MONTE CARLO SIMULATIONS USING SOME NUCLEAR INTERACTION MODELS ON SOLAR NEUTRON PROPAGATION IN THE ATMOSPHERE

KATAYOSE Yusaku (1) and SHIBATA Makio (1)
(1) Department of Physics, Faculty of Engineering, Yokohama National University. 79-5 Tokiwadai, Hodogaya-ku, Yokohama, 240-8501, Japan.
katayose@ynu.ac.jp

We constructed a new type of solar neutron telescope at Yangbajing in 1998. Monte Carlo simulations on the propagation of solar neutron through the Earth's atmosphere has been done in order to evaluate performance of the detector for solar neutrons. Three kinds of the nuclear cascade models were used in Monte Carlo calculations. One is the intranuclear-cascade-evaporation-model and the others are parametrization models "GHEISHA" and Monte Carlo code developed by STE Laboratory in Nagoya university. The attenuation of neutrons in the atmosphere and energy spectra of neutrons at the observational site ware estimated using these simulation code. We show the differences obtained from these three simulation codes on the estimation of the detection efficiency of solar neutrons.