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Neutrino-Nucleon Cross Sections at High Energies

jeudi 1 juillet 2010 18:50 (20 minutes)

Ultra-high energy neutrino experiments can probe neutrino-nucleon cross sections at center-of-mass energies higher than those of typical interactions at the LHC, where deviations from the standard model expectation can signal new physics. We will present new calculations of the neutrino-nucleon charged and neutral current cross sections and their theoretical uncertainties in the range 10^10-10^21 eV using the latest parton distribution functions (PDF's) by Martin, Stirling, Thorne and Watt (MSTW 2008). The MSTW PDF's are based on global fits to recent hard scattering data on as wide a range of processes as possible. The PDF uncertainty is more conservative at small x (high energy) than many other PDF's due to a more flexible parameterisation in this region. We will also present a parameterization of the cross sections for ease of use in modeling. Finally, we will discuss the implications for future neutrino experiments.

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Classification de Session: Air shower radio signal theory and simulations