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Characterization of a prototype of a new multianodic large area photomultiplier

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A prototype of a new large area (10") 4-anodic photomultiplier, manufactured by Hamamatsu for the NEMO collaboration, will be used for the first time for the construction of a Km3 scale neutrino underwater telescope, in the KM3NeT framework. Using testing facility realized in our laboratory, we have performed tests on prototype performances at room temperature, atmospheric pressure and different light conditions. The response of the phototube has been measured for each anode separately. We report the dark count rate measures and the time and the charge characteristics of the photomultiplier when the whole photocatode surface is fully illuminated, as Transit Time Spread, Peak To Valley ratio, charge resolution, linearity and gain. We measured also the fraction of spurious pulses, as PrePulse, DelayPulse an AfterPulse of type 1 and 2, according to Hamamatsu definitions. Photomultiplier characteristics have been studied also by scanning the photocatode area with a single-photon pulsed beam with 5 mm diameter on PMT surface.

Auteur principal: Dr LEONORA, Emanuele (INFN CATANIA)

Orateur: Dr LEONORA, Emanuele (INFN CATANIA)

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