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**Sensitivity of IceCube-Gen2 Phase I to tau neutrino appearance**

JOO PEDRO A. M. DE ANDR, Michigan State Univ, ICECUBE-GEN2 COLLABORATION COLLABORATION — Looking towards the future of IceCube we are planning both high-energy and low-energy (PINGU) extensions. The first step towards these upgrade, "IceCube-Gen2 Phase I", consists of 7 additional strings inserted in the denser region DeepCore of the IceCube Neutrino Observatory. These additional photo-multipliers will more than double the number of sensors in the DeepCore region and with that significantly improve our ability to reconstruct low-energy events. This will lead to a significant improvement in the sensitivity to measure nutau appearance thanks to improved precision in reconstruction of nutau events. Also along with the additional photo-multipliers, new calibration devices will also be deployed with IceCube-Gen2 Phase I. These new devices will also further improve our understanding of the surrounding ice, and with that reduce the impact of some of our dominant systematics. The reduction of these systematics will also improve the sensitivity of IceCube to high-energy neutrinos through the re-analysis of the archival data with the improved detector systematics. We will present status of the tau neutrino appearance analysis using IceCube-Gen2 Phase I, both from thanks to the additional photomultiplier tubes deployed and from the extended calibration capabilities.

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