

# Evaluation of the angle dependence of the light detection efficiency of the LOM-18 detector for IceCube-Gen2

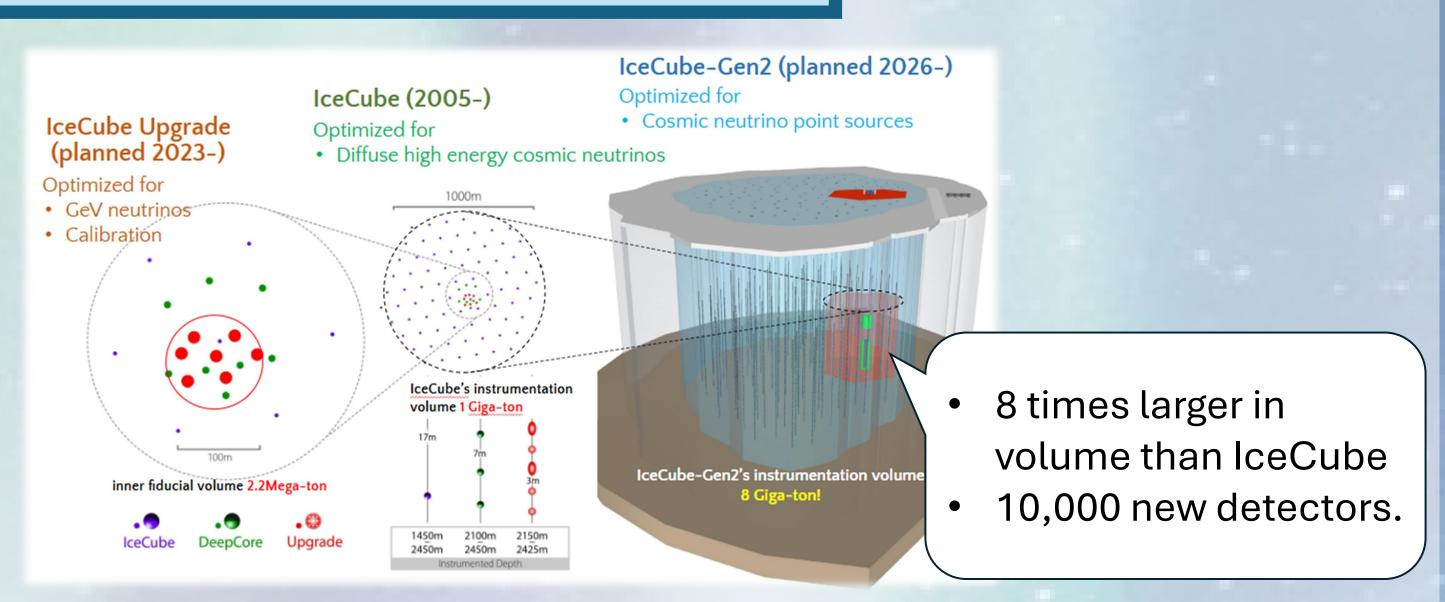




Chiba University, International Center for Hadron Physics (ICEHAP)

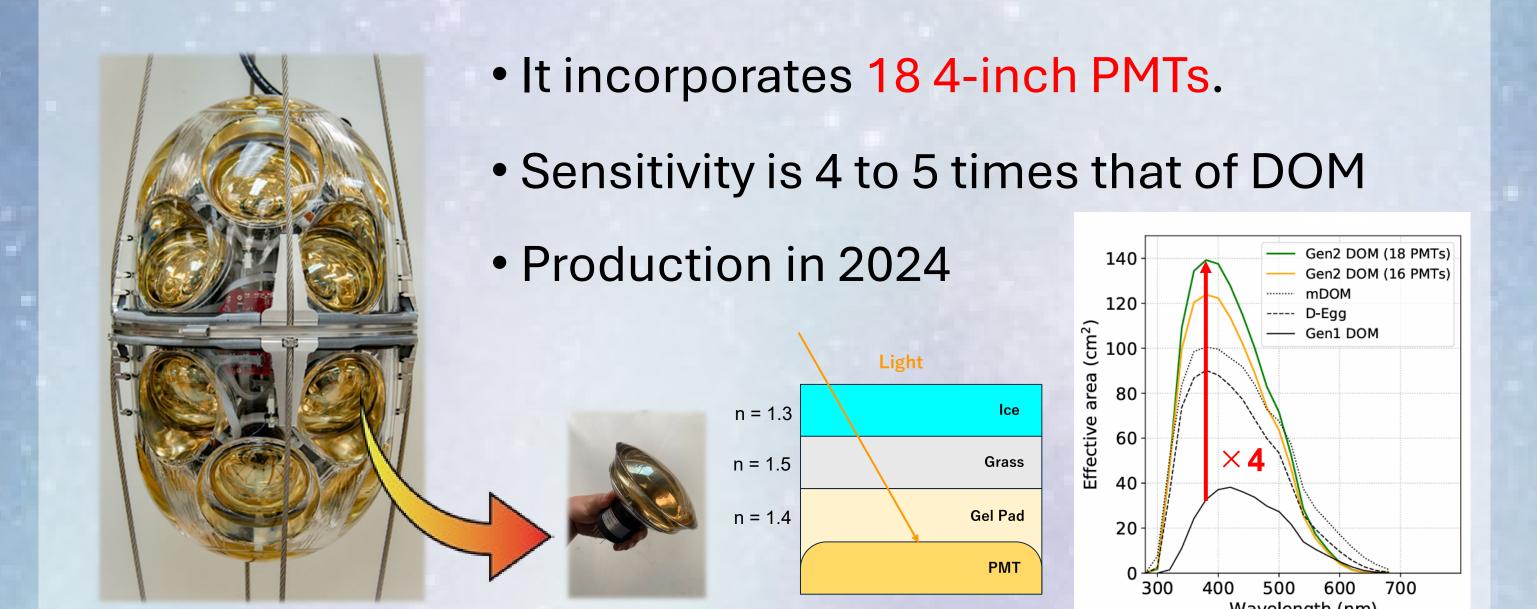
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## 1. IceCube-Gen2



