

Kinematic description of alignment in the Pamir experiment

Wednesday, 28 June 2023 17:45 (15 minutes)

The report is devoted to the geometric and kinematic description of the azimuthal correlation of photon and hadron families, which was observed by the Pamir collaboration in emulsion experiments with cosmic rays. This effect is called «alignment», because quantitatively this feature demonstrates a deviation from the straight line of points on the emulsion film plane used for particles detection. In our approach, it is shown that a high degree of alignment is a consequence of the selection procedure for the most energetic clusters, i.e. the existence of a lower energy threshold of the gamma component in the interaction products of the target nuclei and cosmic radiation together with the law of conservation of their transverse momentum. The obtained results correct describe the maximum degree of alignment for the three points and are also close to the measurements in the Pamir experiment for the case of four and five clusters, so the proposed method looks very promising for interpretation the alignment phenomenon.

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Session Classification: Cosmic rays of very high energies (> 1 PeV)

Track Classification: Cosmic rays of very high energies (> 1 PeV)