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P2.046 Single pion production in neutrino reactions

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This work represents an extension of the single pion production model proposed by D. Rein. The model consists of resonant pion production and nonresonant background contributions coming from three born diagrams in the helicity basis. The new work includes lepton mass effects, and nonresonance interaction is described by five diagrams as it is proposed in HNV paper. The main challenge of the recent work is to calculate them in helicity basis in order to study the interference effect of resonance and non-resonance interaction. The model prediction is in good agreement with all existing bubble chamber neutrino and anti-neutrino data with $W < 2 \text{ GeV}$ cut. The comparison is done on angular and W distribution, Q^2 -differential cross-section and integrated cross-section for three neutrino and three anti-neutrino channels:

