

# Design and performance of the multi-PMT optical module for IceCube Upgrade

## *Executive Summary*

### **About**

A novel optical sensor for the low-energy extension of the IceCube neutrino telescope, consisting of 24 3-inch PMTs, active HV generation per PMT, and continuous waveform digitization.

### **Relevance**

Improved performance compared to sensors in current IceCube detector.

- Increased photosensitive area by more than a factor of 2.
- Adds information on photon arrival direction with its segmented photosensitive area.
- mDOM-like segmented modules also foreseen for IceCube-Gen2

### **What was done?**

- New sensor was designed.
- Several prototypes have been constructed.

### **Results**

- Pre mass-production series of ten modules is being built.
- Final testing program is under way.

