

#### §4. A Study of the First US-Japan Plasma Seminar Based on Information from the Oral History of Yoshihiko Ichikawa

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##### 1. Background and Purpose

It is well known that the current Japan-US fusion research collaboration activities have been carried out since the governmental agreement between Japan and US Joint Activity in the field of fusion research and development in 1979. Prior to this agreement, the US-Japan Plasma Seminar was held in Kyoto in 1968. We had just heard that the seminar was held, however, we had no idea how the seminar really was planned and carried out. In fact, there are found few documents concerning the seminar stored in NIFS Fusion Science Archives (NIFS FSA).

On the occasion of the interview with Y. Ichikawa, the details of the seminar were revealed and some relevant documents were newly collected. The purpose here is to describe what kinds of academic subjects Japanese researchers took much of interest in those days, and also to make a historical review of the seminar held about ten years after fusion research was started in Japan.

##### 2. Summary of the seminar

The joint seminar on plasma physics was proposed by Charles K. Birdsall at Electrical Engineering and Computer Science Department, University of California to Akira Hasegawa at Osaka University at the expense of National Science Foundation and United States-Japan Committee on Scientific Cooperation. Domestically Hideo Ikegami (the Institute of Plasma Physics, Nagoya University) and Yoshihiko Ichikawa (Nihon University) took a major role in arranging the seminar<sup>1)</sup>. It was held under the title, “Japan-U.S. Seminar on Waves, Instabilities and Nonlinear Effects in Plasma,” in April 22-26, 1968, in Kyoto. The numbers of American and Japanese participants were 13 and 27 respectively. The seminar itself was held at the Kyoto International Conference Hall and also at Sekisontei, a Japanese style house originally owned by Junichiro Tanizaki. Prior to the seminar, the participants visited the Institute of Plasma Physics, Nagoya University, and they were invited to reception dinner by Kōdō Husimi, Director of the Institute, according to the photographs and the program which were donated by Noriyoshi Sato, Emeritus Professor at Tohoku University on the time of interview with Y. Ichikawa.

##### 3. Topics covered in the Seminar

There were the two invited open talks titled, “Stability - Containment - Lack of Equilibrium” by Harold Grad from Courant Institute of Mathematical Sciences, New York

University, and “Plasma Echo Experiments” by John H. Malmberg from General Atomic Division, General Dynamics. The sessions in the seminar were as below:

- 1) Plasma Instability, General
- 2) Hot Electron Plasmas
- 3) Non Linear Effects on Plasma Waves
- 4) Computer Experiments
- 5) Plasma Turbulence
- 6) Non Linear Effects and Instabilities, Free Discussions on Future Problems

Each session includes the two or three talks that were previously submitted and informal talks by a few persons. The themes presented and discussed at the seminar were not the problems of the devices, such as, tokamak or stellarator, but the topics of fundamental plasma physics. A snap shot of a session is shown in Fig.1.



Fig. 1 A snap shot of a session

##### 4. Historical Review of the Seminar

It was significant that the seminar served as a trigger for young researchers to get more concerned about international exchange in research of plasma physics, for example, H. Ikezi was invited by B.D. Fried to UCLA. He played an active role at UCLA and later at GA.

There was a protesting movement against Japan-U.S. joint seminar among young plasma researchers those days<sup>2)</sup>. They thought that international exchange should be carried out worldwide not only between two nations. The researchers took advantages of this seminar to have various bilateral and global exchanges in fusion research. The second joint seminar was held at UCLA, U.S. in July 5-9, 1971, afterward the seminars were carried on as a series of Gordon Research Conferences.

- 1) The process of Hasegawa-Birdsall seminar, S. Mori, 1968 (NIFS FSA ID 026-07-03)
- 2) A statement against Japan-U.S. joint seminar of plasma physics, 1968, The group of young plasma researchers (NIFS FSA ID 026-07-04)

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