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Characterization benches for the KM3NeT DOMs

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As has been demonstrated by the first generation of neutrino telescopes Antares and IceCube, precise knowledge of the photon detection efficiency of optical modules is of fundamental importance for the understanding of the instrument and accurate event reconstruction. Dedicated test benches have been developed to measure all related quantities for the Digital Optical Modules of the KM3NeT neutrino telescope being currently deployed in the Mediterranean sea. The first bench is a black box with robotic arm equipped with calibrated single photon source or laser which enable a precise mapping of the detection efficiency of arbitrary incident angle photons as well as a precise measurement of the time delays induced by the photodetection chain. These measurement can be incorporated and compared to full GEANT MonteCarlo simulations of the optical modules. The second bench is a 2mx2m water tank equipped with muon hodoscopes on top and bottom. It enables to study and measure the angular dependence of the DOM's detection efficiency of the Cherenkov light produced in water by relativistic muons reproducing in situ detection conditions. We will describe these two benches and present their first results and status.

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