Contribution ID: **478** Type: **Talk**

Review of Neutrino Astrophysics with IceCube

Wednesday 8 September 2021 13:20 (20 minutes)

IceCube, a kilometer-cubed scale detector operating at the South Pole, has discovered an all-sky isotropic high-energy neutrino flux. A likely astrophyscal neutrino observed in September 2017, was coincident with high-energy and very-high-energy flares from the blazar TXS 0506+056, so revealing the first candidate high-energy neutrino source. A follow-up study by IceCube with archival data revealed a candidate neutrino flare in 2014-2015. Nevertheless, the nature of the classes of objects responsible for neutrino sources remains unclear. IceCube itself has ruled out gamma-ray bright blazars, as being responsible for more than 27% of the diffuse flux.

The diffuse flux has been studied with multiple methods, including tracks, cascades and starting events. The flavor flux ratio is consistent with expectations of standard oscillations for astrophysical baselines. Two recent important results related to the diffuse flux studies are the observation of two nutau candidate events and one Glashow resonance event.

In this presentation, I will discuss the current status of searches for the sources of astrophysical high-energy neutrinos with IceCube. The discussion will include a description of multi-messenger studies conducted with IceCube data as well as a summary of the current knowledge of the diffuse astrophysical flux.

Primary authors: TABOADA, Ignacio (Georgia Institute of Technology); ICECUBE, Collaboration

Presenter: TABOADA, Ignacio (Georgia Institute of Technology)

Session Classification: Nuclear and particle astrophysics

Track Classification: Nuclear and particle astrophysics