

# KM3NeT: a multi-site neutrino telescope in the Mediterranean Sea to address key questions in Astro-Particle and Particle Physics

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Recently it has been reported by the IceCube detector, which is installed under the thick Antarctic ice, evidence of the existence of a high-energy flow of cosmic neutrinos.

Today, the scientific community requires that a neutrinos telescope located in the northern hemisphere verify and complete the results of IceCube, so as to allow observation of high-energy neutrinos across the sky. The Mediterranean Sea is the ideal place for this new structure.

Furthermore, one of the open issue in the particle physics field is the determination of the neutrino mass hierarchy.

KM3NeT, a network of neutrino telescopes in the Mediterranean Sea, is the following step for the next-generation neutrino telescopes. Its first phase is under construction by the collaboration, on two sites. The first one, KM3NeT-It, near Sicily, will focus on high energy neutrinos astronomy (ARCA). The second one, KM3NeT-Fr, near Toulon in France, will focus on the studies of oscillations with atmospheric neutrinos (ORCA) with the main objective of determining the neutrinos mass hierarchy.

They consist in a regular 3D array of DOMs (Digital Optical Modules) equally spaced along flexible lines anchored on the seabed.

First, a detailed overview of the detectors and planned results will be given.

Then, a report on the phase one construction will be made. Finally, details on calibration techniques will be presented, with an emphasis on time calibration, water properties and positioning measurements.

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