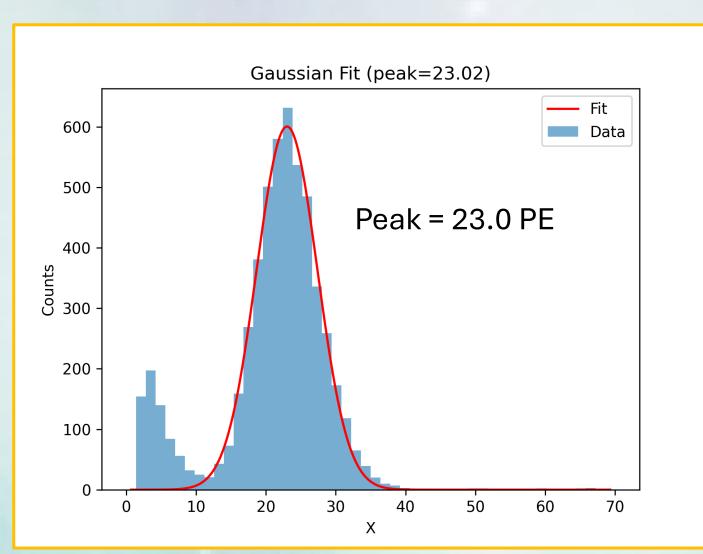
Higher detection rate & better angular resolution

