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FENDL3.2c: V&V and impact over ITER analysis

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The contribution provides a comprehensive overview of the FENDL3.2c nuclear data library, its verification and validation (V&V) process, and its impact on ITER analysis.

FENDL3.2c is the most up-to-date nuclear data library recommended by the IAEA for ITER applications. It includes transport data and activation data from TENDL-2017. The V&V process for FENDL3.2c is extensive, involving computational and experimental benchmarks. The library has resolved issues in energy/angle KERMA/DPA cross-sections and has been confirmed through benchmarks. The JADE V&V tool, driven by F4E and UKAEA, plays a significant role in the V&V process.

FENDL3.2c has been shown to perform better overall compared to previous versions and other libraries. The library has been tested in various experimental setups, showing improved agreement with experimental data for materials like Ni, Cu, Fe, and W. Differences in results between FENDL3.2c and other libraries are noted, particularly in photon flux and SDDR (Shutdown Dose Rate) calculations.

FENDL3.2c offers better overall performance and coverage of pathways and elements compared to previous versions. The library has been approved for use in ITER, although formal confirmation from the IAEA is pending. There is a need for more SDDR experiments and further V&V coordination for future releases.

It is also recommended the need for a new activation library for FENDL, focusing on main isotopes for neutron transport and the provision of HDF5 nuclear data for OpenMC calculations.

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