



Contribution ID: 324

Type: **Parallel Talk**

Development of an Optical Module for IceCube-Gen2

Saturday, 9 July 2022 12:30 (15 minutes)

IceCube-Gen2 is a proposed high energy extension of IceCube that would expand the high energy neutrino sensitivity by an order of magnitude. IceCube, located at the South Pole, is the world's largest neutrino telescope. The IceCube-Gen2 optical array has a planned instrumented volume of 7.9 km^3 , 8 times larger than that of IceCube, and will deploy 9,600 modules in 120 new strings with 240 m spacing. To cover such a horizontally sparse array, the design goals include increasing the optical module photosensitivity a factor of 3 better than the IceCube Digital Optical Module (DOM) while the diameter of the modules needs to be 10% smaller to reduce the ice drilling cost.

Two candidates for the baseline design have total lengths of 540 mm and 444 mm containing 18 and 16 4-inch PMTs, respectively. Each glass pressure vessel will consist of two halves with hemispherical end caps and a roughly cylindrical central section with a diameter of 12 inch. GEANT4 simulations, combined with lab measurements, have confirmed that the new optical modules have a factor of 3 more photosensitive area compared to the IceCube DOM. In this talk, we will show the unique design and expected performance of the new optical module and review the current status of development.

In-person participation

Yes

Primary author: MAKINO, Yuya (University of Wisconsin-Madison)**Presenter:** MAKINO, Yuya (University of Wisconsin-Madison)**Session Classification:** Detectors for Future Facilities, R&D, novel techniques**Track Classification:** Detectors for Future Facilities, R&D, novel techniques