



Poster session 2 – Tuesday 5 July

P2.042 Improvements of simulation of pion production in GENIE

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Simulation of Pion Production in GENIE Neutrino Monte Carlo Generator: The goal of GENIE is to develop a universal Monte Carlo for neutrino-nucleus event generator with validity for all nuclear targets and neutrino flavours from MeV to PeV energy scales. We present a brief introduction to our recent improvements for pion production simulation in GENIE. First, addition of the nonisotropy of resonance decay to pions is presented. Second, the model for $\Delta \rightarrow N + \gamma$ is improved. The ratio of photon to pion production is changed from a constant into a function of hadronic mass W and orbital angular momentum L . Both these changes are consistent with theoretical and data constraints. Third, improvements of the existing Rein-Sehgal and additions of Berger-Sehgal, Alvarez-Ruso, and Paschos-Schalla coherent pion cross section models used in GENIE are presented. Results from these models are then compared; Fourth, final state interaction (FSI) additions are reported. The major improvement has been introduction of medium effects, the Salcedo-Oset model for pions and the Pandharipande-Pieper model for low energy nucleons.