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Weak interaction induced η -production off the nucleon

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η production off the nucleon induced by (anti)neutrinos is studied at the low and intermediate energies for the ongoing and future neutrino oscillation experiments. The non-resonant terms are calculated using a microscopical model based on the SU(3) chiral Lagrangians. We consider $S_{11}(1535)$ and $S_{11}(1650)$ resonances. The vector part of the N- S_{11} transition form factor has been obtained from the helicity amplitudes using MAID(2007) data, dipole form is taken for the axial form factor and the PCAC relation is used for the pseudoscalar form factor.

Summary

Most of the neutrino experiments are using (anti)neutrino beam of a few GeV, to which neutrino oscillation parameters are sensitive. In the few GeV energy region the contribution to the cross section comes from the quasielastic, inelastic as well as the deep inelastic processes. Inelastic channel includes, one or multi pion production, kaon production, η production, associated production of particles and so on. It has been realised that the Monte Carlo generators which were being used for predicting the neutrino event rates should be revisited and updated by the new calculations. We shall present the results for the differential and total cross sections for the (anti)neutrino induced η -production off the nucleon.

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