

ZENITH-ANGLE DEPENDANCE OF $r_{s,600}$ AND $r_{m,600}$ IN THE GIANT AIR SHOWERS

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The joint analysis results of Yakutsk and AGASA array data on the zenith-angle dependence of the parameters $\rho_{s,600}(\theta)$ and $\rho_{\mu,600}(\theta)$ – densities of the charged particles and muons (threshold $E_{\mu} \approx 1 \cdot \sec\theta$ GeV) at a distance 600 m of the core of giant air showers (GAS) with the energy $E_0 \geq 10^{19}$ eV are given. These results are compared with calculations by the QGSJET model for the primary protons. It is shown that at $E_0 \leq 2 \times 10^{18}$ eV this model agrees well with data of both arrays and contradicts to GAS data. The experiments testify that at $E_0 \geq (3-5) \times 10^{18}$ eV the lateral structure of showers changes. This is probably related to some new processes of their development. Neglect of this peculiarity in development of GAS leads to the essentially overstated (by 1.5–2.5 times) estimations of the primary particle energy.