

§15. Study of the Data Base Management System for Atomic and Molecular Processes in Nuclear Fusion Science

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There are several databases, which have been compiled at NIFS, for atomic and molecular processes concerning to the nuclear fusion science. Those data are obtained by experimental method and theoretical calculations. Some of those data are retrieved on the main host computer at NIFS, Fujitsu M380, during about these ten years, and there have been provided a sophisticated retrieval system, RIC, which has been developed by Kato, T. et al.. RIC is a synthesized system based on the FAIRS, Facom Advanced Information Retrieval System, a product of Fujitsu Co. Ltd. to retrieve document database. RIC is the extended system to enable graphical output by adopting User Exit function of FAIRS for those databases, AMDIS, CHART and SPUTY.

On the other hand, there are so powerful workstations, personal computers whose power is strong enough to manipulate so large data as has been contained in those databases, and the ease of use for those small computers make users tending to manipulate atomic-molecular data on their own computers.

When constructing data base, the most troublesome is caused by the non-standard data format; there is no standard format of data neither for experiment nor for theoretical ones. Hulse et al. suggested that a standard format for data together with a tiny re-

trieval system, called ALADDIN, which can be available even on a personal computer with Fortran compiler. This system is superior in its universality or portability but is not directly applicable for those database supported at NIFS.

Now, we plan to open a new world of database system not only in its usage but also in its management. First, we will export the database system which have been created on a main frame computer onto a UNIX-base workstation, both for housekeeping and general usage of data. After the completion of this program, almost all workstation, operated on UNIX will manage whole databases. Further, it will become easier to handle the result of retrieving data in user's private environment, e.g., in FORTRAN program to calculate several physical quantities in plasma, such as cooling rate. We are thinking three years of program to achieve this aim.

In the fiscal year of 1993, we made developments in the following points.

(1) Create a data manipulating system on personal computer for the database AMDIS. It is now possible to reformat data and check the consistency of the input data on PC, then transfer them to the main frame computer. This is a good sample in linkage between host computer and personal computer.

(2) Made a prototype for the graphical interface on UNIX workstation to manipulate data for the database CHART and SPUTY. The spreadsheet input is faked on the display of the workstation, and the data input/update becomes so easy.

Based on these progress, we plan to enhance the above system available on the network, then provide a retrieval system corresponding to the FAIRS on the main frame computer. The graphical interface for general usage will also be created.