

Development of neutrino shower initiated cascades at mid and high altitudes in the atmosphere

Abstract content

Neutrinos are a very promising messenger at tens of EeV and above. They can be produced by several channels, namely as by products of hadronic interactions at the sources, as the main products of the decay of massive particles and, in a guaranteed way, as the result of the propagation of UHECR through the bath of microwave relic photons. A new era of very large exposure space observatories is on the horizon and, with it, it is ever larger the possibility of astrophysical neutrino detection at the highest energies. In the present work we use a combination of the HERWIG interaction code with the CONEX shower simulation package in order to produce fast one-dimensional simulations of neutrino initiated showers in air. We make a detail study of the structure of the corresponding longitudinal profiles, but focus our physical analysis mainly on the development of showers at mid and high altitudes, where they can be an interesting target for space fluorescence observatories.

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