

# 1997年核反応データセンター会議報告

## 1997NRDC Meeting

札幌学院大学社会情報学部 千葉 正喜

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1997年核反応データセンター会議は、技術部会であって5月26日から28日にウィーンの国際原子力機関の核データ部で行われた。日本荷電粒子核反応データグループ(JCPRG)からは、千葉と能登が参加した。日本からは我々のみの参加で、ロシアが3名の他は、アメリカ、OECD/NEA、中国、ハンガリー、ベルギー、ウクライナからそれぞれ1名が参加していた。

日本荷電粒子核反応データグループからは、プロGRESSレポート(添付資料)をしたほか、能登から“How to make the compilation of NRDF(Nuclear Reaction Data File) more efficient”と千葉から”An IntelligentPad System for the Reuse of Nuclear Reaction Data”、の資料を提示した。

1996年核反応データセンター会議で確認した「荷電粒子データのコンパイル責任に関する合意」文書中のJCPRGの責任の記述に誤りがあったので、その訂正を求めた。その結果、「荷電粒子データのコンパイル責任に関する合意」は、修正された。

荷電粒子のコンパイルレーションの議論では、能登の参加によりNRDFの経験からこれに貢献できるとの印象を強くした。また、NRDFデータをEXFORに変換して送る仕事で中断していたが、その理由の説明とこの仕事の再開が求められた。

また、荷電粒子核反応データの活動方向に関して天体核反応に関心が持たれているが、初めてこの会議に参加したベルギーのC. Anguloから”Status report on the european Nuclear Astrophysics Compilation of Reaction rates”の報告があった。

# An IntelligentPad System for the Reuse of Nuclear Reaction Data

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## 1 Introduction

A new retrieval system for NRDF[1,2] is redesigned and developed as an application of IntelligentPad architecture[3]. NRDF is a database originally designed and developed for compiling charged-particle nuclear reaction data. IntelligentPad is now actively studied as a meme media system at Hokkaido University in Japan[4,5,6]. I will first give a brief explanation of the IntelligentPad, and then show several Pads that are specially designed for the NRDF database.

You will see that the exploitation of the IntelligentPad architecture in developing any systems for the international nuclear community might enhance the usability and reusability of the tools that the community needs.

## 2 IntelligentPad architecture

IntelligentPad is a synthetic media object. This system provides computers so as to work as meta-media that provides us with an overall integrated environment for our intellectual activities. This system provides a unified framework for modeling, presentation, synthesis and management of multimedia documents, system-provided functions and application programs.

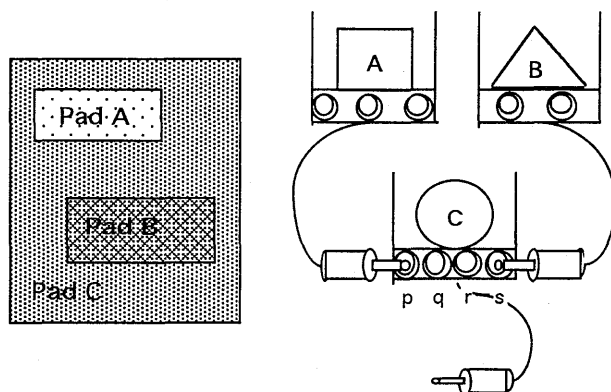


Fig. 1 Function linking of IntelligentPad

In the system, every component is represented by reactive media object called Pad. Any Pad can be copied, pasted on one another to construct some new feature. Pad can display its values which are stored in its slots on itself, and can define functions corresponding to the values in the slots and the events triggered by key or mouse operations. This unified frame work of IntelligentPad is modeled just like as AV components. The intellectual resource are wrapped in the connection mechanism standardized, which provides several connection jacks and only one pin plug connecting to slots (Fig. 1).

There also provided a mechanism for any Pad to be embedded in WWW Pages. Any users at remote sites can view these pages, and may obtain any tools and data in the form of Pads through Internet.

### 3 Pad tools developed for NRDF

Fig. 2 shows a composite Pad for the access of NRDF database and the distribution of records retrieved in the form of Pads in one or two dimensional. The tool Pad is composed of one DatabaseProxyPad, Input/OutputPads, ButtonPad, SqlQueryMakerPad and RecordDistributionPad on the ProxyPad.

First, you can specify one or two attributes that describe information in the NRDF database such as "ATH" and "D#" in Fig. 2. If SearchButton is clicked, the NRDF database is retrieved according to the SQL query made up from the specification. When database search has finished, the records found are distributed in plane geometry as DataSetIDPads on the RecordDistributionPad. Each of the X- and Y-coordinate of the RecordDistributionPad corresponds to value varieties of the specified attributes. In this case, you can see a name of the author and a dataset number in the DataSetIdPad clicked.

