Contribution ID: **5** Type: **Poster**

Floor of cosmogenic neutrino fluxes above 10^{17} eV

Tuesday, 18 June 2024 17:30 (2 hours)

The search for neutrinos with energies greater than 10^{17} eV is being actively pursued. Although normalization of the dominant neutrino flux is highly uncertain, a floor level is guaranteed by the interactions of extragalactic cosmic rays with Milky Way gas. We estimate that this floor level gives an energy flux of $E^2\phi_\nu \simeq 10^{-13^{+0.5}_{-0.5}}$ GeV~cm^{-2}~sr^{-1}~s^{-1} at 10^{18} eV, where uncertainties arise from the modeling of the gas distribution and the experimental determination of the mass composition of ultra-high-energy cosmic rays on Earth. Based on a minimal model of cosmic-ray production to explain the mass-discriminated energy spectra observed on Earth above 5×10^{18}~eV, we also present generic estimates of the neutrino fluxes expected from extragalactic production that generally exceed the aforementioned guaranteed floor. The prospects for detecting neutrinos above 10^{18}~eV remain however challenging, unless proton acceleration to the highest energies is at play in a sub-dominant population of cosmic-ray sources or new physical phenomena are at work.

Poster prize

Yes

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