Cerenkov Radiation of Cosmic Ray Extensive Air Showers.
Part 2. Cosmic Ray Energy Spectrum in the Region of 10^{15} ¸ 10^{17} eV

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On the base of the central part of the Yakutsk complex Extensive Air Shower (EAS) array tthe small Cerenkov installation began to register the showers with the energy $10^{15} \div 10^{17}$ eV synchronously with the large array since February, 1995. The selection of showers is carried out by the Cerenkov "master", i.e. by the coincidence of responses of three Cerenkov detectors located in the tops of equilateral triangles with the sides of 50, 100 and 250 m.
By parameters Q(100) – the EAS Cerenkov light flux density at a distance of 100 m from the shower core and N_s – the total particle number at the observation level the differential cosmic ray spectrum in the energy interval of $10^{15} \div 10^{17}$ eV has been obtained. The differential cosmic ray flux measured by the parameter Q(100) has the knee at ~ $(6,5 \pm 1,0)\cdot 10^5$ photon/m^2 and by the parameter Ns – at ~ $(3,3 \pm 0,8)\cdot 10^5$ particles. If the differential spectra are approximated by a simple power low, then their indices below and above the knee by the two parameters are $\gamma_1 = -(2,63 \pm 0,02)$, $\gamma_2 = -(3,00 \pm 0,02)$ and $\alpha_1 = -(2,42 \pm 0,02)$, $\alpha_2 = -(2,80 \pm 0,02)$, respectively. The coupling coefficient between the parameters N_s and E_0 has been obtained. The comparison of the experimental ratio E_0 / N_s with the calculations according to the hadron interaction QGSJET model shows that in the cosmic ray energy spectrum the portion of proton before the knee is greater and after the knee the mass composition of the primary particles becomes heavier.