

**INVESTIGATION OF NUCLEAR COMPOSITION OF  
THE INITIAL COSMIC RAYS IN THE REGION  
OF ENERGY HIGHER THAN  $10^{15} - 10^{16}$  EV**

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Abstract

The results of the investigation of nuclear composition of initial cosmic rays (ICR), in the region of energy  $10^{15} - 10^{16}$  eV are examined by the method of the study of fluctuation in the number of particles in EAS on the basis of the registration of the stream of Cherenkovs fluctuation.

The character of the investigated fluctuations is susceptible to the model of development of EAS and to the composition of initial cosmic radiation. In the time of fixation  $E_0$  and by good exactness in the definition of  $E_0$  and Ne one can ask about the definition according to these data of nuclear composition of ICR. The showers in which the meaning of the stream of Cherenkovs radiation at 100 m distance from the axis of the shower ( $Q_{100}$ ) lay within the limits of 20 - 40 *protons*/( $cm^2$  eV) were chosen. The average energy of these showers makes up  $3 \cdot 10^{15}$  eV.

The experimental data about the fluctuations of the number of particles in the showers with fixed  $E_0$  is compared with the results of calculations by the model of quark gluon strings, carried out for mixed structure ICR (40 percent of photons, by 15 percent of nucleus like A=4, A=15, A=31, A=56).

The deflection VD  $\sqrt{D(lgNe)} = 0,31 \pm 0,01$  (for cleanly proton structure) received by this way  $\sqrt{D(lgNe)} = 0,34 \pm 0,01$  .

It is shown that on the basis of comparison of calculated and experimental data the best consent of the calculation and experiment is got by mixed structure of ICR.