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Variations of low energy gamma-rays in the atmosphere: seasonal and occurrence

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Low energy gamma-rays background in the polar atmosphere (Apatity (67° N) and Barenzburg (78° N)) is studied. Continuous measurements of gamma-ray differential spectrum in Apatity and integral one in Barenzburg are conducted since 2009. There is a seasonal variation of gamma-ray flux falling down from upper hemisphere. The same variations in thermal neutron and low energy charged particle fluxes are observed. Variations, which connected with atmospheric precipitations are also observed. They occur around year and go after rain, snowfall or fog. Energy range of these variation is up to ~3 MeV. We suggest the variations to be caused by interaction between secondary cosmic rays and clouds in the low atmosphere.

Collaboration

– not specified –

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861

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