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THE INVESTIGATION CHARACTERISTICS OF GAMMA-FAMILY FORMED IN INTERACTIONS OF PROTONS AND ALPHA- PARTICLES OF PRIMARY COSMIC RAYS WITH NUCLEI OF AIR ATOMS

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Based on the experimental data “Pamir” in $E_0 = 5 \cdot 10^{15}-10^{17}$ eV were studied the spatial characteristics of the initial γ -families. As the spatial characteristics of the initial γ -families used the value R1E - length (mm) of the initial γ -quantum from the energy weighted center to the first particle with the maximum energy Emax (TeV). The value R1E is proportional to the transverse momentum of the leading particle at a given effective height Hef ~ 1 km of formed families ($PL = E_{max} \cdot R1E / H_{ef}$).

In the paper was considered $N = 813$ of initial gamma-families, which were registered in the X-ray emulsion chambers (REC) of the experiment “Pamir”, with a total energy $\Sigma E_{\gamma} = 100-2000$ TeV and the number $n_{in} \geq 4$ with $E_{in} \geq 4$ TeV. The family includes the initial γ - quants, located at a distance $R_0 \leq 15$ sm from the axis of the family. The experimental results are compared with data MS0 - model. In the experiment, are observed the events with large leading particles in relation to the model. According to an experimental data, in the distribution of spatial characteristics R1E is observed an excess $\Delta p + \alpha = 0.12 \pm 0.2$ of experimental events with large values $R1E > 15$ mm, compared with MS0 - model. Thus, the spatial characteristics R1E of the initial γ - families was sensitive to the mechanism of the strong interaction.

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