Contribution ID: **814**   Type: **Talk**

A New Search for Neutrino Point Sources with IceCube

Monday 19 July 2021 18:00 (12 minutes)

The IceCube Neutrino Observatory, deployed beneath the South Pole, is the largest neutrino telescope in the World. While eight years have passed since IceCube discovered a diffuse flux of high-energy astrophysical neutrinos, the sources of the vast majority of these neutrinos remain unknown. Here, we present a new search for neutrino point sources that improves the accuracy of the statistical analysis, especially in the low energy regime. We replaced the usual Gaussian approximations of IceCube's point spread function with precise numerical representations, obtained from simulations, and combined them with new machine learning-based estimates of event energies and angular errors. Depending on source properties, the new analysis provides improved source localization, flux characterization and thereby discovery potential (by up to 30%) over previous works. The analysis will be applied to IceCube data that has been recorded with the full 86-string detector configuration from 2011 to 2020 and includes improved detector calibration

Keywords

IceCube; Neutrino Point Sources

Collaboration

IceCube

other Collaboration

Subcategory

Experimental Results

Primary authors: Dr NIEDERHAUSEN, Hans (Technical University of Munich); Mr GLAUCH, Theo (Technical University of Munich); Ms BELLENGHI, Chiara (Technical University of Munich); KONTRIMAS, Tomas (Technical University of Munich); Dr HAACK, Christian (Technical University of Munich); Dr WOLF, Martin (Technical University of Munich); Dr REIMANN, Rene (RWTH Aachen); FOR THE ICECUBE COLLABORATION

Presenter: Dr NIEDERHAUSEN, Hans (Technical University of Munich)

Session Classification: Discussion

Track Classification: Scientific Field: NU | Neutrinos & Muons