KM3NeT: a deep-sea neutrino telescope in the Mediterranean Sea

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The observation of high energy neutrinos from astrophysical sources would substantially improve our knowledge and understanding of the Universe. Theoretical predictions for neutrino fluxes indicate that cubic kilometre scale detectors are needed to give birth to this new astronomy.

All the groups that are presently involved in neutrino astronomy activities in the Mediterranean Sea; ANTARES, NEMO, NESTOR, have recently formed the KM3NeT consortium to develop the design of a deep-sea cubic kilometre scale neutrino telescope.

The realization of such a detector will provide the scientific community with a powerful instrument to study many astrophysical objects including supernova remnants, active galactic nuclei and gamma-ray bursts.

KM3NeT is engaged in evaluations of different detector geometries to determine the optimum for the required sensitivity to astrophysical neutrino sources. The collaboration is also studying the various technical implementations of the telescope, which will be deployed on the seabed in at least 2500 metres water depth. Technical implementations under study include photon detection, readout electronics and data protocols adapted to long distance data transfer to the shore, deep sea and sea surface mechanics, connectivity and deployment issues.