

D-Egg: The next-generation optical module for the deep in-ice neutrino detector

The next-generation optical module for such detector extension is expected to have improved detection efficiency for Cherenkov photons over the current IceCube optical module.

Furthermore, it is also anticipated that additional information possibly provided by new sensors, such as positions of the Cherenkov photons at each optical sensors, will lead to advances in event reconstructions.

The Dual optical sensors in an Ellipsoid Glass for Gen2 (D-Egg) is one of the optical modules being developed for the IceCube-upgrade and the IceCube -Gen2 projects.

About 250 D-Eggs are planned to be deployed in the IceCube-upgrade array.

D-Egg has two 8-inch high-QE PMTs facing downwards and upwards, which are coupled to a highly UV-transparent glass vessel.

It has been designed to have an improved capability of detecting Cherenkov photons in all directions.

In this contribution, expected performances of the D-Egg as well as the status of the prototype module development are presented.

Primary author: MAKINO, Yuya (Chiba University)

Presenter: MAKINO, Yuya (Chiba University)