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The Trigger and Data Acquisition System for the 8 tower subsystem of the KM3NeT detector

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KM3NeT is a deep-sea research infrastructure being constructed in the Mediterranean Sea. It will host a large Cherenkov neutrino telescope that will collect photons emitted along the path of the charged particles produced in neutrino interactions in the vicinity of the detector.

The philosophy of the DAQ system of the detector foresees that all data are sent to shore after a proper sampling of the photomultiplier signals. No off-shore hardware trigger is implemented and a software selection of the data is performed with an on-line Trigger and Data Acquisition System (TriDAS), to reduce the large throughput due to the environmental light background.

A first version of the TriDAS has been developed to operate a prototype detection unit deployed in March 2013 in the abyssal site of Capo Passero (Sicily, Italy), about 3500 m deep.

A revised and improved version has been developed to meet the requirements of the final detector, using new tools and modern design solutions. First installation and scalability tests have been performed at the Bologna Common Infrastructure and results comparable to what expected have been observed.

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