



The cosmic ray all-particle spectrum in the wide energy range from 10^{14} eV to 10^{17} eV observed with the Tibet-III air shower array

THE TIBET AS γ COLLABORATION

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Abstract: We present an updated all-particle energy spectrum using data set collected in the period from 2000 November through 2004 October by Tibet-III air-shower array. The energy determination of the air showers is made by fitting the lateral density distribution of the shower particles to the modified NKG function which is optimized by simulation calculation using interaction models of QGSJET01c and SIBYLL2.1 taking into account of the detector configurations. It is shown that the model dependence in the energy determination is not significant being less than 5% in the absolute flux value and we obtained the cosmic ray energy spectrum in a wide range over 3 decades between 10^{14} eV and 10^{17} eV, in which the position of the knee is clearly seen at around 4 PeV. Based on these calculations, we briefly discuss the systematic errors involved in our experimental results due to the Monte Carlo simulation.