

Report on the status of IT environment

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Abstract

In this report, we present a new EXFOR editor system based on the Java programming language. At the current stage we designed user interface of the new system and executed CHEX checking tool. For convenience of compilers was implemented suggestion field function for all dictionaries. Also we report the update of Asian Nuclear Reaction Data Centres and JCPRG's web page.

1 Development of new EXFOR editor system

The International Network of the Nuclear Reaction Data Centres (NRDC) [1] is a world-wide network of nuclear data centres organized under the auspices of the International Atomic Energy Agency (IAEA). It has been established to coordinate collection, compilation, and dissemination of nuclear data on an international scale. Nuclear data have been utilized in the following many areas: nuclear physics, astrophysics, nuclear engineering, medicine, etc. Since the early 1980s the Nuclear Reaction Data Centre of Hokkaido University (JCPRG, formerly Japan Charged-Particle Nuclear Reaction Data Group) [2] has been extensively active as a member of the network. Under the NRDC network, experimental nuclear reaction data are compiled and stored in the EXFOR library [3] in a unified format EXFOR (Exchange Format), which defines full details of the experimental and bibliographical information.

In order to simplify EXFOR compilation, various editor systems have been developed within the NRDC community. ANDEX [4] developed by IAEA-NDS (Vienna) and ERES by CNDC (Beijing) [5] are such systems developed in 1990s. An EXFOR editor developed by CNPD (Sarov) in 2000s is currently used by many EXFOR compilers. In JCPRG, a web-based nuclear data input system HENDEL (Hyper Editor for Nuclear Data Exchange Libraries) was developed for compilation of experimental nuclear reaction data in NRDF and EXFOR formats [6], and it has been used as a standard compilation editor system at JCPRG since 2001 [7]. For beginners of EXFOR compilation, the HENDEL system is very useful because it requires very limited knowledge on EXFOR, and it is now also used by new EXFOR compilers in Kazakhstan and Mongolia. While the current HENDEL system is well designed to create outputs in both NRDF and EXFOR format,

some extra input forms for creation of NRDF outputs could be rather confusing for foreign compilers who do not create NRDF outputs. Therefore a clone of HENDEL specialized for EXFOR outputs is of our interest. Recently, we have started to develop a new HENDEL system using the Java programming language for a standalone application type (GUI). Java is platform independent and an object-oriented programming language. Note that EXFOR compilers emphasized in a recent EXFOR compilation workshop (6-10 Oct. 2014, Vienna) that it is important to develop an OS independent EXFOR editor system [8]. We adopt Java Swing API for building GUI (graphical user interface) application.

A main page and Common Information section of the new HENDEL editor is shown in Fig.1 and Fig. 2. Contents of the editor will be organized in a Tree format. The contents of editor consist: Bibliography, information commonly applied to all data sets of the EXFOR entry (Subentry 001), and information applied to each data set of the EXFOR entry independently (Subentry 002, 003,..). The Bibliography section consists of Title, Author, Affiliation and Reference. One of the new improvements in this editor is that Affiliation and Reference part in the Bibliographic section can be multiplied by "+" button as shown in Fig. 1.

