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The KM3NeT photonic readout and data acquisition system

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For the KM3NeT neutrino telescope a novel optical network has been designed for data transfer and communication between the on-shore control room and optical sensors off-shore at distances up to 100 kilometers. The implementation relies on sensor technologies using a FPGA and photonic components and a 10 Gb/s optical network for readout, data acquisition and communication. Much functionality has been migrated to shore, thus allowing for easy access to the system during the long lifetime of the telescope. Timing calibration is an integral part of the network architecture providing an event timing integrity with less than 1 ns. Although developed for use in the deep-sea, the concept of the system can be used in other experiments. We will present the design and test results of the data acquisition system and the network architecture.

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