

# 1. US–Japan (Universities) Fusion Cooperation Program

The 36<sup>th</sup> U.S.-JAPAN Coordinating Committee for Fusion Energy (CCFE) meeting was held on March 11 2016 via televideo conference system. The representatives from the MEXT, the DOE, Universities and Research Institutes both from Japan and U.S. participated in the meeting. At the meeting, current research status of both countries were reported together with presenting bilateral technical highlights on collaborations. The 2015 cooperative activities were reviewed, and the FY 2016-2017 proposal was approved. It was noted that both sides have developed significant and mutually valuable collaborations involving all technical elements of the fusion energy sciences program, and also discussed the bilateral programs and multi-lateral activities. Thus, the both sides agreed the usefulness and necessity of the continuation of the Joint Activity.

## **Fusion Physics Planning Committee (FPPC)**

In the area of fusion physics, 7 workshops (4 from JA to US, 3 from US to JA) and 14 personal exchanges (9 from JA to US, 5 from US to JA) were carried out. Due to the lack of funding and the schedule conflict, 6 personal exchanges (5 from JA to US, 1 from US to JA) were cancelled or postponed.

Each personal exchange was performed successfully in the research fields of the steady-state operation, high-beta physics, confinement and transport, diagnostics and the high density physics related to the inertial fusion and its application. Fruitful discussions were made in the workshops with many participants from both sides.

These programs were productive and beneficial for the progress of the fusion physics, and were recommended to continue.

## **Joint Institute for Fusion Theory (JIFT)**

Almost all of the activities in the two categories - workshops and personal exchanges - were carried out during the past year.

In addition to the JIFT Steering Committee meeting, four workshops were successfully held. In the category of personal exchanges, two Visiting Professors and six Visiting Scientists made exchange visits. At the JIFT Steering Committee meeting that was held at Toki on November 27, 2015, the status of JIFT activities for 2015-2016 was reviewed

and the recommendation plans for 2016-2017 were discussed. The JIFT discussion meeting was held at TOKI on September 4, 2015, in the Plasma Simulator Symposium. The information of the JIFT program is released at both of the US and Japanese JIFT web sites.

## **Fusion Technology Planning Committee (FTPC)**

Personal exchange programs are continued in 6 research fields, namely, superconducting magnets, low- activation structure materials, plasma-heating technology, blanket engineering, high-heat flux components, reactor design & others. Of the 18 planned cooperative items related to the general technology joint planning categories, 15 were completed as follows: 4 workshops/technical meetings and 11 personnel exchanges.

## **US-Japan Joint Project : PHENIX**

In terms of joint collaboration project, PHENIX, for Task 1, heat transfer studies with the He-cooled divertor with multi-jets (HEMJ) using the test section like divertor with heat fluxed up to 6.6 MW/m<sup>2</sup> and temperatures up to 400°C with variable gaps were performed in the Georgia Institute of Technology (GT). High heat flux testing studies of SiC/W layered materials were performed by 4 MW/m<sup>2</sup> plasma arc lamp (PAL) facility at Oak Ridge National Laboratory (ORNL).

For Task 2, construction of RB\* neutron irradiation capsule was finished at ORNL. Thermal neutron shield is the most notable feature of this design, unique in PHENIX. Irradiation of the RB\* in HFIR will start in the middle of 2016. PIE for irradiated W including single crystal tungsten was in progress.

For Task 3, modification of TPE for remote handling operation was finished at Idaho National Laboratory (INL). Plasma exposure experiments with TPE to ion damaged tungsten were started. Deuterium permeation study using ion damaged and He irradiated tungsten at Sandia National Laboratory California (SNL-CA) are in progress.

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