

# First measurement of light sterile neutrino mixing parameters with KM3NeT/ORCA

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KM3NeT/ORCA is a water Cherenkov neutrino telescope under construction in the Mediterranean sea. With ORCA, the KM3NeT collaboration will measure atmospheric neutrino oscillations to determine the neutrino mass ordering and constrain the oscillation parameters  $m_{31}^2$  and  $\theta_{23}$ . In addition, Beyond the Standard Model hypotheses can be tested. In this contribution, the sensitivity of ORCA to the presence of a light sterile neutrino in a 3+1 model is presented, as well as the first measurements of the active-sterile mixing parameters. Using 433 kton-yr of data-taking with a partial configuration of only 5% of the final detector, ORCA is able to constrain the active-sterile mixing angles  $\theta_{24}$  and  $\theta_{34}$ . Two sets of scenarios are explored. First,  $\theta_{24}$  and  $\theta_{34}$  are simultaneously constrained under the assumption of an eV-mass sterile neutrino, which is one possible explanation to the anomaly seen in short baseline neutrino experiments. Then, each mixing angle is individually constrained over a broad range of mass squared difference  $m_{41}^2 \sim [10^{-4}, 10] \text{ eV}^2$  to probe the hypothesis of a very light sterile neutrino.

## Poster prize

Yes

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