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# Atmospheric neutrinos from the first KM3NeT/ORCA data and prospects for measuring the atmospheric neutrino flux

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KM3NeT is a research infrastructure aiming to study astrophysical sources as well as to perform particle physics studies, through the detection of neutrinos in the abyssal depths of the Mediterranean Sea. The KM3NeT/ORCA detector (Oscillation Research with Cosmics in the Abyss), currently under construction, is deployed at 2450m depth near Toulon, France. Its primary goal is to determine the Neutrino Mass Ordering. It consists of vertical structures (Detection Units) equipped
with spherical Digital Optical Modules, each hosting a set of photomultiplier tubes capable of detecting neutrino events from the Cherenkov radiation induced by the daughter particles.
Data collected by the KM3NeT/ORCA detector with 4 and with 6 Detection Units, corresponding to an operation time of 6 months and more than a year respectively, are used for this study. The performance of the KM3NeT/ORCA detector with 4 and with 6 Detection Units will be discussed. The selection of a high-purity sample of atmospheric neutrino events will be presented as well as the prospects for measuring the atmospheric neutrino flux using this sample of atmospheric neutrinos at an early stage of the detector construction.

## Keywords

Atmospheric Neutrinos; Neutrinos; Cosmic Rays; Cherenkov Detector; Atmospheric Neutrino Flux; Prospects; KM3NeT; Neutrino Astronomy Background;

## Collaboration

KM3NeT

## other Collaboration

## Subcategory

Experimental Results

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