Contribution ID: **890** Type: **Talk**

Extending KM3NeT's Point-Source Searches to Lower Energies with KM3NeT/ORCA

Tuesday 22 July 2025 13:35 (15 minutes)

Neutrino telescopes play a key role in multi-messenger astrophysics, providing unique insights into the still-unclear processes in our Universe and its active sources.
With the goal of shedding light on these mysteries, the KM3NeT collaboration is deploying a deep-sea Cherenkov neutrino telescope in the Mediterranean Sea.
It comprehends two detectors: identical in their design but differing by scale. KM3NeT/ARCA, off the coast of Sicily, is optimized for high energies in the TeV-PeV range to observe astrophysical neutrinos. KM3NeT/ORCA, off the coast of Toulon (France), is designed primarily for detecting neutrinos in the GeV-TeV range and studying the neutrino mass ordering. However, KM3NeT/ORCA is also capable of detecting astrophysical neutrinos, extending KM3NeT's reach to sources at energies lower than those observed by KM3NeT/ARCA.

In this contribution, we present point source analyses of the data collected by KM3NeT/ORCA from January 2020, when 6 detector lines were active, with an evolving detector geometry. For the first time, KM3NeT/ORCA data are used to perform a binned likelihood analysis, improving KM3NeT's sensitivity to softer spectra and enabling the detection of neutrino sources across a wider energy range.

Collaboration(s)

KM3NeT

Author: DEL ROSSO, Ilaria (University of Bologna, INFN-Bo)

Co-author: ILLUMINATI, Giulia (INFN-Bologna)

Presenter: DEL ROSSO, Ilaria (University of Bologna, INFN-Bo)

Session Classification: NU

Track Classification: Neutrino Astronomy & Physics