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PICO40L neutron background simulation (G)*

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The PICO40L bubble chamber is a threshold detector filled with C_3F_8 located at SNOLAB and design to perform direct dark matter searches. During the construction of this detector, a very careful screening of the materials allowed the selection of materials containing low amount of neutron emitting isotopes. By using GEANT4, GDML and McCAD, a simulation of the expected neutron background events in the PICO40L detector was obtained. This approach has reduced the time required to build geometries by translating STEP files directly in GDML by using McCAD. Going forward in the future, it is critical for the PICO collaboration to perform the same work in order to have a detailed neutron background budget before embarking into the construction of the next detector, PICO 500.

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