Contribution ID: **866** Type: **Parallel Talk**

Search for heavy neutral lepton production and decay with the IceCube Neutrino Observatory

Saturday, 9 July 2022 18:00 (15 minutes)

Extensions of the Standard Model with right handed (sterile) neutrinos pose viable explanations for the origin of neutrino masses and could solve a variety of open questions in physics such as neutrino oscillation anomalies, the nature of dark matter, and baryon asymmetry. Multiple models posit the existence of a GeV-scale, sterile neutrino (also called a Heavy Neutral Lepton (HNL)), which decays to the known Standard Model particles. HNL production from atmospheric neutrinos and the HNL's subsequent decay can produce a unique double-cascade signature in the IceCube detector, which can be utilized to search for GeV-scale HNLs at atmospheric neutrino energies. We investigate the ability of IceCube DeepCore to reconstruct and identify low-energy double-cascade topologies for HNLs in the mass range of 0.1-3 GeV.

In-person participation

Yes

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