

Extraction of signals from EAS neutrons detected by the URAN setup

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On the basis of the Experimental Complex NEVOD, the URAN setup has been deployed which serves to detect the electron-neutron component of extensive air showers (EAS). This setup includes 72 scintillation detectors and covers an area of $\sim 10^3 \text{ m}^2$. Registration of the neutron component by detectors is possible due to the ZnS(Ag) + B₂O₃ scintillator, where the content of the ¹⁰B isotope is 18%. When a neutron is captured by the boron isotope (¹⁰B), two charged particles are born, which cause luminescence flashes in ZnS(Ag) scintillator recorded by a photomultiplier.

One of the important problems is the separation of signals caused by neutron capture in a scintillator from noise pulses. The paper presents a new algorithm for selecting signals caused by EAS neutrons capture. The algorithm makes it possible to reduce the contribution of noise pulses and increase the efficiency of neutron detection by the URAN setup.

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