### 2. The LOM-18 detector

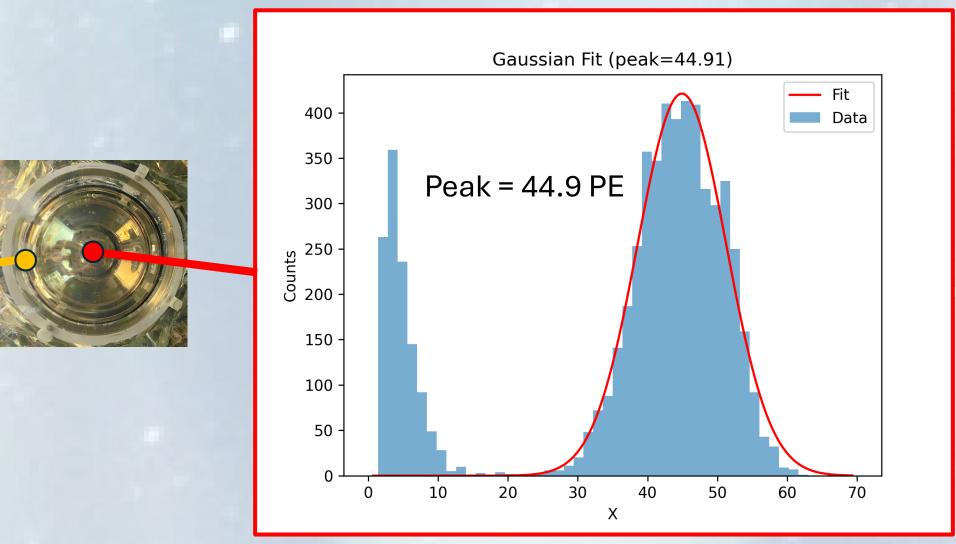


# 3. Profiling of the position dependence of sensitivity

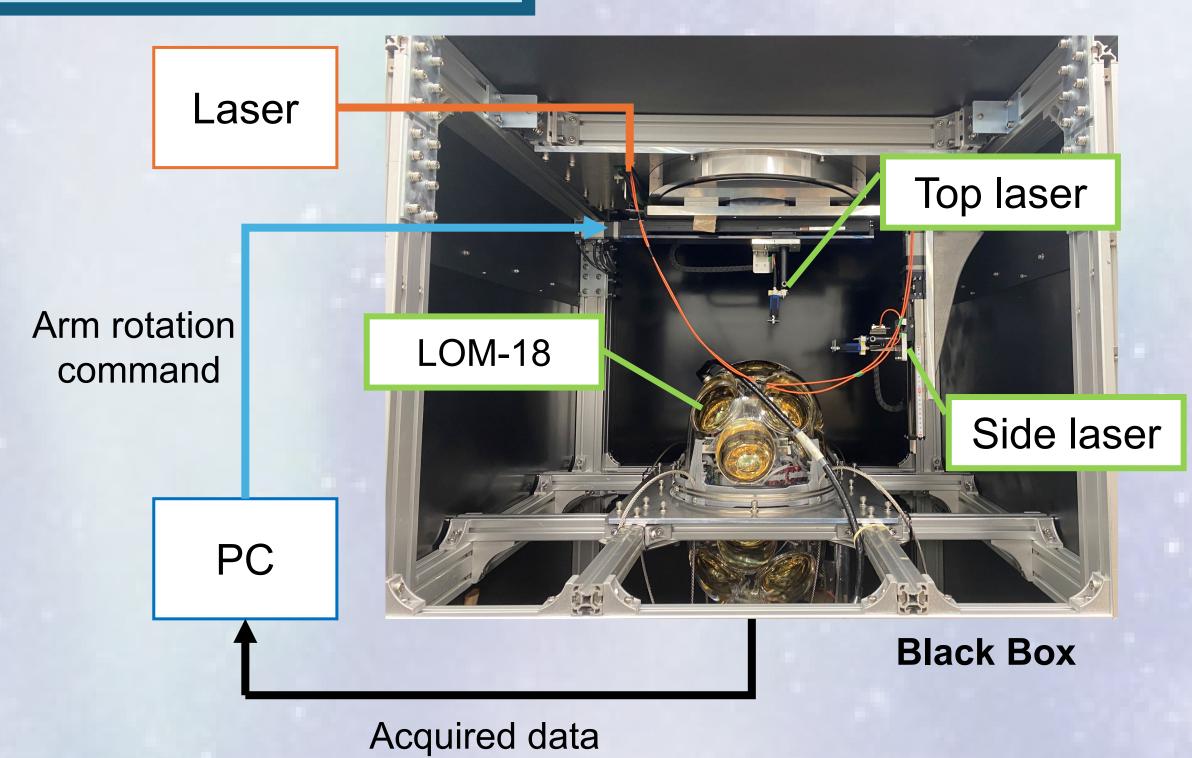
Illuminate photons for various locations, and measure collect charges.



When the radius is large



When the radius is small



# 4. Results of the measurement

#### 1. R-θ Measurement

- Observations using laser irradiation from above
- R: 0~150mm (5mm), θ: 360° (6°)
- Total: 1860 Points

