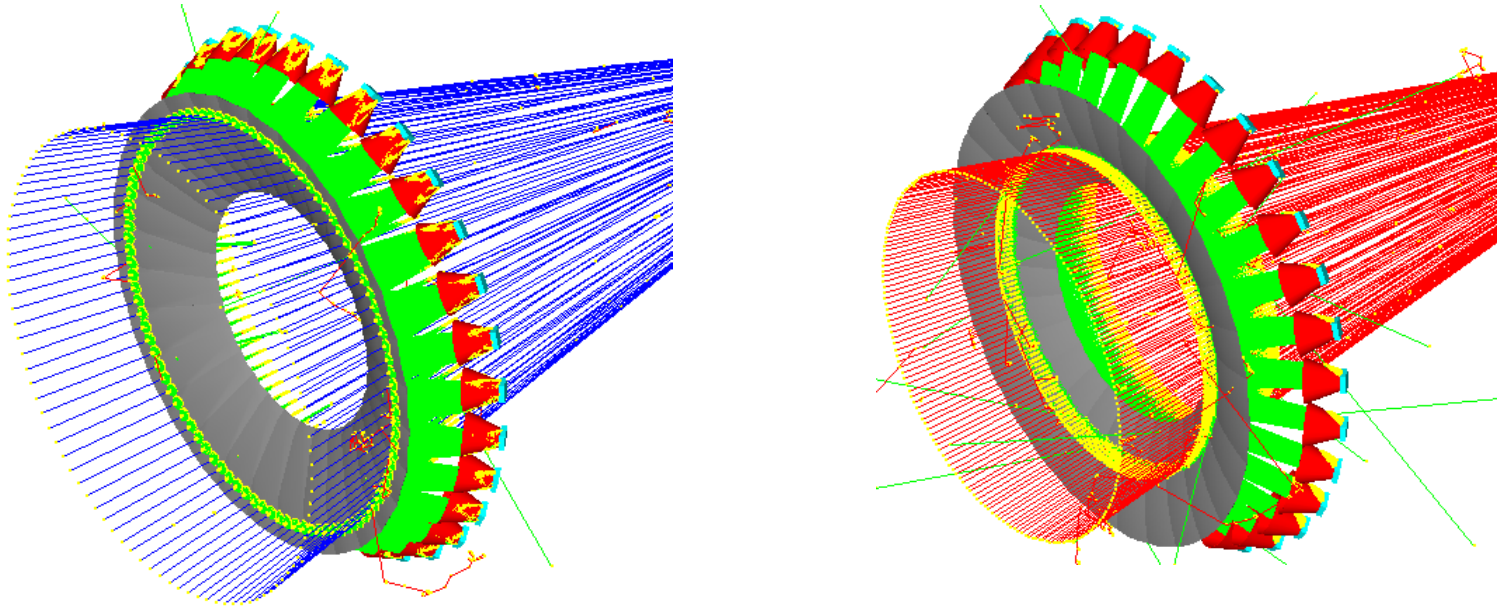


SIDIS (Pion) Cherenkov Update

S. Malace

The Pion Cherenkov: Design

Design: one ring of spherical mirrors + 9 H8500C-03 PMTs per sector + straight cones + C_4F_8O at 1.5 atm and 20 C (pion threshold ~ 2 GeV)



Couldn't make the photon detector smaller:

