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KM3NET SEARCHING FOR NEUTRINOS

In the Mediterranean Sea, at a depth of 3500 metres off the coast of Sicily, a gigantic underwater telescope for neutrinos of cosmic origin is under construction: this is the Km3Net or "Cubic kilometre" project.

The project envisages the construction, by 2015, of a hundred or so underwater structures that will form an observation grid extending over one cubic kilometre of sea. The structures will act as a support for the gigantic undersea antenna, consisting of tens of thousands of optical sensors (photomultipliers) able to detect the blue light trail marking the passage of neutrinos, called "Cherenkov light".

Currently two of the hundred or so planned structures are operational. The last, implemented with a technology that allowed it to be progressively unrolled once anchored, was attached to the seabed, at a depth of 3500 metres, with a remote-controlled submarine robot in May 2014. The so-called "detection unit" consists of an electro-optical cable, approx. 200 m in length, to which the photomultipliers, the electronic eyes of Km3net, are connected. A fibre-optic communication cable transports the data recorded by the sensors in real time from the depths to the ground station of the INFN's National Southern Laboratory in Portopalo di Capo Passero.

Km3Net is funded by the EU as part of the project to enhance research infrastructures in southern regions. It was also supported by EU funding in 2006-2012 and, in Italy, by MIUR (Italian Ministry of Education, University and Research) as part of the PON research and competitiveness programme. Taking part in the Km3Net international collaboration, in which Italy plays a fundamental role with the National Institute for Nuclear Physics, are Cyprus, France, Germany, Greece, Ireland, the Netherlands, Romania, Spain and the United Kingdom. Nine INFN groups are involved in the enterprise, in collaboration and in synergy with geophysics, oceanography and marine biology research institutes, including INGV and CNR.

<http://www.km3net.org/>