

## Recommendations for Submission of Time-of-Flight Spectra

Recommendations for experimentalists (excerpt from Ref. [1])

- *“It is strongly recommended that the data are reported in measured time-of-flight in addition to the required derived neutron energy, and as a measured reaction yield or transmission instead of cross section. The data may also include the region around the gamma-flash, which is valuable experimental information for time calibration purposes and background determination. Since equivalent neutron energy for a time-of-flight smaller than the one corresponding to the gamma-flash is unphysical and since a numerical value for the energy is mandatory, one could adopt a negative value like -1.0 as an indication.”*
- *“If covariances due to data reduction are significant, reporting of additional uncertainty columns allows reconstructing the full covariance matrix, preferably as implemented in AGS.” [2]*
- *“A minimum requirement is to distinguish between the total uncertainty and the uncorrelated uncertainty component and report them separately.”*
- *“Add the derived neutron energies for EXFOR for use in data set comparisons. Specify how the energy was calculated from the TOF.”*
- *“Use the 18 available columns for data reporting to document additional quantities of interest like the used neutron flux distribution and correction factors depending on energy.”*
- *“Report the applicable response function to be used with the data. Separate the components of the RF. Mention the experiment-specific components as the contribution of the pulsed charged particle beam, the sample/detector contribution, the binning contribution, in the EXFOR entry for the experiment. Use a reference to the repository for the target/moderator component if it exists, or submit this component for inclusion.”*

As a guide for these recommendations, templates for reporting time-of-flight data have been prepared. Use the template as a guideline for the information to be supplied, and leave fields empty when not appropriate. An example follows, but additional templates/examples are available on the IAEA-NDS website [3]. The first section (A. EXPERIMENT DESCRIPTION) essentially contains information that should be readily available in the publication(s). The second section (B. DATA FORMAT) contains the actual data:

- The maximum total number of columns is 18;
- The data in the 1<sup>st</sup> (Energy), 4<sup>th</sup> (Experimental observable) and 6<sup>th</sup> (Uncorrelated uncertainty) columns are mandatory;
- The TOF data in the 2<sup>nd</sup> and 3<sup>rd</sup> columns are strongly recommended;
- The data for the ratio to the reference cross section are strongly recommended, especially for measurement in the fast neutron region;
- The data in the 5<sup>th</sup>, 7<sup>th</sup> to 18<sup>th</sup> columns may depend on authors and are not mandatory;
- The numerical data must be FORTRAN-readable using a floating-point format.

- [1] F. Gunsing, P. Schillebeeckx, V. Semkova, “EXFOR Data in Resonance Region and Spectrometer's Response Function”, Summary Report of the Consultants' Meeting, 8-10 October 2013, Vienna, Austria, Report INDC(NDS)-0647, December 2013.
- [2] B. Becker, C. Bastian, J. Heyse, S. Kopecky, P. Schillebeeckx, “AGS – Analysis of Geel Spectra – Users' Manual”, Report NEA/DB/DOC(2014)4 (<http://oe.cd/AGS>), September 2014.
- [3] [www-nds.iaea.org/index-meeting-crp/CM-RF-2013/](http://www-nds.iaea.org/index-meeting-crp/CM-RF-2013/)