

# ONLINE

# ICRC 2021

THE ASTROPARTICLE PHYSICS CONFERENCE  
Berlin | Germany



## A New Search for Neutrino Point Sources with IceCube

**Authors:** Chiara Bellenghi, Theo Glauch, Christian Haack, Tomas Kontrimas, Hans Niederhausen (Presenter), Rene Reimann, Martin Wolf

### What is this contribution about?

We describe the development of improved methods to search for point sources of neutrino emission and their application to 9 years of IceCube data recorded with the complete 86-string detector from 2011 to 2019 and the latest data calibration methods.

### Why is it relevant / interesting?

IceCube has been studying a diffuse flux of high energy neutrinos of presumably extra-galactic origin since 2013. The population(s) of sources responsible for the vast majority of this flux remain unknown and progress in searches for its sources is needed.

### What have we done?

We used numerical techniques to extract a more accurate description of IceCube's response to point-like neutrino emission, including spatial clustering of neutrinos, from detector simulations, developed new muon energy and angular error reconstruction methods, and deployed these tools to search the Northern Sky for signs of point-like neutrino emission.

### What is the result?

Compared to previous works, this new analysis improves the discovery potential by up to 30% and, if sources are found, improves the measurement of their physical properties. The results are currently under review by the IceCube Collaboration and will be released to the public soon.