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Neutrino Oscillation Physics with IceCube Gen2/Phase1

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The IceCube Gen2/Phase1 detector has been proposed to in-fill IceCube's DeepCore region with seven new, densely-instrumented strings. These strings would provide the world's best sensitivity to tau neutrino appearance, with a precision of better than 10%, providing the most stringent test of unitarity in the tau sector to date. Gen2/Phase1 would also have improved sensitivity to muon neutrino disappearance and dark matter searches, and would provide a calibration platform that will improve our understanding of the optical properties of the ice, with positive impact on current and future IceCube analyses at all energy scales. The strings would be placed on a grid consistent with expansion to the future proposed PINGU array. In this presentation we describe the sensitivities of Phase 1 to neutrino oscillations and dark matter, the new calibration devices planned for co-deployment, and the impact those devices will have on future analyses.

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