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The KM3NeT neutrino telescope: status and recent results

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The KM3NeT multi-site detector is designed to detect and study cosmic neutrinos and their sources in the Universe, as well as to improve the intrinsic neutrino properties knowledge. Comprising two underwater Cherenkov neutrino telescopes located at two deep-sea sites in the Mediterranean, the KM3NeT infrastructure includes KM3NeT-ARCA, offshore Portopalo di Capo Passero (Sicily, Italy), which started to study high-energy astrophysical neutrinos, and KM3NeT-ORCA, offshore Toulon (France), designed to measure atmospheric neutrinos at a few GeV and investigate their oscillations within the Earth.

Despite being in a partial configuration, both telescopes have already yielded groundbreaking physics results, including the detection of an ultra-high-energy astrophysical neutrino, KM3-230213A. This significant observation highlights the remarkable capabilities of deep-sea neutrino telescopes and underscores their potential to uncover novel astrophysical phenomena. This contribution will review the key physics results achieved so far with ARCA and ORCA in the field of neutrino (astro)physics, demonstrating the promise of the KM3NeT detector in shaping the future of neutrino research.

Collaboration(s)

KM3NeT

Author: DORNIC, Damien (CPPM)

Presenter: DORNIC, Damien (CPPM)

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