

9. Research Enhancement Strategy Office

The Research Enhancement Strategy Office (RESO) was founded in October 2013, and three University Research Administrators (URAs) were assigned. Under the Research Planning Task Group, the following four Task Groups were organized.

- (1) Collaboration Research Enhancement Task Group
- (2) Young Researchers Development Task Group
- (3) Public Relations Enhancement Task Group
- (4) IR(Institutional Research)/Evaluation Task Group

(1) The collaborative research activities

1) Enhancing international collaborative research in the stellarator-heliotron (S-H) plasma, and steady-state operation (SSO) toward a fusion reactor

Wendelstein 7-X (W7-X) of the Max Planck Institute of Plasma Physics (IPP) at Greifswald in Germany was upgrading for the water-cooled divertor from November 2018. In 2020, a joint research between NIFS and IPP, such as commissioning of diagnostics installed by NIFS was conducted mainly by remote communication/participation tools as a countermeasure for the COVID-19 pandemic.

Collaborative research was also enhanced with PPPL, the University of Wisconsin and University of California, Irvine in the United States, CIEMAT in Spain, CEA in France, CONSORZIO RFX in Italy, Culham Centre in the United Kingdom, University of Belgrade in Serbia, and Peking University and Southwest Jiaotong University (SWJTU) in China. Renewing of the collaboration agreement with the ITER Organization was under progress to be signed in early 2021.

2) Promoting establishment of Agreements with Asian institutes to accelerate collaborative research

In order to enhance helical and stellarator research in Asian countries, the Chinese First Quasi-axisymmetric Stellarator (CFQS) project between NIFS and SWJTU and an international research collaboration between NIFS and Peking University has been promoted. In the CFQS project, fabrication of mock-up coils was successfully completed. The fabrications of the first modular coil (MC4) and the vacuum chamber have been started. As the collaboration between NIFS and Peking University, the design of the Time-of-Flight neutron spectrometer (TOFED) was completed for LHD. The construction of TOFED was initiated in 2019. Commissioning of the TOFED is ongoing.

(2) Supporting young researchers

In the activities for supporting young researchers, international collaboration activities of young researchers were encouraged, enhancing their basic research skills. RESO supported the international collaboration plans proposed by young researchers in NIFS. Applications were reviewed by the Young Researchers Development Task Group. One program was supported in FY2020 as follows.

1. Experimental study of the turbulent transport in TCV tokamak in Lausanne University.

RESO also assisted with the applications of young scientists to the 'Grants-in-aid Scientific Research' program. About 70 application documents were reviewed and suggestions were given to the authors for improvement.

(3) Enhancing public relations

1) Dissemination of research achievements through EurekAlert!

Three topics were released: i) “An accurate simulation of high-pressure plasma for an economical helical fusion reactor,” ii) “Weight reduction of fusion reactor components –Design optimization using a topology optimization technique-” and iii) “Development of a broadband mid-infrared source for remote sensing.” These topics were released to the media in Japan, too. Some topics attracted attention from the international media.

2) Information release about NIFS and fusion science

RESO participated in the AAAS annual online meeting and introduced NIFS and the research results in the virtual form in collaboration with other Japanese institutes, 8–11 February 2021.

3) Outreach activities based on the fusion community

RESO joined the discussion of the fusion science outreach headquarters with QST, universities and the Ministry of Education, Culture, Sports, Science and Technology.

4) Others

RESO introduced interesting science topics to the public on the occasion of the science talk of at the Open Campus Online of NIFS shown in the Figure 1.

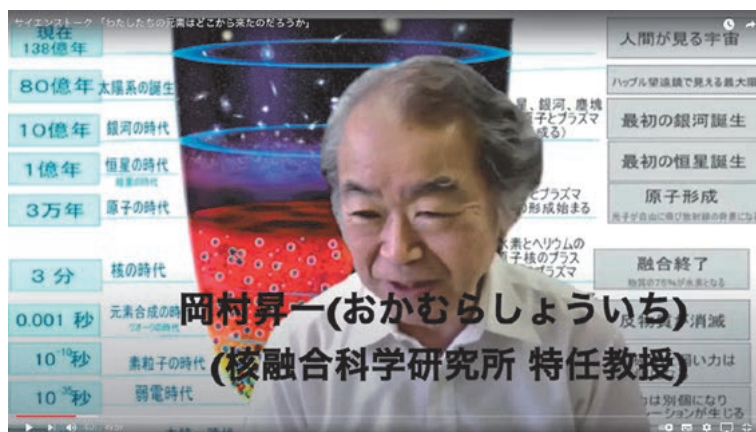


Fig. 1 The science talk at the Open Campus Online of NIFS.

(4) IR/Evaluation activities

The task group for the IR (Institutional Research) and evaluation continued its role to make systematic analyses of the present research activities of the institute. The statistical data of the publications and the scientific reports were collected using the NIFS article information system (NAIS) with complementary data obtained through SCOPUS and WoS public research resource supplying companies. The outcome results of the collaboration activities were collected through the annual collaboration reports of NIFS.

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