

Contribution ID: 831

Type: Parallel session talk

KM3NeT/ORCA overview

Thursday 29 July 2021 09:50 (20 minutes)

KM3NeT is the Mediterranean distributed deep-sea research infrastructure, hosting the next-generation Cherenkov detectors for the observation and study of neutrinos in the energy range from few GeV up to few PeV. KM3NeT/ORCA (Oscillations Research with Cosmics in the Abyss), the detector aimed at the study of low energy neutrinos (> 1 GeV), is currently under construction off the coast of Toulon in France, at a depth of about 2500 m. In its final configuration, ORCA will include 2070 digital optical modules (DOM) distributed over 115 detection lines. Each DOM contains 31 photomultiplier tubes with a diameter of 3". This megaton-size detector is optimized for studies of atmospheric neutrino oscillations, with the primary goal to determine the neutrino mass ordering. Other measurements planned with ORCA include searches for sterile neutrinos, non-standard interactions, and neutrino oscillation tomography of the Earth.

Currently the configuration with 6 deployed lines (ORCA6) is steadily taking data. The status, current performance, and prospects of the KM3NeT ORCA project will be discussed in the talk.

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Collaboration / Activity

KM3NeT Collaboration

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Track Classification: Neutrino Physics