Contribution ID: **357** Type: **Oral**

# KM3NeT-ORCA: Oscillation Research with Cosmics in the Abyss

*Tuesday 4 June 2019 16:30 (20 minutes)*

KM3NeT is a distributed research infrastructure in the Mediterranean Sea that will host a gigaton-scale neutrino telescope (ARCA) for high-energy neutrino astronomy, and a megaton-scale detector (ORCA) for neutrino oscillation studies with atmospheric neutrinos. ORCA is optimised for determining the neutrino mass ordering (NMO) by observing matter effects in atmospheric neutrino oscillations, providing a sensitivity to the NMO of approximately 3σ after 3 years of operation with the full detector. It will also measure the atmospheric mixing parameters Δm<sup>2</sup><sub>32</sub> and θ<sub>23</sub> using both the muon neutrino disappearance and tau neutrino appearance channels. Determining the tau neutrino appearance probability with unprecedented precision will provide for a powerful test of the unitarity of the 3-flavour mixing matrix. The observation of neutrino oscillations over a wide range of baselines and energies will provide broad sensitivity to new physics such as non-standard neutrino interactions (NSI) and sterile neutrinos.

## Author's Name

Luigi Antonio Fusco

## Author's Institute

Laboratoire APC

## Subject

Neutrinos

## Author's e-mail

luigi.fusco@apc.in2p3.fr

## Abstract Title

KM3NeT-ORCA: Oscillation Research with Cosmics in the Abyss

**Author:** FUSCO, Luigi Antonio (APC)

**Presenter:** FUSCO, Luigi Antonio (APC)

**Session Classification:** Parallel Session Neutrinos