

Report on EXFOR Compilation 2015

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Abstract

In this report, we present our activities 2015 in the compilation of experimental nuclear reaction data. In fiscal year from April 2014 to March 2015, we compiled 18 entries and transmitted 8 TRANS files .

1 Introduction

Nuclear reaction data is used in various fields (nuclear physics, engineering research, medical, etc.) and can be browsed by the Internet when we connect our computers to a nuclear database. The database is constructed by a special format: EXFOR (EXchange FORmat for experimental nuclear reaction data)[1] which is designed to accommodate experimental data with their bibliographies and experimental descriptions including error analysis for proper interpretation of the stored experimental data. EXFOR is maintained by the International Atomic Energy Agency (IAEA) [2] and the International Network of Nuclear Reaction Data Centres (NRDC). The NRDC collaborates on compilation of experimental data and development of related software for compilation and dissemination. Hokkaido University Nuclear Reaction Data Centre (JCPRG) [3] is a member of NRDC, and has contributed about 10 percent of the charged-particle nuclear reaction data in the EXFOR library. JCPRG provides the compiled nuclear reaction data both in the international (EXFOR) and in the domestic (NRDF) format through an online search system. In this report, we present the activities in 2015, contributing the compilation of experimental nuclear data by JCPRG.

2 Organization

The total staff includes two JCPRG staff (Masayuki Aikawa and Shuichiro Ebata) and three researchers (Dagvadorj Ichinkhorloo, Sarsembayeva Aiganyam and Zhou Bo) carry out compilation work.

3 Compilation Activities

In 2015, we compiled 18 new papers reporting on nuclear reaction experiments performed in Japan. Every week, we assign each compiler one paper and check their compilation to finalize by all the members in the compilation meeting. For higher quality of the compilation contents, we contact the authors of a particular paper to request them to provide their original experimental data plotted in each figure in the paper to ensure the accuracy of the data compiled in the NRDF and the EXFOR library. If the original data could not be directly obtained from the authors, we digitize the plotted curves on the figures in the paper with the digitization software GSYS [4] .

4 Journal Survey

The journal survey is carried out on the published papers by JCPRG in parallel with by IAEA-NDS. Sometimes we find some published papers that are not in the scope of EXFOR but are as of NRDF. The lists of the surveyed journals are as follows:

- Physical Review C (PRC)
- Physical Review Letters (PRL)
- Nuclear Physics A (NP/A)
- Physics Letters B (PL/B)
- The European Physical Journal A (EPJ/A)
- Journal of Nuclear Science and Technology (NST)
- Journal of Physics G (JP/G)
- Nuclear Instruments and Methods in Physics Research A (NIM/A)
- Nuclear Instruments and Methods in Physics Research B (NIM/B)
- Progress of Theoretical and Experimental Physics (PTEP)
- Journal of Physical Society of Japan (JPJ)
- Nuclear Science and Engineering (NSE)

5 Transmitted File in 2015

In 2015, 8 TRANS files: E095, E096, E097, E098, E099, E100, K015 and R028 are submitted to the IAEA. Table 1 represents the TRANS files that include the new as well as modified entries with their accession number. These 8 TRANS files, contain 18 EXFOR new entries and 37 modified entries. There are frequent transmissions of the new entries, in which 11 registered entries contain the RIBF data.

6 Compilation of Nuclear Reaction Data at RIBF

In the JCPRG, 11 papers were produced by using the RIBF data and those data satisfy the compilation scope of the EXFOR library. We have established an effective procedure to compile all of the new publications during the last five-year collaboration with the RIKEN Nishina Center. Therefore, most of the recent experimental nuclear reaction data from the RIBF have successfully been compiled in the EXFOR database.

7 Summary

In this article, we reported recent compilation works in the JCPRG. We summarized the status of the EXFOR file transmission: the 8 TRANS files, named as E095, E096, E097, E098, E099, E100, K015 and R028 were transmitted in fiscal year 2015.

Table 1: The list of transmitted new and revised entries in 2015

TRANS	Prelim	Final	Entry New	Entry Rev
E095	2015.04.29	2015.04.29		E1905 E2172 E2404 E2443
E096	2015.03.05	2015.04.29	E2465 E2466 E2469 E2473	E2461 E2463
E097	2015.05.21	2015.06.26	E2464 E2468 E2471 E2474 E2479	E2129
E098	2015.05.29	2015.09.26	E2395 E2396 E2397 E2476	
E099	2015.06.24	2015.09.26	E2480 E2481 E2482 E2454 E2456 E2457	E1737
E100	2015.11.17	2016.02.07		E2203 E2204 E2205 E2206 E2207 E2208 E2209 E2210 E2211 E2222 E2243 E2245 E2246 E2248 E2249 E2250 E2251 E2252 E2255 E2257 E2259 E2260 E2263 E2272 E2279 E2300 E2310
K015	2015.05.20	2015.06.25	K2472 K2478 E2462 E2463 E2467	K2385
R028	2015.03.03	2015.04.29		R0046
Total			18	37

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References

- [1] <http://www.jcprg.org/exfor/>
- [2] <http://www.nds.iaea.org/>
- [3] <http://www.jcprg.org/>
- [4] <http://www.jcprg.org/gsys/>