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IceCube-Upgrade and IceCube-Gen2

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After the discovery of high-energy cosmic neutrinos and the likely observation of a first neutrino source with the IceCube neutrino telescope, the realization of a next generation neutrino telescope at the South Pole, IceCube-Gen2, is progressing. As a first step, the IceCube detector will be upgraded with seven new strings to be deployed near the center of the existing detector during during the 2022/23 Polar season. The main goals are world-leading sensitivity to neutrino oscillation physics including tau neutrino appearance and significantly improved calibration of the existing detector which can also be applied to archival data. IceCube-Gen2 will then consist of additional ~140 strings which will instrument 8 km3 of ice with the main goal of high-energy neutrino astrophysics. The talk discusses the physics case for both detectors and presents the current project status.

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