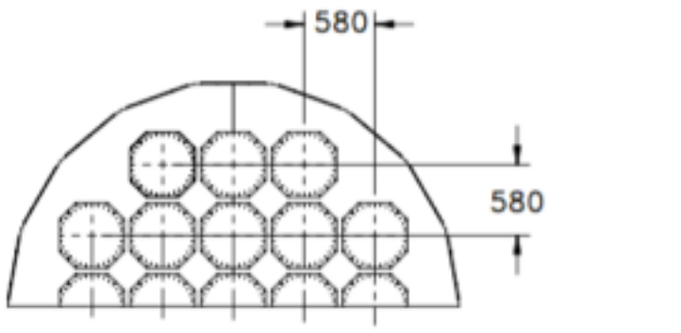
# WATER CHERENKOV TEST EXPERIMENT REQUIREMENTS

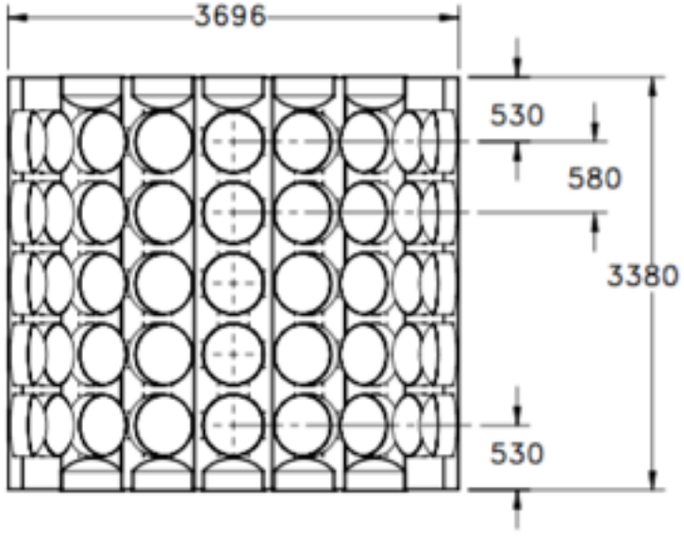
# DESCRIPTION OF EXPERIMENT

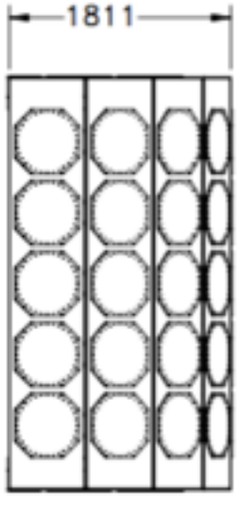


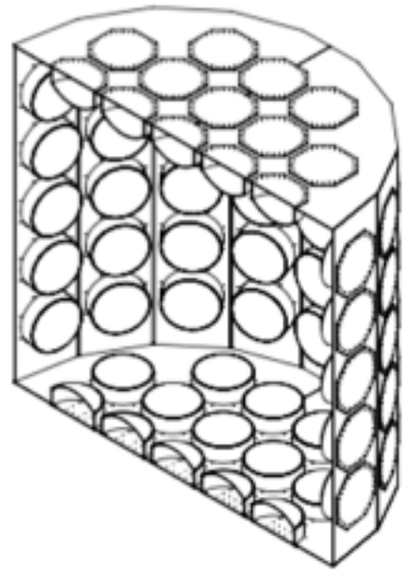
- Plan to install a ~30-50 ton water Cherenkov detector in a test beam to test detector components and calibration systems

- Baseline detector design:



# FACILITY REQUIREMENTS



- Space:
  - 4 m x 4 m x 4m space for detector
  - Additional 4 m of overhead space for installation (can be installed at different location then test hall
  - 2 m x 2 m floor space for water system near detector
  - 3 racks in counting room for DAQ and low voltage systems
- Weight:
  - Maximum of 60 ton detector mass including the water tank
- Access to deionized water to fill detector

# BEAM REQUIREMENTS



- Pion, electron, proton and kaon beam with beam momentum of 140 MeV/c to 1200 MeV/c
- Muon enhanced beam with beam momentum down to 140 MeV/c to 1200 MeV/c
- Beam spot size less than 10 cm RMS
- Beam energy scale uncertainty of <0.5%
- Beam energy resolution of <2.0%
  - Beam spread can be large if momentum is measured to <2.0% event-by-event
- Instantaneous rate between 1 kHz and 10 kHz

# TIME REQUIREMENTS



- Construction of detector in 2021
- Operation of detector in 2021-2022