

Projection data generation in neutron tomography by means of Monaco/Mavric code

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Abstract

In the present study, SCALE6.1 package is used for the analysis of experimental neutron transmission data and for the determination of neutron attenuation characteristics of various neutron absorbing materials. The neutron beam hardening is highlighted as well as its influence on shielding calculation and tomographic image reconstruction accuracy. Reconstruction is performed from projection data generated by the Monaco/Mavric code as it is demonstrated in this work. Experimental thermal neutrons transmission data of Al, SS304 and 304B7 materials are used for comparison purpose and to proof the used codes capacity in neutron tomography simulation and image correction. Good agreement between experimental and calculated values is found. Indeed, this code can provide accurate data exactly comparable to the experimental values.

Keywords: neutron transmission, beam hardening, SCALE 6.1, Monaco/Mavric.