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Numerical study of the electron and muon lateral distribution in atmospheric showers of high energy cosmic rays.

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The lateral distribution of an atmospheric shower depends on the characteristics of the high energy interactions and the type of the primary particle. The influence of the primary particle in the secondary development of the shower into the atmosphere, is studied by analyzing the lateral distribution of electron and muon showers having as primary particle, proton, photon or iron nucleus.

This study of the lateral distribution can provide useful conclusions for the mass and energy of the primary particle. This paper compares the data that we get from simulations with CORSIKA program with experimental data and the theoretical NKG function expressing lateral electron and muon distribution. Then we modify the original NKG function to fit better to the simulation data and propose a method for determining the mass of the original particle started the atmospheric shower.

Summary

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