

Abstract Submitted
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A calculation of the ultra-high energy neutrino cross sections

PHUOC HA, Towson University — Using a very accurate global fit to the combined HERA data for the structure function $F_2^{\gamma p}(x, Q^2)$ extrapolated to the values of Bjorken variable x down to $x = 10^{-14}$, we perform a calculation of the ultra-high energy cross sections for neutrino scattering on an isoscalar nucleons at neutrino energies up to $E_\nu \sim 10^{17}$ GeV. We also include the contributions from the subdominant NLO structure functions $F_3^{\nu(\bar{\nu})}$, $F_L^{\nu(\bar{\nu})}$, and $F_{0L}^{\nu(\bar{\nu})}$ evaluated from $F_2^{\gamma p}(x, Q^2)$ in the calculation. We find that, at the highest energies, our results of the neutrino cross sections do not agree with those calculated using NLO parton distribution functions based on the power-law extrapolations of quark distributions to small x .

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