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Status and Perspectives of KM3NeT/ORCA

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The KM3NeT collaboration is constructing megaton-scale neutrino detectors at a depth of 2500m in the Mediterranean Sea.

These detectors, named ARCA and ORCA are each made up of a three-dimensional array of spherical optical modules, each of which contains 31 3" photomultiplier tubes, designed to detect Cherenkov light emitted by charged leptons produced by neutrino interactions in and around the instrumented volume.

These are packed either sparsely (ARCA) or densely (ORCA), depending on the target energy.

ORCA, which is under construction off the coast of Toulon in France, will study atmospheric neutrino oscillations in the 1-100 GeV range.

This will address multiple outstanding issues in neutrino oscillation research, including ascertaining the neutrino mass ordering.

Physics studies indicate that this can be determined with a significance of 3-7 sigma (depending on the true value of the hierarchy and the value of the mixing angle θ_{23}) after three years of operation.

Experimental Collaboration

KM3NeT

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