

# The KM3NeT detector –status, perspectives and preliminary results

*Friday, 29 October 2021 16:00 (25 minutes)*

KM3NeT is a deep-sea infrastructure mainly devoted to the detection of neutrinos over a large range of energy. It hosts two Cherenkov neutrino telescopes in different sites of the Mediterranean Sea: ARCA, located at 3500 m sea depth, offshore Sicily, will look for high energy neutrinos coming from astrophysical sources; ORCA, installed 2500 m under the sea level, in front of the Provençal coast, will detect atmospheric neutrinos to investigate neutrino properties, in particular the neutrino mass order, through the study of oscillation patterns.

The two telescopes are organized as 3D lattices of Digital Optical Modules, each hosting 31 small photomultipliers, distributed along vertical, flexible lines. The distance between the optical modules depends on the scientific goal of the detector: longer for ARCA, in order to instrument a much wider volume of water, more than 1 km<sup>3</sup>, and identify very high energy neutrinos; shorter for ORCA, to detect atmospheric neutrinos.

The modular structure of the detectors allows for analyses and searches to be performed even in a preliminary and not complete configuration.

This talk discusses the main scientific goals of a km<sup>3</sup> Mediterranean neutrino telescope, describes the status of the construction, and shows the first preliminary analyses performed using data collected in the present partial configuration.

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