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Simulation of Cold Neutron Experiments using GEANT4[1] EMIL FRLEZ, JOSHUA HALL, MELINDA ROOT, STEFAN BAESSLER, DINKO POCANIC, University of Virginia — We review the available GEANT4 physics processes for the cold neutrons in the energy range 1–100 meV. We consider the cases of the neutron beam interacting with (i) para- and ortho- polarized liquid hydrogen, (ii) Aluminum, and (iii) carbon tetrachloride (CCl_4) targets. Scattering, thermal and absorption cross sections used by GEANT4 and MCNP6 libraries are compared with the National Nuclear Data Center (NNDC) compilation. NPDGamma detector simulation is presented as an example of the implementation of the resulting GEANT4 code.

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