

Mean number of TeV muons in air showers measured with IceTop and IceCube

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IceCube is a cubic kilometer detector buried in the Antarctic ice at the South Pole. Combined with its surface component, IceTop, it constitutes a unique detector for air-shower physics in the PeV to EeV primary energy regime. In this contribution, a recent measurement of the mean multiplicity of muons with energies above several 100 GeV ("TeV muons") in near-vertical air showers seen in coincidence between IceTop and IceCube is reported. The results are found to be in agreement with expectations from simulations based on the hadronic interaction models used in the analysis: Sibyll 2.1, and the post-LHC models QGSJet-II.04 and EPOS-LHC. However, inconsistencies with other air-shower observables are found for all considered models. Notably, the observed density of GeV muons at large lateral distance in IceTop indicates a lighter cosmic-ray mass composition than the high-energy muon measurement.

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