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Photonics-oriented data transmission network for the KM3NeT prototype detection unit

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The design of the readout and data acquisition system of the future KM3NeT neutrino telescope employs 10Gbps photonic technologies for data transmission to shore. The photonic architecture can handle standard transmission protocols. The generic scheme is based on DWDM technology using lasers on shore and optical modulators in each of the 15.000 Digital Optical Modules (DOMs) arranged on vertical detection units anchored to the seabed. Each DOM will house 31 small-size PMTs together with auxiliary transducers. A 100 km electrical/optical fibre cable will connect the DOMs to the store. The readout system will guarantee a unique optical connection between each DOM and the shore. A small-scale prototype of a detection unit with four DOMs is now in a realization phase for a.o. in-situ testing of the data transmission network. We will present results of laboratory tests of the photonics-oriented transmission layer of the network being realised for the prototype detection unit.

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