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KM3NeT: Pushing the Boundaries of Photo-detection with Unprecedented Photomultipliers Deployment

Tuesday 16 May 2023 12:00 (25 minutes)

KM3NeT, with the largest number of photodetectors ever built, operates with 20,000 3" PMTs submerged underwater. Ongoing efforts aim to integrate more PMTs into the Digital Optical Module (DOM), totaling around 200,000 PMTs. 10,000 PMTs have undergone detailed characterization, informing the development of an enhanced 3" PMT model by Hamamatsu. The upgraded model exhibits improvements in dark counts, timing precision, and suppression of spurious pulses. ECAP in Erlangen conducted initial tests, and a new photosensors testing lab in Caserta plays a pivotal role in advancing PMT understanding. The lab studies quantum efficiency, time properties, and noise characteristics. Dedicated facilities include a pool for sea water testing, a hyperbaric chamber for deep-sea pressure tests, and a climatic chamber for aging and stress tests. These findings benefit KM3NeT and broader scientific research.

Requested length

20 minutes

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