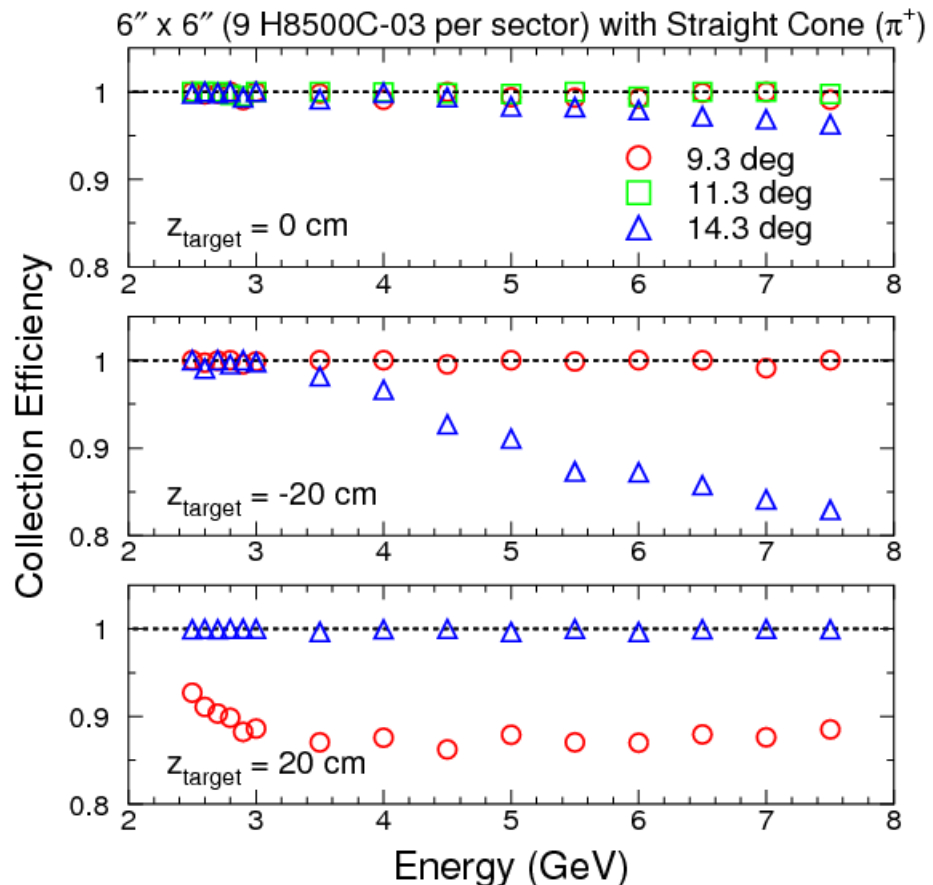
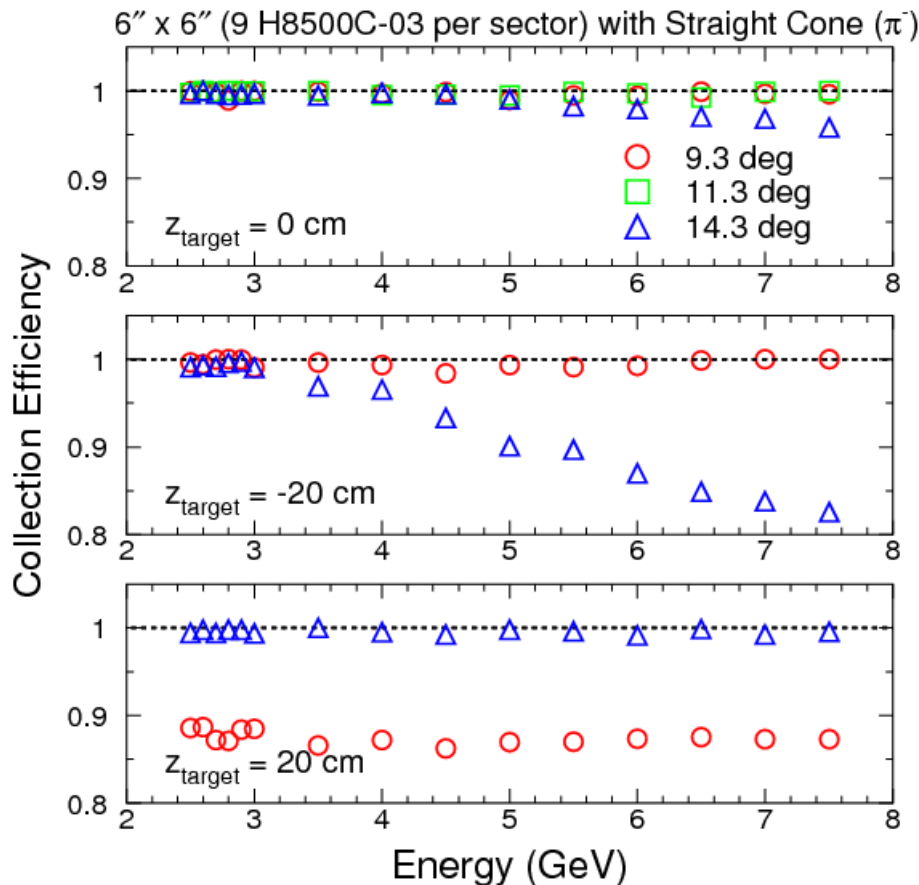
→ constraints on PMT position in the tank

→ gas with high index of refraction: large enough Cherenkov cone to impose constraints on the photon detector size given the wide kinematic range to be covered

