



Contribution ID: 62

Type: Oral presentation

Characteristics and performance of the KM3NeT multi-PMT optical module

Tuesday, 13 September 2022 16:15 (15 minutes)

While other neutrino telescopes use optical modules comprising a single large 10" PMT in a 17" glass sphere, KM3NeT features a novel design with 31 small PMTs with a 3" photocathode diameter, along with calibration devices and the associated electronics. The new design provides multiple benefits, such as an improved photocathode area, equivalent to the effective area of three 10" PMTs, an almost uniform angular coverage and a sensitivity to the direction of the detected photons. The calibration devices allow for a precise position and timing calibrations of the optical modules, improving the overall performance of the whole detector. The modules are assembled and integrated at eight different integration sites. To ensure that each module performs at the required standards and given the amount of modules - more than 6000 - needed for the ARCA and ORCA detector, the KM3Net collaboration has implemented a distributed production model with well-defined integration, documentation, testing and quality control procedures that every integration site has to follow. Moreover, the KM3NeT quality plan comprise a protocol to track and handle any issue that may occur during the production. In this talk I will present the characteristics of the novel multi-PMT optical module of KM3NeT and the integration procedure. I will also describe the challenges met during the implementation of the distributed production model and the performance of the KM3NeT optical modules.

Primary author: DEL BURGO, Riccardo (Istituto Nazionale di Fisica Nucleare)

Presenter: DEL BURGO, Riccardo (Istituto Nazionale di Fisica Nucleare)

Session Classification: Astrophysical Neutrinos