



Contribution ID: 337

Type: **Parallel talk**

Latest Results with the KM3NeT Neutrino Telescope

Thursday 31 August 2023 14:00 (15 minutes)

KM3NeT is a multi-purpose neutrino observatory being installed in a phased scheme in the Mediterranean Sea. It is composed of two Cherenkov detectors instrumenting water with photomultipliers in different layouts: ORCA, a compact and dense detector optimised on the measurement of fundamental atmospheric neutrino physics, such as mass ordering and oscillations, in the 1-100 GeV energy range, with unprecedented statistics; and ARCA, a set of two detectors covering a cubic kilometre to catch faint astrophysical neutrino fluxes from 100 GeV to 10 PeV, with a pointing resolution reaching down to 0.1 degree. Each detector has a final configuration of 115 lines, and currently 15 lines of ORCA and 21 of ARCA are recording data. An overview of first KM3NeT results and prospects will be presented, with focus on the measurement of oscillation parameters, on the search for sources of extraterrestrial neutrinos, and on the prompt multi-messenger program including the search for correlations of neutrinos with gravitational waves. The physics case of KM3NeT is broad and also covers new physics searches that will also be presented, such as non-standard oscillations, invisible neutrino decay and dark matter.

Submitted on behalf of a Collaboration?

Yes

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Session Classification: Neutrino physics and astrophysics

Track Classification: Neutrino physics and astrophysics