

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

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- Analysis goal: measure total ν_{μ} CC neutrino-nucleon cross-section from 100 GeV to 5 TeV
- No neutrino-nucleon cross-section measurements currently exist between a few 100 GeV and a few TeV
- We can make a measurement using the linear relationship between event rate and cross-section rather than neutrino-Earth absorption
- Our foundation is an existing IceCube diffuse ν_{μ} event sample and associated analysis tools
- Events are reprocessed with an energy reconstruction using the full description of photon propagation in ice, tailored to the unique properties of the energy range for improved resolution in the region of interest
- First tests look promising! Expect updates soon