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First results of the KM3NeT/ARCA detector

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The KM3NeT collaboration started to build a multi-km³

neutrino telescope in the Mediterranean

sea. The telescope is composed of two parts: the ARCA (Astroparticle Research with Cosmics in the Abyss) detector searches for high energy neutrino sources in the Universe and it is under construction in the Capo Passero site, Italy, 80 km offshore at a depth of 3500 m; the ORCA (Oscillation Research with Cosmics in the Abyss) detector, for the determination of the mass hierarchy of neutrinos, is located in the Toulon area, France, 40 km offshore at a depth of 2500 m. The basic detection element of the KM3NeT detector is the Digital Optical Module (DOM). The DOM is a pressure resistant glass sphere, containing 31 photo-multipliers tubes. 18 DOMs are arranged in the Detection Unit (DU), a vertical string anchored on the sea floor. The DUs are deployed on the sea bed to form a three-dimensional array of DOMs, optimised to detect Cherenkov light produced by neutrino-induced muons.

In this poster, preliminary results obtained with the first two ARCA-DUs are presented. The capability to select and reconstruct atmospheric muons is discussed. The dependence of the muon flux with the sea depth is derived, showing that the detector is well calibrated and the systematics are kept under control.

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