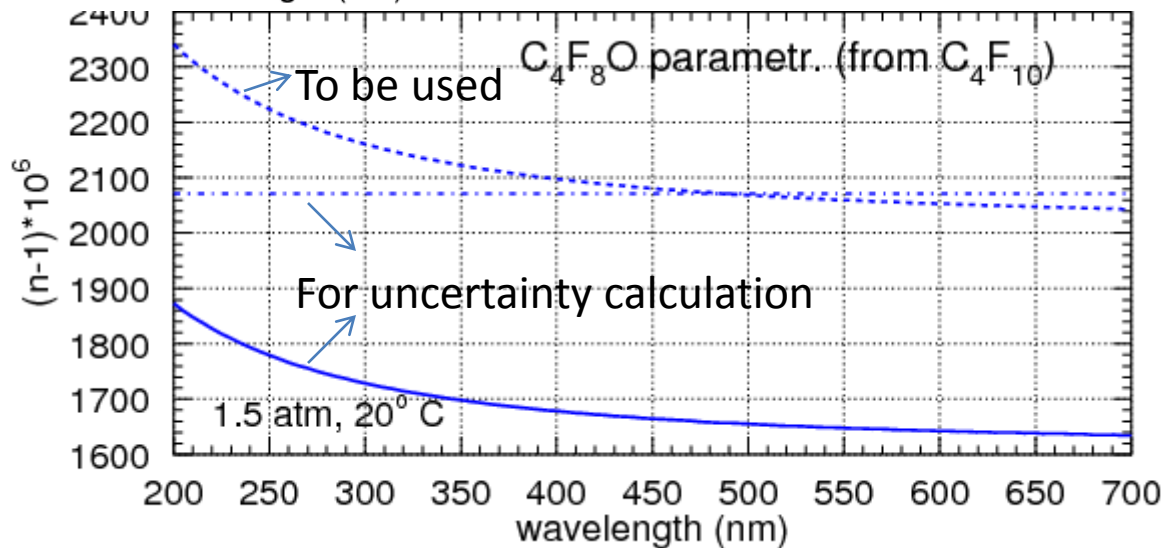
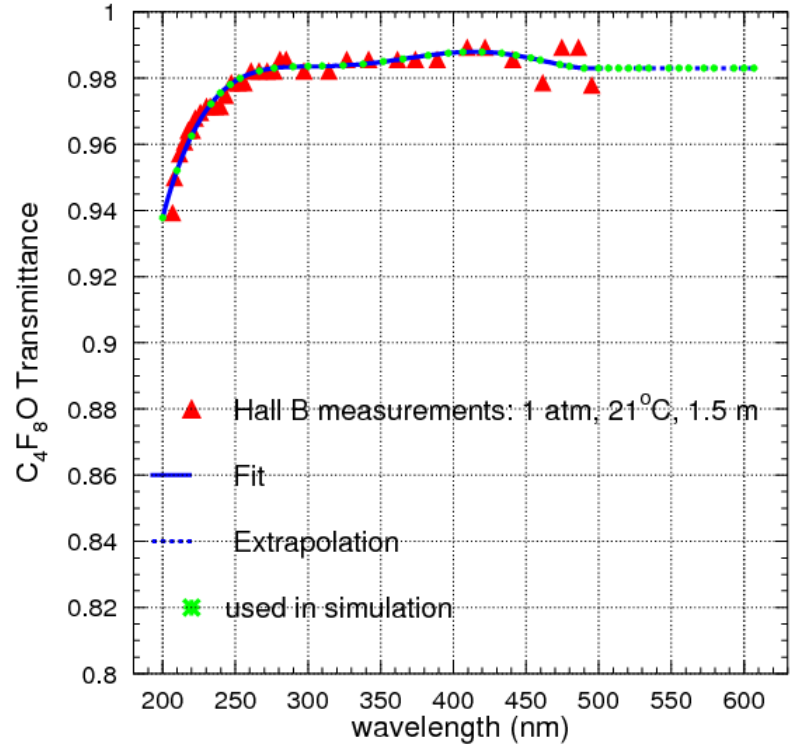
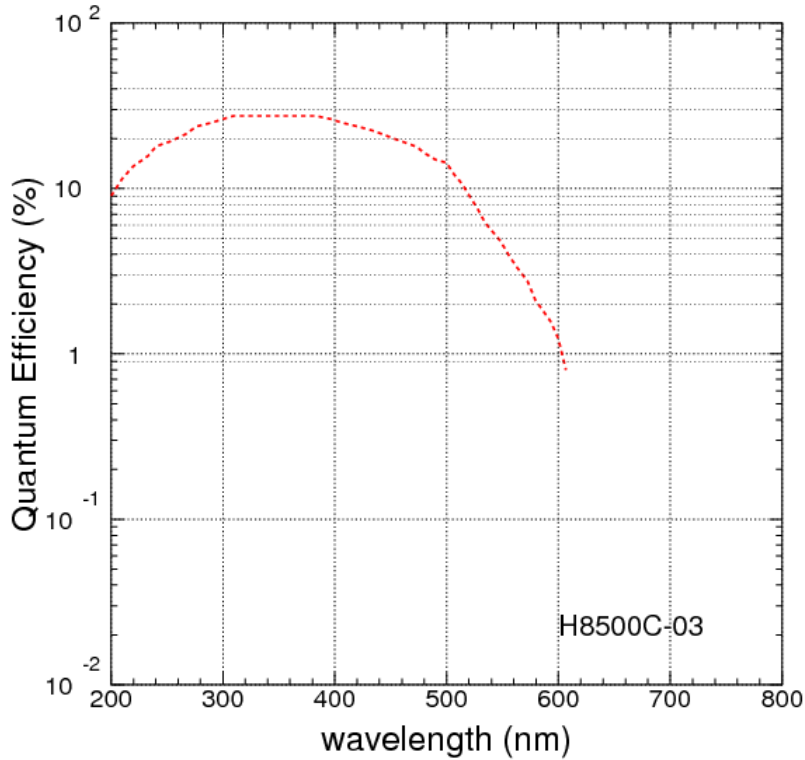
Mirrors will be kept in one piece per sector