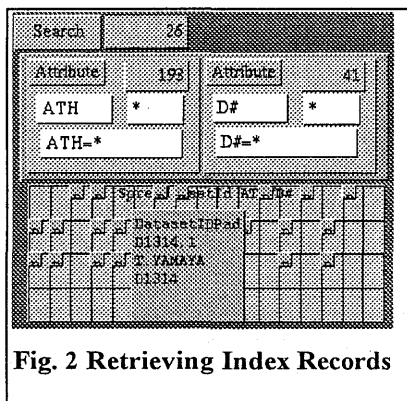


Fig. 2 Retrieving Index Records

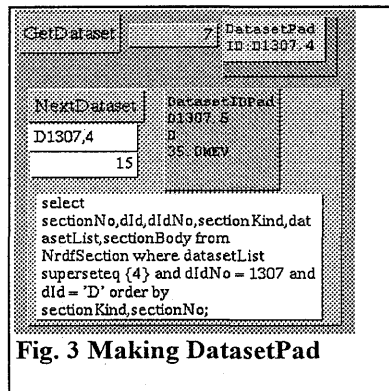


Fig. 3 Making DatasetPad

A DataSetIdPad has not full information of the dataset in its slots. If full information of the dataset is needed, it has to be filtered out from the database and set it in the slots of a DatasetPad. DatasetFilteringPad do this function as shown in Fig. 3. Paste any DataSetIdPad on DatasetFilteringPad and click the GetDataset button then a DatasetPad will appear such as "D1307,4".

If you have got a DatasetPad, you can see any details of the dataset through appropriate viewer Pads for different purposes. For examples, we provide two graphical viewing Pads and a text viewing Pad(Fig. 4). GraphPad shows a numerical data table as a data point graph. GraphBasePad is used to compare two or more graphs. This Pad makes the background color transparent and adjust the scale of coordinates of all the GraphPads pasted on itself. TextViewerPad displays the information from DatasetPad as text on itself.

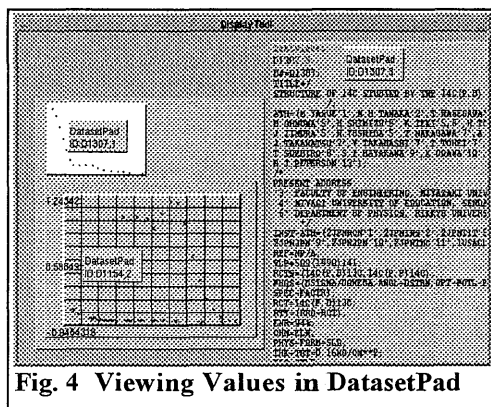


Fig. 4 Viewing Values in DatasetPad

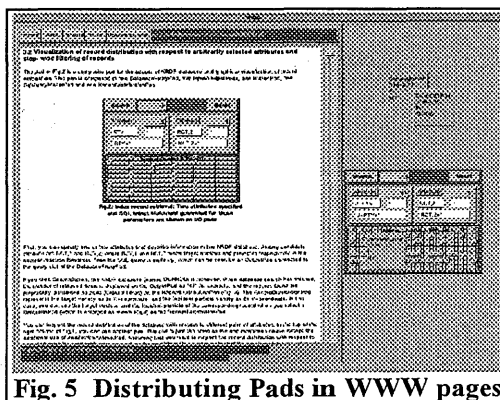


Fig. 5 Distributing Pads in WWW pages

## 4. Distribution of Pads being embedded in WWW Pages

All the Pads mentioned above are embedded in Web pages[3] so as to distribute them through Internet. Fig. 5 shows that a WWW browser in the IntelligentPad platform is viewing the page containing a Pad and the same Pad is copied to the platform. This WWW browser itself is a composite Pad.

## 5 Concluding Remarks

We have shown several Pads specially designed for the NRDF database, together with the examples of how to use them. A Pad in the IntelligentPad system is a reusable media object. Once a new Pad is developed, it can be registered in a common pool of Pads as a shared resource. It can be exchanged or reused in different contexts by different people in the community. You can also easily distribute any composite Pads through the Internet. In IntelligentPad architecture, any Pads may be put on any places of the document that is to be submitted to WWW.

We could be convinced that the IntelligentPad architecture might be effective in developing application systems shared in some such nuclear data community as shown the example of the NRDF case.

## References

- [1] Togashi, M. and Tanaka, H. : "An information system for charged particle nuclear reaction data", Journal of Information Science, Vol. 4, No. 5, 1982.
- [2] NRDF home page: <http://nucl.phys.hokudai.ac.jp/~nrdf/>
- [3] Chiba, M.: "IntelligentPad for Exchanging and Reusing Nuclear Reaction Data Information as Shared Resources", <http://ca.meme.hokudai.ac.jp/people/chiba/Chiba.html>
- [4] Tanaka, Y. and Imataki, T. : "IntelligentPad: A Hypermedia System allowing Functional Composition of Active Media Objects through Direct Manipulations", IFIP'89, San Francisco, pp. 541-546, 1989.
- [5] Tanaka, Y.: "From Augmentation to Meme Media", Proc. of ED-Media 94, Vancouver, pp. 58-63, 1994.
- [6] Tanaka, Y.: "A Synthetic Media Architecture and its Prospects", <http://ca.meme.hokudai.ac.jp/>

