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Muon-Induced Neutrons Measured with ZEPLIN-II Veto

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Summary

The muon-induced neutron background in the Boulby Underground Laboratory (North Yorkshire) was measured using the ZEPLIN-II experiment veto system. A delayed coincidence method was used for this purpose, with the muon producing the first pulse in an event, and gamma rays from captures (in hydrogen or other elements) the second (delayed) pulse. Detailed GEANT4 models of the Boulby underground laboratory and the complete ZEPLIN-II detector were used to simulate the complete cascades created by muons generated a few metres into the rock. We present here details of the physics list used for this simulation, along with a comparison with experimental results.

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

Track Classification: Geant4 Users Conference : Low background