

## Program for searching keywords (mainb)

The process of extracting the information about the origin of the evaluations has been partly automatized. The utility code written in C++ goes through all the selected nuclear data files. It searches for the text lines that describe the source of the data and the modifications applied.

Some examples of such lines are:

**Original data taken from: (library)**

**The data were taken from (library)**

**modified parts for JENDL-(3.2, 3.3, 4.0)**

**JENDL-3.3 data were automatically transformed to JENDL-4.0.**

**JENDL-3.2 data were automatically transformed to JENDL-3.3. Interpolation of spectra: 22 (unit base interpolation) (3,251) deleted, T-matrix of (4,2) deleted, and others.**

**Resonance parameters in JENDL-3.3 were revised for JENDL-4.**

They are defined at the beginning of the code as char objects. The code then opens one file at the time and reads through each line. If it finds a line that matches the previously defined ones, it writes the number of the file and all lines that have been found in the text to an Excel sheet. If it does not find any known line, it writes only the consecutive number of the text file that has been read and a »/« sign. Although the process of data extraction is faster using the code, all the files needed to be checked manually one more time, because the program could not always find the indicated lines. This happened in case of unexpected differences in syntax, for example when capital letters were used or when there was a different spacing between the words and the edge of the file or other variations of the imposed lines in the code.

The code is accessible below in [mainb](#). For some shortcomings of this code look description below.

## Encountered issues for mainb and suggestions

We would like to suggest to the evaluators of the nuclear data libraries to unify the annotations of the data sources for the most recent edition of the library and their modifications. From the available nuclear data libraries JEFF-3.2 seems to have the most user-friendly notation. On the top of their headers the name of the current edition is written and in the box below the origin of the data along with possible modifications applied is given. The next box has the name of the previous library written on the top like the first, the source of the data and potential modifications within the box and so on until the oldest version of a previous library is reached. In that case »New evaluation« is written in the box. In JENDL-4.0u2 and ENDF/B-VII.1 is often more difficult or unclear to understand which was the source of the data for the current edition or if there has been made a new evaluation. In the files with the heading »Modified part for (library name)« is unclear, if the modification has been performed in the mentioned library or in the previous version of that library for the mentioned version. It is also unclear, where this heading is used and no data source or »New evaluation« written, if the file has been produced using that previous library with the only difference that the mentioned modifications were applied, or if there has been made a new evaluation and only those modified parts of the previous version have been included in the current one. Sometimes it is unclear how the file has been produced. This is the case when a new evaluation has been made but also small parts from other sources were added to the file. Those sources are often indistinctly mentioned and easy to overlook. There are also cases when most of the data were taken from a previous version of the library, but a small amount of data have been added from a new evaluation. An example for

this is when the new version contains data for an energy region that was not in the previous one but this supplement is not clearly characterized.

The unification would not only make the files easier to understand, but also it would help the developed software to find data it is searching for. It would only have to search for the same pattern in all the libraries to find where the data of the source library are written and which modifications have been made. Now the program needs to be modified every time the library changes and still it is unable to find all the required data, so a manual check must be done in addition. This is a problem, because the final aim is to completely automatize the check for data sources in the future versions of the libraries, store them in an Excel sheet and update the website where they are accessible. With differences between the files and ambiguous notation the software will not always work properly.