

A Combined Analysis of IceCube's Muon Track and Cascade Neutrino Data

Friday 16 July 2021 19:18 (12 minutes)

The IceCube Neutrino Observatory first observed a diffuse flux of high energy astrophysical neutrinos in 2013. Since then, this observation has been confirmed in multiple detection channels such as high energy starting events, cascades, and through-going muon tracks. Combining these event selections into a global fit of IceCube's neutrino data could strongly improve the understanding of the astrophysical neutrino flux properties: challenging the simple unbroken power-law flux model as well as the astrophysical neutrino flux composition. One key component of such a combined analysis is the consistent modelling of systematic uncertainties of different event selections. This can be achieved using the novel SnowStorm Monte Carlo method which allows constraints to be placed on multiple systematic parameters from a single simulation set. We will report on the status of a new combined analysis of through-going muon tracks and cascades, which is currently being prepared. It is based on a consistent all flavor neutrino signal and background simulation using, for the first time, the SnowStorm method to analyze IceCube's high-energy neutrino data.

Keywords

Collaboration

IceCube

other Collaboration

Subcategory

Experimental Results

Primary authors: GANSTER, Erik; NAAB, Richard (Z_ICE (IceCube+NG)); ZHANG, Zelong (StonyBrook University); FOR THE ICECUBE COLLABORATION

Presenter: GANSTER, Erik

Session Classification: Discussion

Track Classification: Scientific Field: NU | Neutrinos & Muons