

Title: A deep sea detection prototype

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The KM3NeT experiment is a neutrino telescope in the Mediterranean sea. As the successor of the Antares telescope the goal of the experiment is the detection of atmospheric and cosmic neutrinos of all flavors. The current phase foresees the construction of two building blocks of different proportions, location and application. The ORCA block will be a tightly instrumented, small volume detector to allow the observation of low energy neutrinos with good resolution. The ARCA block will be of larger volume, sparser instrumented and is dedicated to the detection of cosmic neutrinos at the highest energies. The two blocks are to be constructed at different locations: ORCA in France and ARCA in Italy. Both detectors are constructed using strings of 800 m length on which the instrumentation will be housed. Each string is equipped with 18 digital optical modules (DOM). A DOM holds a total of 31 photo multipliers (PMT) with a cathode area of 3" equally spaced in zenith and azimuth. This new configuration (compared to 10" downward looking PMTs of Antares) allows for better background suppression and granularity while the PMTs have a longer half life. The first DOM prototype (PPM-DOM) has been deployed in spring 2013 at the Antares site. It allowed for first measurements and exploits of the new PMT configuration. Such as a muon detection using one DOM. A string prototype (PPM-DU) holding 3 DOMs has been deployed in spring 2014 at the ARCA site. The production of the first string allowed for methods of production and qualification to be established. The PPM-DU has been taking data since deployment gathering over 1200 h of data. The analysis of this data allowed for the first results on muon tracking, in situ detector calibration and bio luminescence studies. The time calibration

of PMTs was performed by using the spatial correlation ^{40}K decays in water and exploiting the multi-PMT design. The multi-PMT design also allowed for a better understanding of bio luminescence backgrounds. Since the PPM-DU deployment the production of the first 18 DOM string has been successfully performed and its deployment at the future ORCA site is foreseen for spring 2015. This poster will give an introduction into KM3NeT and depict the PPM-DU as well as its results obtained by the PPM-DU.