

Time-integrated search for astrophysical neutrino emission with 2 years of KM3NeT/ARCA data

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The identification of cosmic objects emitting high energy neutrinos provides new insights about the Universe and its active sources. Although cosmic neutrinos have been observed by the IceCube Neutrino Observatory, the sources of these neutrinos still remain unknown. The KM3NeT/ARCA detector for Astroparticle Research with Cosmics in the Abyss, is currently being built in the Mediterranean Sea at about 3500 m depth and 100 km off the Sicilian coast, near Capo Passero. To record the neutrino induced Cherenkov light, on its final configuration the detector will consist of >4000 light sensitive optical modules with 31 photomultiplier tubes each, distributed over 230 detection units. The detector will instrument a volume of a cubic kilometre of seawater. KM3NeT has a view of the sky complementary to IceCube, and is sensitive to neutrinos across a wide range of energies. The results of a binned all-sky scan are presented, as well as a binned time-integrated point source and an extended source searches in the direction of a list of preselected candidate sources. The galactic and extragalactic candidates are selected based on GeV –EeV information from other neutrino experiments, cosmic ray observatories as well as optical measurements. For all presented analyses, KM3NeT/ARCA data from May 2021 until September 2023 taken with an evolving detector geometry up to 21 detection units is used.

Second affiliation

Collaboration (if any)

KM3NeT

Poster prize

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