Abstract number: S4-421
4. High energy cosmic rays (HE-CR I)

Event-by-event study of CR composition with reflected Cherenkov light

Dzhatdoev, Timur[1], Antonov, RemA.[1], Aulova, TatianaV.[1], Bonvech, ElenaA.[1], Chernov, DmitryV.[1], Galkin, VladimirI.[2,1], Podgrudkov, DmitryA.[2,1] and Roganova, TatianaM.[1]
[1]Skobeltsyn Institute of Nuclear Physics Lomonosov Moscow State University
[2]Faculty of Physics M.V. Lomonosov Moscow State University

We present the first reasonably well systematically controlled results on cosmic ray (CR) composition obtained with the reflected Cherenkov light method. The fraction of CR light component above 30 PeV was reconstructed using the data of the SPHERE experiment which observes Vavilov-Cherenkov radiation of extensive air showers (EAS), reflected from a snow surface of Lake Baikal. We discuss the main sources of systematic uncertainty of the CR light component fraction, a possibility to enhance sensitivity to the primary nuclei mass number by means of multidimensional methods, as well as the ways to lower the energy threshold of CR composition study.