

## 8. Fusion Science Archives

### 1. Academic Purposes

The purposes of this collaboration research are to promote the following two issues concerned with fusion researches:

(1) To collect historical documents related with fusion research activities in Japan and construct their catalog database for opening them to the public.

(2) To describe the detailed history of fusion researches in Japan based on the analysis of those documents.

### 2. Collaboration Scheme

In order to achieve such academic purposes, long-range continuous activities are necessary as well as wide range of collaborations across universities and research institutions. The core staffs of Fusion Science Archives (FSA) shown below have coordinated the research activities.

Head: Harukazu Iguchi,

Staffs: Mitsuko Endo, Kazue Kimura, Chusei Namba, Keisuke Matsuoka.

More than 50 people from universities and research organizations have contributed to the research activities. Researches are carried out under the two major collaboration frameworks: one is the network of plasma and fusion research communities in Japan and the other is that of inter-university research institutes of natural sciences and SOKENDAI (The Graduate University of Advanced Studies).

The research subjects include (1) collection of historical documents and registration, (2) interviews to retired researchers as oral history, (3) expanding the catalog database, (4) opening the catalog to the public through Internet, and so on. Here we summarize the outline of the research activities in this fiscal year.

### 3. Outline of the Research Activities

Collaborative works on ten topical research themes were approved at the Committee of General Collaboration Research in this fiscal year, and were carried out by each group. Detailed result of each subject is described in the following subsections. Total research activities are summarized here.

(1) Collection of new documents was continued. Contributors are Yoshihiko Ichikawa (Professor Emeritus of NIFS), Noriyoshi Sato (Professor Emeritus of Tohoku University), Shoichi Yoshikawa (the late chief researcher at PPPL, USA), Naoaki Yoshida (Professor Emeritus of Kyushu University), Yoshinosuke Terashima (the late Professor Emeritus of NIFS) and NIFS administration office, etc. Overlooking these documents and making catalogs are under going to be added to the database.

(2) Two methods for opening the catalog database to the public are promoted in parallel. The first one is the online-opening of the catalog database using a commercial cloud server provided by InfoCom Co.. About 1,500 items among total number of 25,000 are now open through Internet. Access to the database is available at the home page of FSA, NIFS. Four inter-university research institutes (NIFS, KEK,

IMS, NAOJ) and SOKENDAI are now participating in this system. The second one is the online-opening by our own scheme using the international standard software named Archon. It is necessary to convert the operating language from English to Japanese, which is under development.

(3) Collaborative research meetings among those scientists and archivists from inter-university research institutions are carried out. The first meeting was held at the Tokyo Office of NINS (National Institute for Natural Sciences) in October 3<sup>rd</sup>, 2013 organized by KEK Archives Office. The topic of this meeting was on the historical processes of forming the research group of high-energy physics in 1950s and 1960s. The second meeting was held at NIFS on January 22nd-23rd, 2014 organized by FSA, NIFS. Special lecture by Naoki Kan (an associate professor of Osaka University Archives) was given, which was entitled “The Story of Establishment of Osaka University Archives and Facing Issues”. Since the act for the management of official document was enacted in April 2011, major universities are establishing archives to adapt to this law. Osaka University Archives is the seventh institution of this kind among national universities. In addition to this lecture, case studies and progresses on archival research activities at several institutions were given. (4) Result of our research was presented at the international meeting, the 12<sup>th</sup> Asia-Pacific Physics Conference held at Makuhari-Messe in Chiba, Japan, on July 14<sup>th</sup>, 2013, which was on the description of historical processes of fusion research in Japan in terms of a flow-chart style chronological table. It is a visualization technique of historical procedures of nuclear fusion research that make it clear the inter-relation between various historical events in different place and year. It is online-published in the proceeding of the conference. The original chart was developed at FSA, NIFS in 2008, when Japanese language version was published in the Special Issue of the Journal of Plasma and Fusion Research Vol. 84, 2008 in celebrating the 50<sup>th</sup> Anniversary of Fusion Research.

(5) New findings from the interview to Yoshihiko Ichikawa was presented at the 30<sup>th</sup> annual meeting of the Japan Society of the Plasma Science and Nuclear Fusion Research held at Tokyo Institute of Technology on December 3<sup>rd</sup>, 2013. The interview covered not only on fusion research history but also his wide range activities as a physicist.

(6) FSA, NIFS reserves lots of documents given by Kōji Husimi (the first director of the Institute of Plasma Physics, Nagoya University). Request to review Husimi's documents was proposed by a science historian Hiroshi Ezawa, Professor Emeritus of Gakushuin University, especially of those documents created while K. Husimi was a professor at Osaka University in 1950s. Quality of papers in this age was rather poor and fragile now. Reading these original documents for review is not preferable. Conversion to electric file (PDF file) is urgent.

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