Chair of Galileo, from which, according to tradition, he gave lectures - Credits: Univ. of Padova - M. Pistore

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Neutrino mass ordering determination through a combined JUNO and KM3NeT/ORCA analysis

Thursday, 25 February 2021 12:10 (5 minutes)

The neutrino mass ordering (NMO) is one of the fundamental questions in neutrino physics. KM3NeT/ORCA and JUNO are two neutrino oscillation experiments both aiming at measuring the NMO with different approaches: ORCA with atmospheric neutrinos transversing matter/Earth and JUNO with reactor neutrinos. This talk presents the potential of determining the NMO through a combined analysis of JUNO and ORCA data. In a joint fit, the NMO sensitivity is enhanced beyond the simple sum of the sensitivities of each experiment due to the tension between their Δm^2_{31} best fit in a wrong ordering assumption. From this analysis, we expect to determine the true NMO with $5\,\sigma$ significance after $1\,-\,2$ years of data taking by both experiments for the current global best-fit values of the oscillation parameters, while maximally 6 years will be needed for any other parameter set.

Collaboration name

KM3NeT

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