

10. International Collaboration

IEA (International Energy Agency) Technology Collaboration Program for Co-operation in Development of the Stellarator-Heliotron (SH) Concept

Programmatic collaborations have been further extended in the new era of Stellarator-Heliotron research

Established in 1985, this Implementing Agreement (IA), [now formulated as Technology Collaboration Program (TCP)], under the umbrella of the IEA (International Energy Agency) has been effective to improve the physics base of the Stellarator-Heliotron (SH) concept and to enhance the productivity of research and development efforts related to the SH concept by strengthening cooperation among member countries. All collaborative activities of the worldwide SH research are combined under the umbrella of this IA, which continues to promote the exchange of information among the partners, the assignment of specialists to facilities and research groups of the contracting parties, joint planning and coordination of experimental programs in number of critical areas, joint experiments, workshops, seminars and symposia, joint theoretical, design and system studies, and the exchange of computer codes. The research activities have been organized mainly through the Coordinated Working Group Meetings (CWGM). The bi-annual “International Stellarator-Heliotron Workshop” has served as an important forum for the scientific exchange within the scientific community.



Fig. 1 The webpage for SH-IA, (now SH-TCP), maintained by IPP-Greifswald, <http://www.ipp.mpg.de/sh-tcp>

● 45th Executive Committee (ExCo) Meeting

The 45th ExCo meeting took place on October 20, 2016 on the site of the 26th IAEA Fusion Energy Conference in Kyoto, Japan. The ExCo members as of that day are listed in Table I. The domestic and international collaborations were reported from the participants, and discussion was made for future collaborations. For the first time, a representative from Costa Rica attended the meeting as an observer, after the ExCo had agreed to start discussions on Costa Rica’s participation in this TCP based on the research plan of a small stellarator there.

● 16th Coordinated Working Group Meetings (CWGM)

The 16th Coordinated Working Group Meeting was held in CIEMAT (Madrid, Spain) from 18 to 20 January, 2017. The meeting implements the worldwide cooperation in the field of SH research. The main vehicle is

the International Stellarator-Heliotron Profile Database which successively broadens the documentation of experimental results relevant to the design of next step devices. Priorities are given to topics which need to be resolved for next step developments. A group of coordinators prepared the meeting, identified topics for international cooperation and took over the responsibility to track the agreed actions. Sessions on particle transport and fuelling, impurity transport (as a standing session), plasma wall interaction, divertor physics, turbulence, isotope effect, core electron-root confinement (CERC) were formed, and a number of joint activities and mutual collaboration in the future directions were agreed to proceed. The follow-up meeting will be conducted in October 2017 in Kyoto on the occasion of the 21st International Stellarator-Heliotron Workshop.

It has also become evident that the understanding of more complex three-dimensional confinement properties of SH is indispensable for the further development of tokamaks. The promotion of the synergies between tokamaks and SH is therefore a central part of the strategic direction of this TCP. An important mechanism to foster such synergies is the participation of a representative of this TCP in each topical group of the International Tokamak Physics Activity (ITPA).

The webpage for SH-TCP, <http://www.ipp.mpg.de/sh-tcp>, (shown in left page) has been maintained by Max-Planck Institute für Plasmaphysik (Greifswald, Germany) where TCP-Chair, Prof. R. Wolf belongs to.

(Y. Takeiri)

Table I The membership of SH-TCP ExCo (as of the date of the 45th ExCo meeting)

Contracting Party	Country	Name	Affiliation
ANU	Australia	B. Blackwell	The Australian National University
		J.H. Harris	The Australian National University
EURATOM	Germany	R. Wolf (Chair) T. Klinger (alternate)	Max-Planck-Institute for Plasma Physics
	Spain	J. Sanchez C. Hidalgo (alternate)	CIEMAT
NIFS	Japan	Y. Takeiri (Vice Chair)	National Institute for Fusion Science
		T. Morisaki	National Institute for Fusion Science
ROSATOM	Russia	B. Kuteev	National Research Center, Kurchatov Institute
		V. Ivanov	Prokhorov General Physics Institute of Russian Academy of Sciences
NSC	Ukraine	I.E. Garkusha	Institute of Plasma Physics, National Science Center "Kharkov Institute of Physics and Technology"
		V.S. Voitsenya	Institute of Plasma Physics, National Science Center "Kharkov Institute of Physics and Technology"
US DOE	USA	D.T. Anderson	University of Wisconsin-Madison
		D. Gates (since Dec. 1, 2016)	Princeton Plasma Physics Laboratory
		M.C. Zarnstorff (Vice Chair) (until Nov. 30, 2016)	Princeton Plasma Physics Laboratory
Observers		C. Pottinger	IEA
		L.G. Eriksson	European Commission
		I. Vargas Blanco (since Oct. 20, 2016)	Costa Rica Institute of Technology
		M. Yokoyama	National Institute for Fusion Science
		P. Kurz (Secretary)	Max-Planck-Institute for Plasma Physics