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Neutron production by cosmic ray muons at the Sudbury Neutrino Observatory

Neutrons produced by cosmic ray muon interactions can be a significant background in sensitive underground experiments. The Sudbury Neutrino Observatory (SNO) is an efficient and well-calibrated neutron detector capable of measuring the rate and characteristics of neutrons produced by muon interactions in its heavy water target, light water shielding and surrounding rock. The location of the detector, beneath a rock overburden of 2092 m (5890 +/- 94 m water equivalent), means that the muon flux is particularly low in rate and high in energy. SNO's measurements, with their unique target materials and high energy muons, are important for benchmarking Monte Carlo simulations. These simulations will be used to predict the muon-induced neutron fluxes in future low background experiments.

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