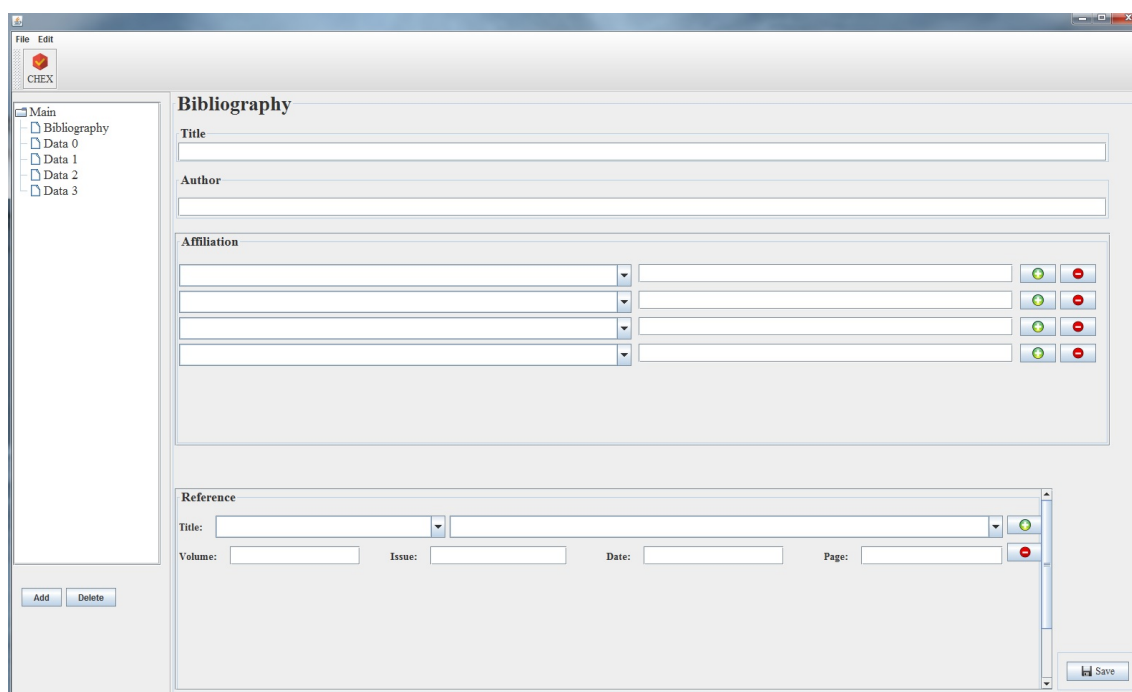


Fig. 1: Main page of Java based Hendel system (Bibliography section)

Such a new HENDEL system is expected to be very useful for compilation not only in JCPRG but also in foreign countries . We plan to develop the new HENDEL system by the following steps:

- Design of the user interface;
- Coding for realization of desired functions;
- Inclusion of utilities (e.g., checking tools);
- Data output in EXFOR format.

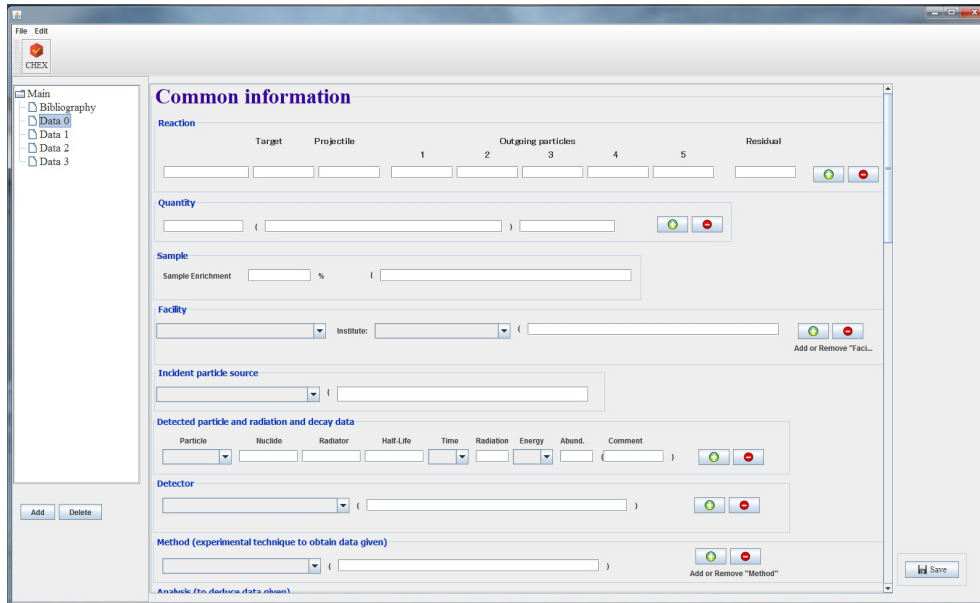


Fig. 2: Common Information section

As we know in current Hendel system dictionaries shown in long line list. In new Hendel editor system was developed "quick find" function. For example, as shown in Fig. 3 by typing "Tokyo" in text field, suggestion field show candidates related to "Tokyo".

