



Contribution ID : 2

Type : **Oral**

AVERAGE MASS COMPOSITION OF PRIMARY COSMIC RAYS IN THE SUPERHIGH ENERGY REGION BY THE YAKUTSK COMPLEX EAS ARRAY DATA

Friday, 6 July 2007 11:10 (0:12)

Abstract content

The characteristics relating to lateral and longitudinal development of EAS in the energy region of 1015 - 1019 eV have been analyzed in the framework of the QGSJET model and of mass composition of primary cosmic rays. It is found that at $E_0 \geq 5 \times 10^{15}$ eV the mean mass composition of primary cosmic rays begins to vary as indicated by a rise of with increasing energy. The maximum value of is observed at $E_0 \sim (5 - 50) \times 10^{16}$ eV. It is confirmed by data of many compact EAS arrays and does not contradict to an anomalous diffusion model of cosmic ray propagation in our galaxy (Lagutin et al., 2001). In the superhigh energy region ($\geq 10^{18}$ eV) the value begins to decrease, i.e. the mass composition becomes lighter and consists from proton and nuclei of He and C. It does not contradict to our earlier estimations for the mass composition and points to a growing role of the metagalactic component of cosmic rays in the superhigh energy region (Berezinsky et al., 2004).

If this paper is presented for a collaboration, please specify the collaboration

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 4 (HE part 1), pages 167-170

Primary author(s) : Dr. KNURENKO, Stanislav (Yu. G. Shafer Institute of Cosmophysical Research and Aeronomy)

Co-author(s) : Dr. SABOUROV, Artem (Yu. G. Shafer Institute of Cosmophysical Research and Aeronomy); Dr. SLEPTSOV, Ivan (Yu. G. Shafer Institute of Cosmophysical Research and Aeronomy); Dr. IVANOV, Anatoly (Yu. G. Shafer Institute of Cosmophysical Research and Aeronomy)

Presenter(s) : Dr. KNURENKO, Stanislav (Yu. G. Shafer Institute of Cosmophysical Research and Aeronomy)

Session Classification : HE 1.3.A

Track Classification : HE.1.3.A