



Contribution ID: 48

Type: **not specified**

A vertical electro-optical data cable for KM3NeT

Wednesday, October 12, 2011 3:15 PM (25 minutes)

KM3NeT is a research facility which will be built at the bottom of the Mediterranean Sea. The facility will host a neutrino telescope with several hundreds of detection units - vertical mechanical structures to which the optical sensors modules of the telescope are attached. A data cable will run the full length of the structure, which is almost one kilometre. In order to allow a novel compact deployment of the detection unit, the cable must be flexible and at the same time protect the two copper conductors and eleven optical fibres inside. In order to comply to these requirements a pressure balanced oil-filled cable has been designed, for which a prototype is being built for in-situ tests at the anticipated telescope depths of 3 to 5 km. At the level of each optical sensor module a short horizontal cable breaks out which is connected to the readout components inside the glass sphere of the module via a novel tapered glass transit. We will present the design and assembly method of the cable, the design of the glass transit and the results of laboratory tests.

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Session Classification: Parallel Session 5

Track Classification: Deep-sea and deep-ice technologies