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Neutron Displacement Cross-Sections for Materials from Be to U Calculated Using the Arc-dpa Concept

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The recently proposed athermal recombination-corrected (arc) dpa model enables, as compared to the standard NRT model, an estimation of the actual damage production in irradiated materials taking into account lattice defects surviving the thermal annealing [1]. On this basis, advanced displacement damage cross-sections were prepared for a number of materials ranging from Be to U. The parameters included in the arc-dpa formalism were taken from Ref.[1], as far as available, and else estimated on the basis of a semi-empirical systematic approach that will be described in the paper. A modified version of the NJOY-2016 processing code was applied to generate improved displacement cross-sections with the current versions of the nuclear data libraries JEFF, ENDF/B, JENDL, and TENDL. The produced data files are available in ENDF/-6 and ACE format.

References
1. K. Nordlund, A.E. Sand, F. Granberg, S.J. Zinkle, et al, Primary Radiation Damage in Materials, NEA/NSC/DOC(2015)9, 2015.