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The underground neutron events at Tien-Shan

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Abstract content

By the neutron monitor placed in the underground room of Tien-Shan mountain station is measured the spectrum of neutron multiplicities of the registered events. The spectrum has an approximately power shape with the differential slope index 3.7, its absolute intensity being 350-450 times lower than that of the events in the on-ground NM64 type neutron supermonitor. According to the lateral distribution of the neutrons, the underground events are produced by the single particles (or narrow particle groups), and the temporal distribution of neutron signals has an exponential shape with lifetime parameter 400-430 mcs.

The slope index of the neutron multiplicities coincides with the index of the energy spectrum of bremsstrahlung gamma-quanta produced inside the monitor's lead absorber by the energetic muons (having the energies above 1 TeV), but the observed intensity of neutron events is two orders of magnitude higher than the expected intensity of muon-induced events.

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Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 4 (HE part 1), pages 3-6

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