#### 2. Z-θ Measurement

• Observations using laser irradiation from the horizontal direction Ch 15

• R: 0~190mm (5mm), θ: 180° (6°

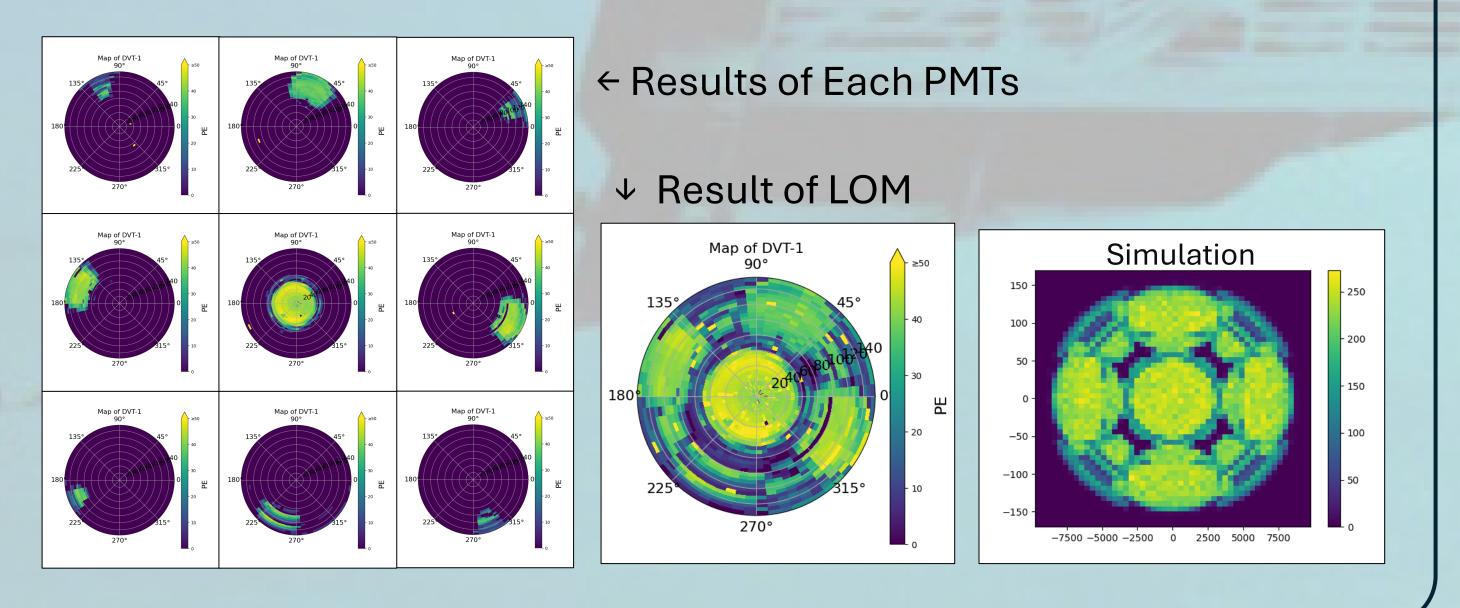
Total: 1140 Points

# Ch 9 Ch 17 Ch 17 Ch 17

Ch 3

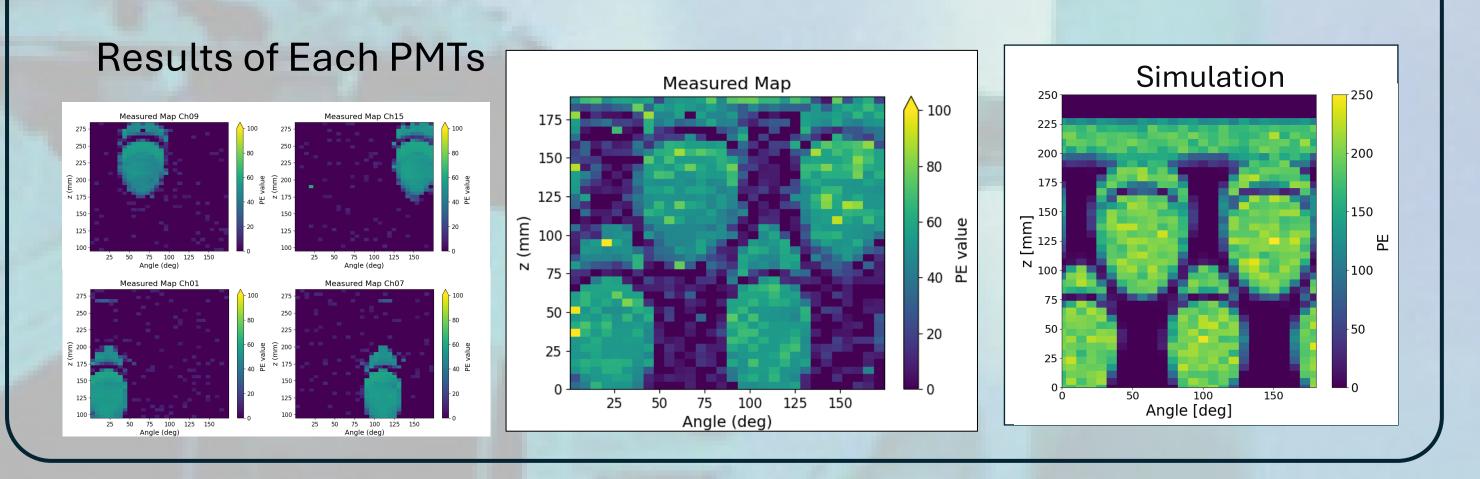
#### R-θ Measurement

- The majority of the surface is sensitive from above.
- The conical-shaped "Gel Pad" really enhances the sensitive area of the PMTs.
- The experimental results are consistent with a MC simulation



#### Z-θ Measurement

- Photon collection pattern is consistent with the geometric location of the PMTs.
- The light-gathering effect of the "Gel Pad" is exceptionally well reflected.
- The experimental results were consistent with MC simulation. Moreover, the photon yield is uniform among PMTs.



# 5. Summary & Outlooks

- Illuminated photons to the LOMs, and the collected charges were measured.
- The results using both top- and side- lasers are consistent with the simulation, thereby justifying the effective area I have evaluated.
- Get a higher resolution map.