

EXFOR compilation of data from RIBF in 2021

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A nuclear database is the compilation of measured reaction data and plays an essential role in providing the best estimate for the safety and effective use of nuclear reactions for various purposes. Thus, nuclear reaction databases support the most fundamental aspect of nuclear sciences and technologies, such as nuclear physics, astrophysics, nuclear reactor development, environmental monitoring, dosimetry, radioisotope production, and radiotherapy.

One of the largest and globally used public nuclear reaction databases is the EXchange FORmat (EXFOR) library for experimental nuclear reaction data.¹⁾ The EXFOR library is a universal common repository for nuclear reactions. It was established in 1967. The International Network of Nuclear Reaction Data Centres (NRDC) maintains the EXFOR library under the supervision of the International Atomic Energy Agency (IAEA).²⁾ The EXFOR library covers a wide range of nuclear reactions, such as neutron-, charged-particle-, and photon-induced reactions.

The Hokkaido University Nuclear Reaction Data Centre (JCPRG),³⁾ founded in 1973, is responsible for the compilation of the charged-particle- and photon-induced nuclear reaction experiments conducted in Japanese accelerator facilities.⁴⁾ Our contributions to the EXFOR database constitutes approximately 10% of the total amount of the data records. The database covers papers published in peer-reviewed journals, and a unique EXFOR entry number is assigned to each paper. Each record includes the information of the bibliography, experimental setup, reaction code, measured numerical data, and uncertainties for the reaction. For the compilation of each record, we usually request the corresponding authors to provide us the original data for the numerical accuracy of the database.

Since 2010, JCPRG and RIKEN Nishina Center have been cooperating for the compilation of data obtained by RIBF, which aims to enforce the availability of RIBF data. In 2021, we compiled 33 new articles published by Japanese facilities. These include 16 articles from RIKEN, 4 registered articles, and 12 articles still in the process of registration. The compiled data are accessible by entry numbers, which are listed in Table 1.

We acknowledge that collaboration with RIKEN is helpful for us to establish an effective procedure for the compilations. Most RIKEN data are very quickly compiled after publication, and end-users can easily

Table 1. Entry numbers with references compiled from RIBF data in 2021.

| | | Entries | | |
|-------|----------------------|----------------------|----------------------|--|
| New | E2670 ⁵⁾ | E2671 ⁶⁾ | E2672 ⁷⁾ | |
| | E2676 ⁸⁾ | E2682 ⁹⁾ | E2685 ¹⁰⁾ | |
| | E2687 ¹¹⁾ | E2689 ¹²⁾ | E2693 ¹³⁾ | |
| | E2697 ¹⁴⁾ | E2698 ¹⁵⁾ | E2703 ¹⁶⁾ | |
| | E2704 ¹⁷⁾ | E2705 ¹⁸⁾ | E2713 ¹⁹⁾ | |
| | E2715 ²⁰⁾ | | | |
| Total | | 16 | | |

access them. We also thank all authors of articles from RIKEN, who provided us the numerical data. This greatly helps increase the accuracy and quality of the database.

References

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