA and NIFS from Japan, 2) recent activities of MOST, SWIP and ASIPP from China. The next, research activities achieved in the 2010 year were reported: 1) report of joint research program from Japan to China, 2) report of joint research program from China to Japan. The collaborations in this year were then presented, discussed and confirmed as follows: 1) overall status of joint research program, 2) proposal of joint research program from Japan to China, and 3) proposal of joint research program from China to Japan. Group photo of the JWG-4 is shown in Fig. 2.

General review of collaboration in FY 2011

KUMAZAWA Ryuhei and KASAHARA Hiroshi visited ASIPP (hosted by ZHAO Yanping) Mar.5-10, 2011. Their collaboration themes are ICRF heating experiment on EAST, power-up of RF generators, discussion about

advanced RF antenna system, and estimation of RF sheath effect between dipole and monopole excitations by the HFSS code.

KUBO Shin and IGAMI Hiroe visited SWIP (hosted are t ECRH system upgrade in HL-2A, ECRH Experiments in HL-2A, and theoretical study on ECRH with EBW in extremely high dense plasmas.

KISAKI Masashi visited ASIPP (hosted by LIU Zhinming) Feb.20-24. His collaboration themes are presentation of future plan for LHD-NBI, discussion about their latest experimental results on the test stand, and observation of EAST-NBI ion source and beam-line component.

TANAKA Kenji visited ASIPP (hosted by GAO Xiang) Mar.4-10, 2012. His collaboration theme is development of IR/FIR interferometer on EAST. Particle transport study on EAST using density modulation experiments were planned during the visit, however, because of machine trouble of EAST, experiments could not be done. Instead, discussion about the past results of particle transport study in HT-7 tokamak was done.

YAMADA Ichihiko visited SWIP (hosted by Huang Y.) Dec. 4-9, 2011. His collaboration themes are Thomson scattering system on HL-2A tokamak, discussion on the error estimation of the deduced data, and discussion about the future development.

NISHIMURA Arata visited TIPC and ASIPP (hosted by LI Laifeng and SONG Yuntao) Oct. 31 - Nov.5, 2011. His collaboration themes are neutron irradiation effect on NbTi, Nb3Sn and Nb3Al wires for fusion application, and radiation effect on electric insulation materials.

HAMAGUCHI Shinji, MIYAZAWA Jyunichi and YAMADA Shuichi visited ASIPP (hosted by SONG Yuntao) Feb. 12-15, 2012. Following results were obtained: Test items and test schedule of the HTS current-leads for the ITER were discussed. Flow diagram and available capacities of the components of new helium refrigerator with refrigeration capacity of 900 W @ 4.5 K were discussed. Interface and dc bus-bar between 100 kA power

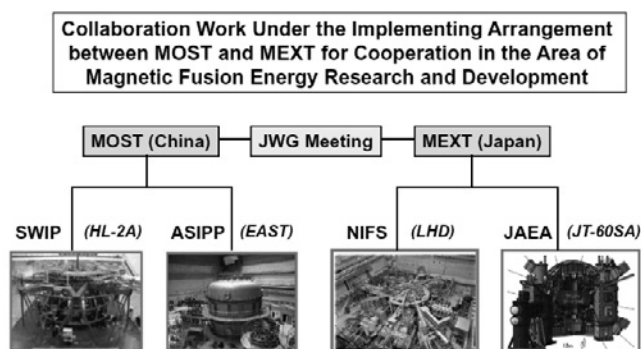


Fig. 1 Structure of the joint working group meeting (JWG).

Table 1 History of JWG collaboration.

FY	Cjina → Japan	Japan → China	JWG Meeting
2008	13 persons 8(SWIP) 5(ASIPP)	6 persons 4(JAEA) 2(NIFS)	JWG-1 Hosted by SWIP Chengdu, China
2009	13 persons 5(SWIP) 8(ASIPP)	12 persons 5(JAEA) 7(NIFS)	JWG-2 Hosted by JAEA Tokai, Japan
2010	19 persons 8(SWIP) 11(ASIPP)	15 persons 3(JAEA) 11(NIFS)	JWG-3 Hosted by ASIPP Shangri La, China

supply and new cryogenic test facility was discussed. Seminar concerning the design of a helical DEMO reactor FFHR-d1 and related R&D in NIFS was held, and the basic techniques needed to realize the fusion reactor was discussed.

Yukihiro Tomita visited SWIP (hosted by YAN Longwen) Sep.5-14, 2011. His collaboration theme is the dust dynamics in HL-2A, and future collaboration researches. He also visited ASIPP (hosted by LUO Guangnan) Feb. 27-Mar.10, 2012. The dynamics of dust particles and impurities was discussed in EAST tokamak and LHD plasma.

ITO Atsushi visited SWIP (hosted by PENG Xiaodong) May 5-10, 2011. His collaboration themes are

stability of toroidal equilibria with toroidal and poloidal flows, and Two-fluid equilibrium with flow and finite Larmor radius.

SUZUKI Yasuhiro visited SWIP (hosted by LIU Yi) Dec.19-23, 2011. He discussed about the applications of 3D MHD codes to model RMP experiments.

KAWAMURA Gakushi visited ASIPP (hosted by LUO Guangnan) Feb.27-Mar. 3, 2012. He discussed about impurity transport modeling and simulation on EAST.

SATO Masahiko visited SWIP (hosted by DONG Jiaqi) Mar.5-10, 2012. He discussed about development and application of integrated code for helical plasmas from MHD aspects.

(Kumazawa, R., Yamada, S.)



Fig. 2 Participants of JWG-4 in Nagoya Garden Palace Hotel (3rd August 2011).