

## Astrophysical Tau Neutrinos with IceCube

*Friday, 29 October 2021 08:40 (20 minutes)*

Kilometer-scale neutrino detectors, like the IceCube Neutrino Observatory deployed in the ice cap at the South Pole, are uniquely capable of detecting astrophysical tau neutrinos. IceCube has sensitivity to tau neutrinos with energies at and well above the threshold for tau lepton production, and has sufficiently large volume to contain tau leptons that travel hundreds of meters. The experiment has world-leading acceptance for astrophysical tau neutrinos at energies above roughly 100 TeV. Astrophysical tau neutrinos are likely produced by neutrino oscillations over cosmic baselines, and can be detected exclusively, through the distinctive signatures created by the tau neutrino interaction vertex and the subsequent tau lepton decay vertex. We present results of IceCube's astrophysical tau neutrino measurements, and provide projections for future improvements and possible new channels for tau neutrino detection.

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**Session Classification:** Session 1