

Overview and future of JENDL-5/JENDL-5 の概要と 今後

The latest Japanese Evaluated Nuclear Data Library, JENDL-5 [1], was released in 2021. JENDL-5 was developed with the aim of providing nuclear data to a wide range of application fields. JENDL-5 includes nuclear reaction data not only of neutron but also of proton, deuteron, alpha-particle, and photon. JENDL-5 also provides the data of thermal neutron scattering, fission product yields, and nuclear decay. These data were stored in separate sub-libraries; JENDL-5 consists of 11 sub-libraries. Regarding the neutron reaction data, the energy region was extended up to 200 MeV for 73% of storing 795 target nuclei. The number of nuclei increased almost double of that of the previous version JENDL-4.0, covering most of the nuclei with the half-lives longer than 1 day. The revision of the data covered a wide range of nuclei from light to heavy ones reflecting the latest experimental data. The charged particle and photon induced reaction data were based on the data of the JENDL special purpose files released so far with revisions. JENDL-5 is expected to be applicable for large parts of computer simulations for radiations.

For future, the covariance data in JENDL-5, whose updates and coverage are limited, will increase. Those data would be used to estimate reliability and uncertainties in the computer simulations originated from the nuclear data. The number of target nuclei of charged particle reaction data will also increase to satisfy future needs of wide area.

References

[1] O. Iwamoto, N. Iwamoto, S. Kunieda et al., "Japanese evaluated nuclear data library version 5: JENDL-5", J. Nucl. Sci. Technol. 60(1), (2023), pp. 1-60.

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