# Japan Charged-Particle Nuclear Reaction Data Group (JCPRG)

Progress Report to  
the IAEA Technical Meeting  
May 26-28, 1997

The Executive Committee of JCPRG

## General

In the latest meeting of the NRDF advisory committee, we had conclusions on our responsibilities in the international nuclear data centers' network;

- (1) Compiling all CPND produced in Japan with NRDF,
- (2) Translating data in NRDF into EXFOR format,
- (3) Making a combined index database for the CPND in both of NRDF and EXFOR for the convenience of the customers in Japan,
- (4) Distributing CPND and promoting utilization within Japan.

The JCPRG is organized by two committees (advisory committee and executive committee) and secretariat in order to accomplish above four duties. As the members of both committees are listed in Annex, the chairman of the NRDF executive committee was taken by K. Kato from H. Tanaka from April, 1997.

## NRDF Data Compiling Activity

In 1996, we newly compiled 52 entries (1,176 tables) based on the data obtained at the accelerators in Japan. We list the institutes provided us with their data:

- Tohoku Univ.(CYRIC) — 1 entry
- Tsukuba Univ.(UTTAC) — 1 entry
- Institute of Nuclear Study, Tokyo Univ. (INS) — 9 entries
- Tandem Accelerator Labo., Kyushu Univ. — 4 entries
- Research Center for Nuclear Physics, Osaka Univ. (RCNP) — 10 entries
- JAERI Tandem, LINAC & V.D.G. — 4 entries
- RIKEN Accelerator — 10 entries

- KEK Accelerator — 9 entries
- Van de Graaff, Tokyo Inst. of Tech. — 3 entries
- Osaka Univ. — 1 entry

By March of 1997, amount of the data compiled have reached 24,319 tables of about 69.33 MB. Our aim is to store all data produced by Japanese accelerators in the NRDF database. The amount of data to be compiled is approximately 1,000 tables and 3 MB in every year.

#### EXFOR Translation from NRDF

Translation of the NRDF data compiled up to 1993 was done, but the work of translation did not progress for the data from 1994. Recently, we had discussions on the NRDF compilation of data and researched problems to increase amount of translatable data. From April, 1997, translation from NRDF to EXFOR has restarted, and our plan of this year (1997) is to translate the data compiled from 1994 to 1996 and to send them to IAEA.

#### Customer Services

For the purpose to extend the NRDF data service to more general users,

- (1) we made the IntelligentPad system and
- (2) we made our WWW homepage and opened to public the NRDF data,

in addition to the usual retrieval services of NRDF and EXFOR data by using computers in the Hokkaido University Computing Center.

#### Evaluated Data: Nucleosynthesis

New data evaluation activity for charged-particle data has been discussed to make nucleosynthesis database in Japan. Recently, the working group was organized.

## ANNEX: Organization and members of JCPRG

### Advisory committee:

Yasuhisa ABE (Research Institute for Fundamental Physics,  
Kyoto Univ.)  
Yoshinori AKAISHI (Institute for Nuclear Study, Tokyo Univ.)  
Yasuo AOKI (Tsukuba Univ.)  
Junsei CHIBA (National Institute for High Energy Physics)  
Masayasu ISHIHARA (Tokyo Univ.)  
Ichiro KATAYAMA (Institute for Nuclear Study, Tokyo Univ.)  
Mituji KAWAI (Kyushu Univ.)  
Akira HASEGAWA (Japan Atomic Energy Research Institute)  
Tetsuo NORO (Research Center for Nuclear Physics, Osaka Univ.)  
Shunpei MORINOBU (Kyushu Univ.)  
Hajime OHNUMA (Tokyo Institute of Technology)  
Hikonojo ORIHARA (Cyclotron and Radioisotope Center, Tohoku Univ.)  
Teijiro SAITOH (Tohoku Univ.)  
Hajime TANAKA (Sapporo-Gakuin Univ.)  
Yoshihiko TENDO (Institute of Physical and Chemical Research)  
Kiyoshi KATO (Hokkaido Univ.)

### Executive committee:

Kiyoshi KATO (Chairman, Hokkaido Univ.)  
Akira OHNISHI (Hokkaido Univ.)  
Shigeto OKABE (Hokkaido Univ.)  
Toshiyuki KATAYAMA (Hokusei-Gakuen Univ.)  
Yoshuharu HIRABAYASHI (Hokkaido Univ.)  
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Masaki CHIBA (Sapporo-Gakuin Univ.)

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Yuji HIRATA(Hokkaido Univ.)

(2) Data input:

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Hitomi YOSHIDA (Hokkaido Univ.)

NRDF System Maintenance:

Akira OHNISHI(Hokkaido Univ.)

Working Staff of Transformation from NRDF to EXFOR:

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Toshiyuki KATAYAMA(Hokusei-Gakuen Univ.)