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Coherent pion production in Neutrino(antineutrino) - Nucleon interaction

We present a study for the coherent pion production in neutrino-nucleon scattering in the resonance region using the formalism based on partially conserved axial current (PCAC) theorem which relates the neutrino-nucleus cross section to the pion-nucleus elastic cross section. We calculate the differential and integrated cross sections for neutral and charged current coherent pion production in neutrino Nucleus scattering for different Z-value material in different experiments. The nuclear density function for low Z-value material like carbon is taken as the harmonic oscillator type. The results of integrated cross-section calculations are compared with the measured data of MINERvA, T2K and NOvA experiments.

Mini-abstract

The calculation of cross-sections in coherent pion production and its comparison with experiments.

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