

# FLARE Detector Conceptual Design

## ► Preliminary conceptual drawing of FLARE detector (All dimension in millimeter)

- Membrane Cryostat similar to DUNE design
  - Inner volume  $\sim 36\text{m}^3$  (2m x 2m x 9m inner dimensions ), LAr mass  $\sim 50$  ton
  - Membrane insulation thickness  $\sim 0.5$  m
  - Heat leak into cryostat from wall  $\sim 580$  W (assuming  $7.2$  W/m<sup>2</sup> flux )
- TPC similar to ICARUS design
  - Fiducial volume  $7\text{m}^2$  (1m x 1m x 7m ), LAr mass  $\sim 10$  ton
  - Perforated metal plate CPA in the middle with main bias voltage
  - Two identical APAs on both sides with 50 cm drift distance
  - APA with wrapping wires following DUNE APA arrangement, Single-end readout
  - $\sim 600$  readout wires on one APA
  - HV required for the common  $0.5\text{kV/cm}$  is  $25\text{kV}$ , can go for higher drift field
- Photon Detection System
  - 100x Hamamatsu R11410 PMT(3-inch window) array at the back of each APA
  - Total window area of the PMT of on array  $\sim 0.45$  m<sup>2</sup>

