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Towards an Improved Mass Ordering Measurement With IceCube-DeepCore: Neutrino/Anti-Neutrino Discrimination Studies SEBASTIAN ENRIQUE SANCHEZ HERRERA, Michigan State University, ICECUBE COLLABORATION — The neutrino mass ordering (NMO) is one of the remaining questions in the field of neutrino oscillations. The ordering is defined by the neutrino mass state with the lowest mixing to electron neutrinos. In the normal ordering (NO), this state is the heaviest, in inverted ordering (IO), it is the lightest. The IceCube neutrino observatory is a Cerenkov detector located at the south pole. Within, we can find DeepCore, a lower energy sub detector sensitive to atmospheric neutrino oscillations. As neutrinos traverse the Earth after production in cosmic ray showers in the atmosphere, they have different oscillation probabilities that depend on their energy and path lengths through the Earth. Inference of these probabilities under each mass ordering has been used in the past to measure the NMO with DeepCore, although sensitivities were low. High-energy Cherenkov detectors are usually not well suited to discriminate between neutrino and anti-neutrino populations and thus have limited sensitivity towards measuring the mass ordering. In this presentation I will show recent studies on a discrimination method between ν and $\bar{\nu}$ events in DeepCore that promises to yield a significant improvement in sensitivity

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