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The specific yield function of EAS arrays in detecting GLE

Abstract content

As it was showed earlier the EAS array Carpet at the Baksan neutrino observatory (N43.3 E42.7) owing to the large area (200 m2) has appeared more effective in detecting the solar proton effect than a neutron monitor at geomagnetic cutoff ˜ 6 GV. However, for use of this instrument in deriving the solar proton parameters it is necessary to know exact specific yield function (SYF) at rather low rigidities (6-10 GV). Using GEANT4/PLANETOCOSMICS we simulated solar proton transport through the Earth's atmosphere and estimated angular and energy distributions of secondaries (protons, electrons, positrons, muons, photons and neutrons) at the location of instrument. As the initial data the spectrum of solar protons derived by modeling from the GLEs of 29.09.1989 and 20.01.2005 was used. By fitting the observed responses of the instrument with calculations the corrected values of SYF were obtained.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

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