Contribution ID: **45** Type: **Oral presentation**

First neutrinos with KM3NeT/ORCA

Friday, 26 March 2021 11:00 (20 minutes)

Summary

KM3NeT is a cubic kilometer scale neutrino observatory located at the bottom of the Mediterranean Sea. The two detectors, ORCA and ARCA, are respectively optimised for energy of 1GeV to 100 GeV and 1TeV to 10PeV. It allows the collaboration to cover a broad range of physics topics, from neutrino oscillation to neutrino astronomy.
Currently under construction and deployment, the ORCA detector will reach its full volume of 115 detection units at the 2025 horizon. When completed, It will offer a competitive sensitivity for the Neutrino Mass Hierarchy as well as for the atmospheric neutrino oscillation parameters. For now, it was operated with 4 lines during 2019, and with 6 lines since the early 2020. This preliminary step validates the Phase 1 of the detector integration, opening the way to more frequent deployments until the instrument completion.
This contribution will focus on the analysis of the early data collected during the 2 past years with ORCA. With only a fraction of the detector volume, it is already possible to reconstruct charged particles passing through the instrument. Furthermore, the detector performances allow for first atmospheric neutrino study, already reaching the edge of the neutrino oscillation sensitivity. This preliminary work allowed the collaboration to develop a good understanding of the detector, showing promising perspective for the coming years.

Primary author: PESTEL, Valentin

Presenter: PESTEL, Valentin

Session Classification: Contributed talks