§33. The Next-Generation Technology of Control, Data Acquisition, and Remote Participation for Fusion Research

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From June 4th to June 8th 2007, 6th IAEA Technical Meeting on Control, Data Acquisition, and Remote Participation for Fusion Research will be held in Inuyama International Sightseeing Center "FREUDE". It is the unique conference that all the computer scientists engaged in this field will meet together in every two years.

As our research collaboration group is the only entity which is deeply concerned to these conference topics in Japanese fusion community, most of our collaborators have taken active parts in the International Program Advisory Committee (IPAC), Local Organizing Committee (LOC), and also organizer secretariat (Table I).

The number of total registered participants, 190 people, will be an almost twofold increase from the previous Budapest meeting in 2005. This is because (i) it is the first conference of this series held in Asian region, (ii) has two brand-new sessions of inertial confinement and ITER, and (iii) holds industrial and organization exhibitions for the first time. Therefore, we will have 43 attendees, in addition to 141 researchers, for 9 industrial and 3 organization exhibitions.

This conference covers the same research topics as this collaboration (Table II). Contributed presentations from our collaborators are also scattered in many topics (Table III).

In other words, it should be the very good proof that we are able to follow and support this Meeting very well.

Table I   Members' contribution for IPAC and LOC

Nagayama Yoshio Tsuda Kenzo Emoto Masahiko Nakanishi Hideya	NIFS
Naito Osamu Kurihara Kenichi Ozeki Takahisa	Japan Atomic Energy Agency
Urushidani Shigeo Matsukata Jun	National Institute for Informatics
Nakamura Kazuo	Kyushu University
Nishihara Katsunobu	Osaka University
Okada Hiroyuki	Kyoto University
Tatematsu Yoshinori	Fukui University

Table II   Number of presentations for each topic

Topics	oral	poster	total
Plasma Control	5	12	17
Machine Control, Monitoring, etc.	4	19	23
Data Acquisition & Signal Process	6	19	25
DB Tech. for Info. Store & Retrieve	4	14	18
Adv. Computing & Mass. Data Ana.	5	4	9
Remote Participation & Virtual Lab.	5	7	12
Fast Network Tech. & Application	4	4	8
Inertial Confinement	4	2	6
ITER	6	0	6
	43	81	124

Table III   Related collaborators' presentations

Collaborator	Presentation title
Hochin T. (KIT)	Extension of Frequency-Based Dissimilarity for Retrieving Similar Plasma Waveforms
Urushidani S. (NII)	Next-generation Science Information Network for Leading-edge Applications
Nakamura K. (Kyushu Univ.)	Control System of CPD and QUEST
Hasegawa M. (Kyushu Univ.)	High Accessible Experimental Information on CPD Experiment
Wang F. (Kyushu Univ.)	Comparison of CCS and FCA Method in Plasma Shape Reconstruction of CPD Spherical Tokamak
Kurihara K. (JAEA)	Issues of Plasma Control System toward the JT-60SA Generation
Kawamata Y. (JAEA)	Design Study of the JT-60SA Supervisory Control System
Sakata S. (JAEA)	Architecture plan of the next real time processor in JT-60 data processing system
Sato M. (JAEA)	Development of VME-based data acquisition system for extended pulse duration of JT-60U
Sueoka M. (JAEA)	Development of the Supervisory Discharge Operation Monitoring System for JT-60
Suzuki Y. (JAEA)	Research and Development of Fusion Grid Infrastructure Based on Atomic Energy Grid InfraStructure (AEGIS)
Nishihara K. (Osaka Univ.)	e-Science in High Energy Density Science Research
Nagayama Y. (NIFS)	Control, Data Acquisition, Data Analysis and Remote Participation for LHD
Tsuda K. (NIFS)	Virtual Laboratory for Fusion Research in Japan
Yamamoto T. (NIFS)	Estimation of the advanced TCP/IP algorithms for long distance collaboration
Emoto M. (NIFS)	Web Interface for Plasma Analysis Codes
Nakanishi H. (NIFS)	Adaptive Data Migration Scheme with Facilitator Database and Multi-Tier Distributed Storage in LHD
Kojima M. (NIFS)	Feasible Design toward unlimited expansion of massive-size distributed storage
Ohsuna M. (NIFS)	Reliability study for essential technologies in numerously parallel-processing DAQ system