W±Iν 2021

Contribution ID: **245**   Type: **Poster session**

Monte Carlo Event Generator for Neutrino Trident Production at High Energy

Neutrino trident production (NTP) is sub-dominant standard model process where a neutrino interacts in the coulomb field of a nucleus and produces lepton-antilepton pair. At high neutrino energies, on-shell W Boson production is predicted to enhance the NTP cross-section significantly and increase the expected event rate in neutrino telescope detectors like IceCube. In this work, we are the first to publish a Monte Carlo generator to simulate NTP events in the neutrino energy range 100GeV to 100PeV. Using this we make predictions on the number of di-muon NTP interactions in the IceCube detector from both the atmospheric and diffuse astrophysical neutrino fluxes. By making simple assumptions on the performance of an improved two-track event reconstruction method, we conclude that it should be possible to detect high energy NTP events in neutrino telescope detectors and then use them as a probe for new physics.

Primary author: SARKAR, Sourav

Presenter: SARKAR, Sourav

Session Classification: Neutrino Physics Session 2

Track Classification: Neutrino Physics