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Measuring neutrino cross-section with IceCube at intermediate energies (~ 100 GeV to a few TeV)

Neutrino cross-sections are a key ingredient to a variety of present and future analyses and experiments. Measuring those cross-sections is an active and on-going source of investigation, largely restricted to accelerator studies below a few 100 GeV. However, with the increasing precision of atmospheric neutrino flux measurements and modelling, an opportunity exists to provide enhancements at energies at ~ 100 GeV to a few TeV. An analysis is now underway that applies an advanced energy reconstruction (that uses the full description of the photon propagation in ice) to an event sample of IceCube through-going muons to perform a forward folding analysis. The anticipated end result is a measure of the neutrino cross-section in the intermediate energy regime in comparison to the Standard Model prediction.

Mini-abstract

Measuring neutrino cross-section for new, intermediate energy range with IceCube

Experiment/Collaboration

IceCube Neutrino Observatory

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