

Application of the TUD-W Benchmark for Nuclear Data and code Validation

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The presentation focuses on the validation study of tungsten nuclear data using the TUD-W SINBAD benchmark. The study involves the use of two different transport codes, MCNP 6.2 and OpenMC 0.15.0, to compare spectral neutron and photon flux at various depths from a neutron source emitting almost isotropic neutrons around 14 MeV. The conversion of the benchmark model from MCNP to OpenMC is discussed, including the translation of geometry and materials, and the definition of tallies according to benchmark documentation. The analysis of neutron and photon spectra results is presented, highlighting the agreement between experimental data and simulations, as well as the discrepancies observed in high-energy photons. The investigation of these discrepancies and the role of impurities in DENSIMET are also covered. The presentation concludes with key outcomes and possible future work, emphasizing the validation of nuclear data, the conversion of the experimental benchmark model to OpenMC format, and the need for further studies to assess impurity levels and understand the importance of different reaction channels.

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