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Search for non-standard neutrino interactions with ANTARES and KM3NeT/ORCA

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Non-standard interactions (NSIs) in the propagation of neutrinos in matter can lead to significant deviations in neutrino oscillations expected within the standard neutrino oscillation framework. These additional interactions would result into an anomalous flux of neutrinos discernible at neutrino telescopes. The ANTARES detector and its next-generation successor, KM3NeT, located in the Mediterranean Sea, have the potential to measure sub-dominant effects in neutrino oscillations, coming from non-standard neutrino interactions.

In this presentation, a likelihood-based search for NSIs with 10 years of atmospheric muon-neutrino data recorded with ANTARES will be reported and sensitivity projections for KM3NeT/ORCA (ORCA being the low energy sub-array of KM3NeT), based on up-to-date simulations, will be shown. The phenomenological consequence of NSIs on the neutrino mass ordering (NMO) measurement at ORCA will be addressed as well. Remarkably, the bounds obtained with ANTARES in the NSI $\mu - \tau$ sector constitute the most stringent limits up to date.

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