

# NEUTRINO INDUCED MESON PRODUCTION REACTIONS ON NUCLEON AND DEUTERON

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Next-generation long baseline experiments aim to investigate CP violation and mass hierarchy of neutrino using a few GeV neutrino. A precise knowledge of neutrino-nucleus reactions in the nucleon resonance region is crucial to extract those neutrino properties. We report on our coupled channel model of neutrino induced meson(pion, eta, kaon, two-pion)production reactions on nucleon in resonance region. The model is extension of our model on pion, photon and electron induced meson production reaction to investigate nucleon resonances. The model takes into account multichannel couplings required by unitarity, includes resonant and non-resonant mechanisms based on the meson exchange picture and is constructed by analyzing all available differential cross sections and polarization data from Delta(1232) below  $W < 2\text{GeV}$ . A comparison with reaction models used in the neutrino-generators will be discussed. We will also report on the application of the model for the neutrino-deuteron reaction within the multiple scattering formulation. We demonstrate a role of rescattering effect and suggest for re-analysis of the previous bubble chamber data to extract the single nucleon cross sections.

