

The Trigger and Data Acquisition System for the KM3NeT-Italy neutrino telescope

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The INFN's project KM3NeT-Italy, supported with Italian PON (National Operative Programs) fundings, has designed a distributed Cherenkov neutrino telescope for collecting photons emitted along the path of the charged particles produced in neutrino interactions. The detector consists of 8 vertical structures, called towers, instrumented with a total number of 672 Optical Modules (OMs) and its deployment is ongoing 3500 meters deep in the Ionian Sea, at about 80 km from the Sicilian coast. In this contribution the Trigger and Data Acquisition System (TriDAS) developed for the KM3NeT-Italy detector is presented. The "all data to shore" approach is adopted to reduce the complexity of the submarine detector: at the shore station the TriDAS collects, processes and filters all the data coming from the towers, storing triggered events to a permanent storage for subsequent analysis. Due to the large optical background in the sea from 40K decays and bioluminescence, the throughput from the sea can range up to 30 Gbps. This puts strong constraints on the performances of the TriDAS processes and the related network infrastructure.

Secondary Keyword (Optional)

Trigger

Primary Keyword (Mandatory)

DAQ

Tertiary Keyword (Optional)

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