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EDELWEISS-II Muon-Veto Simulations with GEANT4

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Summary

Direct Dark Matter searches such as EDELWEISS make use of the particle identification via the simultaneous measurement of ionisation and heat signals. Thus, electron/gamma background can be separated from potential WIMP scattered off on Ge nuclei. Neutron scattering with the same ionisation/heat ratio as WIMP scattering is a severe background. Although the Modane underground lab is shielded by 4800mwe, muon induced neutrons through DIS form a background limiting the sensitivity for WIMPs. To identify and suppress this background passively and actively with a muon veto system, detailed GEANT4 simulations have been performed. Results based on the full 3-dim geometry of the underground lab and the EDELWEISS setup will be presented and the suppression of muon-induced neutron events in the Ge detectors using the muon veto system will be discussed.

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Session Classification: Parallel Session 1 (a) - Low Background Experiments

Track Classification: Geant4 Users Conference : Low background