

IAEA主催による1995年「核反応データセンター会議」報告
Reports on the Nuclear Reaction Data Centers' Meeting
(1995) organized by IAEA

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Abstract

Discussions and conclusions at the NRDC meeting (May 2-4, 1995) are summarized.

1995年 NRDC (Nuclear Reaction Data Centers) Meeting は5月2日から4日、ウィーンのIAEAの本部で開催され、我々のグループからは、加藤・千葉が出席した。今回の会議は Technical Meeting で、担当の千葉がNRDFからEXFORへの変換データについてIAEAからの問い合わせに対する回答を持って参加した。また、国際核データセンターネットワークの議論が最終段階に達し、我々のグループ (NRDF) がどのように参加するか、そのネットワークの在り方についての意見・要望を携えて、特に加藤が参加することとなったものである。国際核データネットワークに関する意見と要望については、1995年3月28日に神奈川大学での物理学会時に開催されたNRDF助言員会で討論され、まとめられたものである。(NRDF ANNUAL REPORT 94, pp.134-137)

会議はウィーンにあるIAEA本部ビルで行なわれた。会議の議題は以下の通りである。

1. General
 - 1.1 Opening and adoption of the agenda, 1.2 Brief status reports of the center, 1.3 Review of actions from the 1994 NRDC meeting, 1.4 The Network document, 1.5 Conclusions from the 1995 INDC Meeting
2. New EXFOR/CINDA dictionaries
 - 2.1 Summary: New archive dictionaries, changes in EXFOR dictionaries and experiences with TRANS 9068, CINDA dictionaries, 2.2 Wishes for new transmission, 2.3 Further program/format modifications?
3. Exfor compilation and transmission
 - 3.1 General compilation situation, 3.2 List of last TRANS tapes distributed, 3.3 Update distribution list for TRANS tapes (neutron/CPND/photonuclear), 3.4 Pending Exfor matters (dictionary updates, coding rules)
4. Exfor corrections and checking
 - 4.1 List of pending retransmissions, 4.2 List of important or frequent mistakes in TRANS tapes, 4.3 "Bulk" retransmission or resubmission of TRANS tapes or Exfor areas (– L-series, – B-series, – TRANS E012, E013)
5. Exfor compilation and checking on PC
 - 5.1 Dr. Chukreev's check program TEST-EXF
6. CPND Exfor compilation
 - 6.1 ATOMKI compilations, 6.2 TRANS O001, 6.3 Compilation coordination
7. Photonuclear Data
8. CINDA
 - 8.1 General compilation situation, 8.2 Top priority work plan until book deadline in June 1995, 8.3 Cooperation NDS-CNDC, 8.4 Manual update for (n,n'f) etc.

9. Evaluated data libraries
10. Communication between the centers
 - 10.1 Update list of e-mail address, 10.2 Distribution of CP memos, 10.3 Update list media for data exchange between the centers (memos, CINDA batch, Exfor TRANSMissions, dictionaries)
11. Online systems and computer matters
12. Customer services
13. Address list and document distribution
 - 13.1 Joint maintenance of mail and electronic address, 13.2 Document distribution and maintenance of distribution lists
14. Citation of databases
15. Other business
16. Closing items
 - 16.1 Conclusions and actions of this meeting, 16.2 Next NRDC meeting: May 1996 in Brookhaven

最初に核データネットワークについて、INDC Meeting の報告があり、そこで、我々のグループの意見を述べた。特に、核データベースの意義について、我々の意見を入れて学術的な重要性を付加えることとなった。EXFOR についての議論の中で、NRDF からの変換データにおける問題点はすべて解決して、今回新たなテープを持ってきたことを千葉が報告した。今回話題になった1つのことは、ユニックスによる核データ検索システムについてであった。例えば、どんなデータベース・マネージメント・システム (DBMS) を用いたら良いのか、より汎用的で手に入りやすいDBMSは何かと言う問題等である。近い将来、世界各地でインターネットによるEXFORの検索が可能になるものと思われる。

Technical Meeting であったこの度の会議に加藤が参加した理由は、はじめに述べたようにネットワークに関する我々のグループの意見を述べると共に、今後、N RDC会議に出席するための財政的な問題と同時に我々のグループの活動状況を正確に伝えることが目的であった。(会議で報告した我々の活動報告は資料1に示す。) IAEAの核データ・セクションが属する Department of Research and Isotopes の Deputy Director である S. Machi 氏にも会って事情の説明を行った。帰国後、Machi さんの方から文部省の方に説明の手紙を寄せていただき、加藤が直接文部省にも説明に行った。核データの各センター間のネットワークが再編される中で、我々の活動の位置付けを明確にすると共に、対外的なコンセンサスを確立しておくことが重要であると言う認識に立ったものである。

