

Germany

Several German research institutions are active in the fields of fission and fusion reactor technology, accelerator facilities including spallation and material irradiation neutron sources, medical physics and astrophysics, as reported in the working paper INDC/P(21)-06. The related activities include nuclear data evaluations with a focus on the needs for fusion technology and accelerator applications (KIT), and, in the experimental field, measurements of neutron cross-section data and fundamental nuclear properties using radioactive ion beams (HZDR, Dresden-Rossendorf; FZJ, Jülich; Goethe University Frankfurt; PTB, Braunschweig; Technical University Darmstadt, Technical University Dresden, Johannes Gutenberg University, Mainz). Education and Training activities of young scientists in the nuclear data field are addressed in the EURATOM project ARIEL which began in September 2019.

- Fission technology

Germany is participating in the JEFF project of the OECD where most data needs for fission reactor applications are addressed. There are no specific requests to the NDS at this time. It has to be pointed out, however, that Germany is active in the decommissioning of nuclear facilities. Decay heat, nuclide vectors and source terms of SNF in interim storage are relevant quantities, see e.g. JEFF stakeholders meeting, June 2019, OECD NEA, Paris. The NDS efforts in this field (e.g. data development projects) are welcome.

- Fusion technology

Germany is participating in the European programme for the development and experimental validation of fusion nuclear data, which is conducted within the EUROfusion programme. There is also a close cooperation with the JEFF project, to which nuclear data evaluations are provided, both for the general purpose neutron data library as well as specific sub-libraries such as the JEFF-3.3 radiation damage library.

Germany has actively participated in the FENDL-3 project at the IAEA/NDS, which has highest importance to fusion including ITER and the IFMIF/DONES neutron source which is considered of high priority in the European fusion programme. In addition to the regular revisions and corrections applied to the neutron data library, it is recommended to further improve the sub-libraries on neutron, proton and deuteron-induced activation reaction data. Similarly, efforts to define and update reference decay data libraries are suggested. The required strong V&V programme should be further extended under the guidance of IAEA/NDS and synergies with other similar nuclear data and neutronics tools V&V activities, e.g. at ITER, OECD/NEA, are to be pursued.

- Fundamental nuclear properties

The ongoing RIPL activities and improvements in nuclear reaction models (codes TALYS, EMPIRE, GEF, etc.) that are of general relevance for nuclear applications in science and technology are welcome. The importance of reliable stopping power databases is recognized. In the short-term future, the knowledge of double-differential

cross sections for light charged particles will be essential in assessing the risk of secondary tumors in particle radiation therapy.