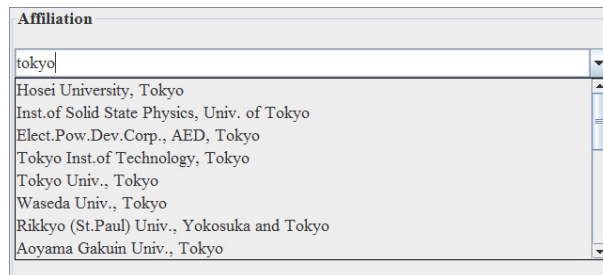


Fig. 3: Institute suggestion field

In new Hendel system was executed external CHEX checking tool as shown in Fig. 4



Fig. 4: CHEX button

Data output in EXFOR format is underpreparation.

2 Web page of Asian Nuclear Reaction Data Centres

Asian nuclear reaction data centres collaborate to develop nuclear data activity in Asia. Currently the seven data centres shown in Table 1 participate in the Asian Nuclear Reaction Data Centres and collaborate mainly for compilation and exchange of experimental data by using the common Exchange Format (EXFOR format) and NRDF format (Nuclear Reaction Data File) under the auspices of the IAEA Nuclear Data Section (NDS).

Table 1: Asian Nuclear Reaction Data Centres

Country	Centre
Japan	Japan Nuclear Reaction Data Centre (JCPRG)
Korea	Korea Atomic Energy Research Institute (KAERI)
India	Bhabha Atomic Research Centre (BARC)
China	Chinese Nuclear Data Center (CNDC)
Mongolia	Nuclear Research Center, National University of Mongolia (NRC)
Kazakhstan	Central Asian Nuclear Reaction Database (CA-NRDB)
Vietnam	Nuclear Research Institute, Vietnam Atomic Energy Institute (VINATOM)

Five centres in five countries, Japan, China, India, Korea and Kazakhstan hold annual workshop, called as Asian Nuclear Reaction Database Development Workshop [9]. The aim of these meeting is to bring together Korean, Indian, Chinese, Mongolian, Kazakhstan, Vietnamese and Japanese researchers for discussing future collaborations in Asian nuclear data activities based on recent developments in each country.



Fig. 5: Web page of Asian Nuclear Reaction Data Centre

Topics covered in this workshop:

- Asian Nuclear Data Center Activity;

- EXFOR Compilation;
- Development of the Asian Nuclear Reaction Database Network;
- Nuclear Reaction Experiments and Nuclear Reaction Evaluation;
- Computational Simulation on Nuclear reactions and Accelerator Facilities.

The 6th Asian Nuclear Reaction Database Development Workshop will be held at the Hokkaido University in Sapporo, Japan on September 15-17, 2015.

3 Report on renewal of JCPRG's web page

JCPRG's web page (<http://www.jcprg.org>) have been developed to message our activities to foreign colleagues. Our web page was renewed in the last fiscal year [10]. We adopt WordPress [11] to construct the contents. WordPress provides us a flexible and straightforward environment to maintenance, such as WYSIWYG editor on web browser, dynamic generation of web pages by PHP, extend features using plugins and useful templates. As the basic design, we use the new top visual and logo mark of JCPRG reported in [10]. Multilanguage (Japanese and English) environment is implemented by using WPML plugin [12] which gives one-to-one corresponding and management system of Japanese and English. Selection of each language pages is provided by a select box.



Fig. 6: Multilanguage selection box

A minimal contents are constructed and renewed in this fiscal year, and there are still remaining contents on old web serves. We will merge all the contents and continue renewal of web service.

4 Summary

In the current stage, the design of the user interface and inclusion of utilities (e.g., checking tools) of the new HENDEL system have been completed.

Asian Nuclear Reaction Database Development Workshop 2015 will be held on September 15-17, 2015. The series of workshops AASPP started in 2010 at Hokkaido University, Sapporo. Ever since, this workshop series has succeeded in bringing Asian nuclear data researchers together to review and discuss the status and prospects of the Asian nuclear data activities.

JCPRG's web page is renewed using WordPress with multi-languages and the renewal will be continued.

References

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