最後に、最近の核データをめぐる状況について、この度の会議に出席して感じたことを2、3言及しておきたい。1つは、核データセンターネットワークの再編の議論からもわかるように、核データ活動の意義とその在り方が問われているということである。別な言い方をすれば、各国の経済状況が悪化しているなかで、核データ活動への財政的基盤が薄らいで来たことに対してどのように対応していくかが問われているとも言える。もう1つは、中性子核反応データについて一段落し、それに加えて荷電粒子核反応データの重要性が一段と高くなって来ているということである。現在、荷電粒子核反応データを本格的にデータベース化しているのは、我々のグループのほかにはハンガリーのグループだけであり、この分野における我々の責任が非常に大きいことを感じた。また、インターネットがますます発展する中で、核データのユニックス・システムによるデータベース化が緊急の課題になっていることを改めて強く感じた。このような核データをめぐる国際環境のもとで、われわれが為し得ることは何か、また、国際協力をベースとして何をして行くか、考えさせられた会議であった。

Japan Charged-Particle Nuclear Reaction Data Group
— Status Report to the NRDF Meeting from 2 to 4 May 1995 —

Hajime TANAKA
Chairman of the Executive Committee of JCPRG

1. A general view of JCPRG activities in 1994

In one year from April, 1994 to March, 1995, we have compiled 3 MB CPND newly produced in Japan. Our goal is to completely compile and store all the Japanese CPND produced each year to NRDF, and seems to have been accomplished these 2 or 3 years. Our activities largely owe to the support from the cooperation with nuclear experimentalist. The JCPRG consists of theoretical nuclear physicists and information scientists. So it is indispensable for pursuing our work smoothly to secure the cooperation with experimental nuclear physicists.

We gratefully welcome the reconstruction of the international nuclear data centers' network. To fulfil our responsibilities in the network, we must have a steady domestic organization in Japan. Throughout this year, we have had many discussions on this issue and constructed a firmer basis of our JCPRG activities in cooperation with a community of nuclear experimental physicists.

In the meeting of the NRDF advisory committee, which was held on 28 March, 1995, we had conclusions on our responsibilities and remarks on the international nuclear data centers' network. We have confirmed our responsibilities;

- (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 remarks discussed on the network in the meeting of the NRDF advisory committee are as follows:

- We support the nuclear data centers network for a world-wide cooperation of nuclear data centers.
- It is expected that nuclear data will be more and more important in many fields of nuclear science and technology. At present, our NRDF is aimed at an academic-oriented database, though it can of course be utilized for application purposes.
- In "The Nuclear Data Centers Network"(pp.1 ~ 2) of the Network Document, we cannot find no expressions of importance and scope of nuclear data in academic or scientific usage. We hope that academic or scientific purposes of nuclear data should be mentioned in the document.
- Many centers other than four "Core Nuclear Data Centers" are included in "Other Nuclear Data Centers." Explanation of "Other Nuclear Data Centers" seems to be too brief. For further developments of regional and national activities of "Other Nuclear Data Centers", we hope that "the Network Document" gives more explicit and detailed explanation of present and further roles of " Other Nuclear Data Centers" with appreciation.

2. Organization and members of JCPRG

Since the organization and members of JCPRG in a period from April, 1994 to March, 1995 have been reported in the previous NRDC meeting on 25-27 April, 1994, we here report a new organization and members from April, 1995 to March, 1996.

The JCPRG is organized by two committees and secretariat in order to accomplish above four duties.

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.)
Yasuyuki KIKUCHI (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 SAITHO (Tohoku Univ.)
Hajime TANAKA (Sapporo-Gakuin Univ.)
Yoshihiko TENDO (Institute of Physical and Chemical Research)

Executive committee:

Hajime TANAKA (Chairman, Sapporo-Gakuin Univ.)
Kiyoshi KATO (Vice-Chairman, Hokkaido Univ.)
Akira OHNISHI (Hokkaido Univ.)
Shigeto OKABE (Hokkaido Univ.)
Toshiyuki KATAYAMA (Hokusei-Gakuen Univ.)
Yoshuharu HIRABAYASHI (Hokkaido Univ.)
Hiroshi NOTO (Hokusei-Gakuen Univ.)
Masaki CHIBA (Sapporo-Gakuin Univ.)
Hitomi YOSHIDA (Assistant, Hokkaido Univ.)
Shigeo MUKAI (Assistant, Hokkaido Univ.)

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Working Staff:

(1) Data compiling:

Hirokazu TEZUKA(Tokyo Univ.)
Takahisa KOIKE(Institute for Nuclear Study, Tokyo Univ.)
Yuka AOKI(Tohoku Univ.)
Yasushi NARA(Hokkaido Univ.)
Shigeyoshi AOYAMA(Hokkaido Univ.)
Naoyuki ITAGAKI(Hokkaido Univ.)

