

Applying universality in development of cascade processes for study of high energy cosmic particles in space experiments

A.I.Fedosimova, P.B.Kharchevnikov, I.A.Lebedev, A.T.Temiraliev

Institute of Physics and Technology, Almaty, Kazakhstan

Abstract

An approach for measurement of energy of high-energy particles by a thin calorimeter, is presented. The method is based on universality in development of cascade processes. For measurement of primary energy of cosmic particles, the correlation analysis of dependence of number of secondary particles, N_e , at observation level and the relation of number of particles, dN , at two levels, divided by an absorber layer, is used. It is shown, that use of correlation curves ($\log N_e$ versus dN) allows to reduce essentially errors of definition of energy of the primary particle, which are connected with uncertainty of a primary nucleus and with fluctuations in development of cascade process. Uncertainties of energy reconstruction on the base of the correlation curves methodology, is less than 10 percent.