

# **Tau neutrino measurement using track sample in IceCube**

*Monday 7 April 2025 17:00 (15 minutes)*

At the IceCube Neutrino Observatory, muon neutrinos are identified by characteristic long tracks due to high energy muons through the charged current (CC) interactions. On the other hand, ~17% of tauons resulting from tau neutrino CC interactions decay to muons and produce long tracks. However, energy sharing between hadronic showers and a muon is different between muon neutrino CC interaction and tau neutrino CC interaction. Therefore, careful reconstruction of hadron shower energy, or inelasticity, can be used to statistically separate tau neutrinos. Here, we use low energy IceCube track sample, covering 500 GeV - 20 TeV, to look for tau neutrinos potentially the lowest energy astrophysical neutrino signals.

**Authors:** WEN, Alex (Harvard University); MILLSOP, Archie (King's College London); Prof. ARGUELLES DELGADO, Carlos (Harvard University); Dr KATORI, Teppei (King's College London)

**Presenter:** Dr KATORI, Teppei (King's College London)

**Session Classification:** Cosmic Messengers

**Track Classification:** Cosmic Messengers