(2) Data input:

Takako ASHIZAWA

NRDF System Maintenance:

Shigeo MUKAI(Hokkaido Univ.)

Working Staff of Transformation from NRDF to EXFOR:

Masaki CHIBA(Sapporo-Gakuin Univ.)
Toshiyuki KATAYAMA(Hokusei-Gakuen Univ.)

3. Recent progress

(1) Compiling CPND produced in Japan

We have been compiling CPND produced in Japan with the NRDF format since 1987 constantly. In 1994, we have newly added 56 entries and 1,328 sub-entries (3.0 MB) in the NRDF library. These newly added entries are the ones that were all produced by accelerators in Japan.

Main institutes are

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

Almost all CPND produced from these institutes have been stored in NRDF. By March 1995, amount of the data compiled have reached 22,933 entries of about 63 MB.

(2) EXFOR translation

In 1994 we submitted to NDS TRANS E012 and E013. These are re-transmissions of TRANS E010 and E011. The TRANS E012 contains 25 entries. These entries were re-translated from NRDF so as to satisfy the "Comment on TRANS E010 by, O.Schwerer, 1992-08-25" except E1315, E1350, E1357 and E1358 entries. The TRANS E013 contains 25 entries, which were also re-translated in accordance with the "Comment on TRANS E011 by O.Schwerer" except E1428 entry. The Entries included in TRANS E010 or E012 but not in E012 or E013 have not yet been successfully re-translated. When corrections for the entries are successfully done, we will re-transmit.

(3) Index information system of CPND

A retrieval system for the index information of CPND has been installed in Hokkaido University Computing Center. The ORION Information Retrieval System is employed for the installation. The purpose of this retrieval system is to open the way for the researchers in Japan to get benefits from utilizing the Charged-Particle Nuclear Reaction Data which are compiled and stored in EXFOR libraries.

(4) Customer service

We are realizing that Customer services should be emphasized. Our activities have been reported by "NRDF ANNUAL REPORT" to almost all nuclear physicists and some nuclear engineers in Japan since 1988. Each one contains regular reports such as NRDF data compiling, the EXFOR translation and other relating matters, and some topics which may direct our activities in advance.

Some topics in the recent report, "NRDF ANNUAL REPORT 94" are

- Validating Versions of 'Hierarchical Index Classified by Terms for NRDF Codes Dictionary' and 'Field-Codes to Value-Codes Correspondence Dictionary' and Their Evaluations
- NRDF Coding Manual
- NRDF Quick Retrieval Manual
- A Plan for Developing 'NRDF Coding Editor'
- Charged Particle Nuclear Reaction Database NRDF - Present status and its usage -

4. Computer Facility

We utilize the Hokkaido University Computing Center for the storage and retrieval of NRDF and EXFOR information. The Hokkaido University Computing Center installs with Hitachi M-880H and S-820/80 computers. These computers are running by MVS or UNIX compatible operating systems. They are also connected to the National Academic Information Network. Therefore researchers of the universities or institutes in Japan can access our NRDF or EXFOR information through the Network.

There are personal-computers or workstations available at our laboratory. They are also connected to a local and the National Academic Information Network. We are able to communicate with each other and others overseas through computer networks.

5. Future of activities

The activity and organization of JCPRG is based on Nuclear Research Laboratory, Department of Physics, Hokkaido University, which is supported with the regular working budget

and administered by the Ministry of Education and Hokkaido University. The organization of JCPRG has got acknowledgement of the Nuclear Research Community in Japan.

(1) CPND Compiling

We estimate the amount of data produced in Japan per year to be about 3 MB. Almost all CPND produced ever year in Japan are compiled. Especially, recent data of unstable nuclear beams at RIKEN and of high-energy experiments at KEK should completely be stored in NRDF.

(2) EXFOR translation

We are now translating only the parts of the NRDF data which can be translated. The EXFOR translation will be continued in this way. As NRDF contains various kind of physical quantities, we will try to increase the NRDF data translatable into the EXFOR.

(3) Information system of CPND

The current version of the Index Information System include only EXFOR index information. We are also planning to add NRDF index information to this system. We are intending to install the Index Information System on a workstation, and to develop a new customer service through computer network.

(5) Others

We are studying CPND in NRDF in several aspects for evaluation:

- 1) What physical quantities really exist?;
- 2) In the case of choosing Total-Cross-Section, is it feasible to evaluate?, are there sufficient data or energy range?;
- 3) As NRDF data includes also optical potential, are there any data evaluation model, simulation method or code?

We are also planning to make an evaluation system of the nucleosynthesis by using very low-energy data in NRDF.