The Pion Cherenkov: Collection Efficiency

Design: one ring of spherical mirrors + 9 H8500C-03 PMTs per sector + straight cones + C_4F_8O at 1.5 atm and 20 C (pion threshold ~ 2 GeV)

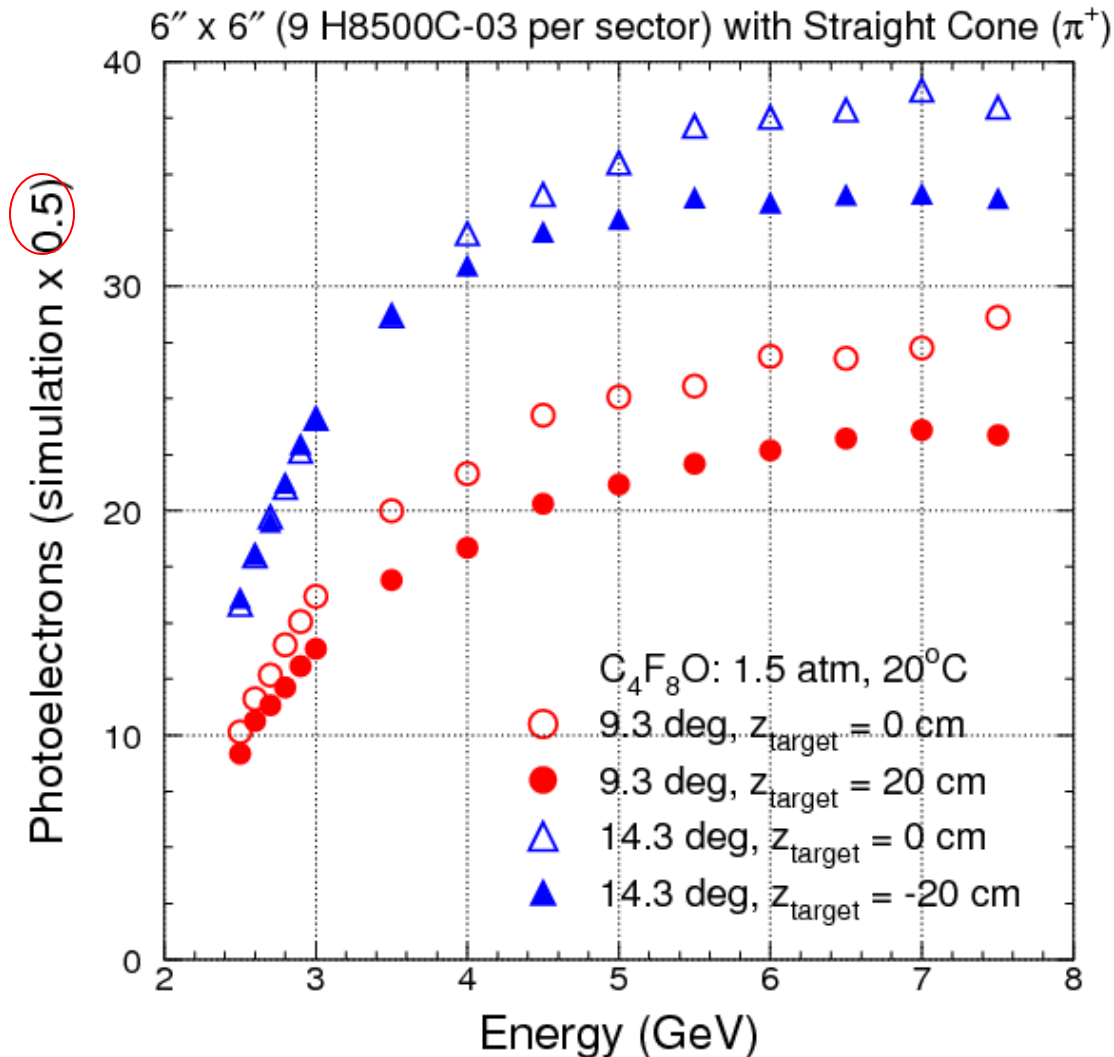


The Pion Cherenkov: Corrections



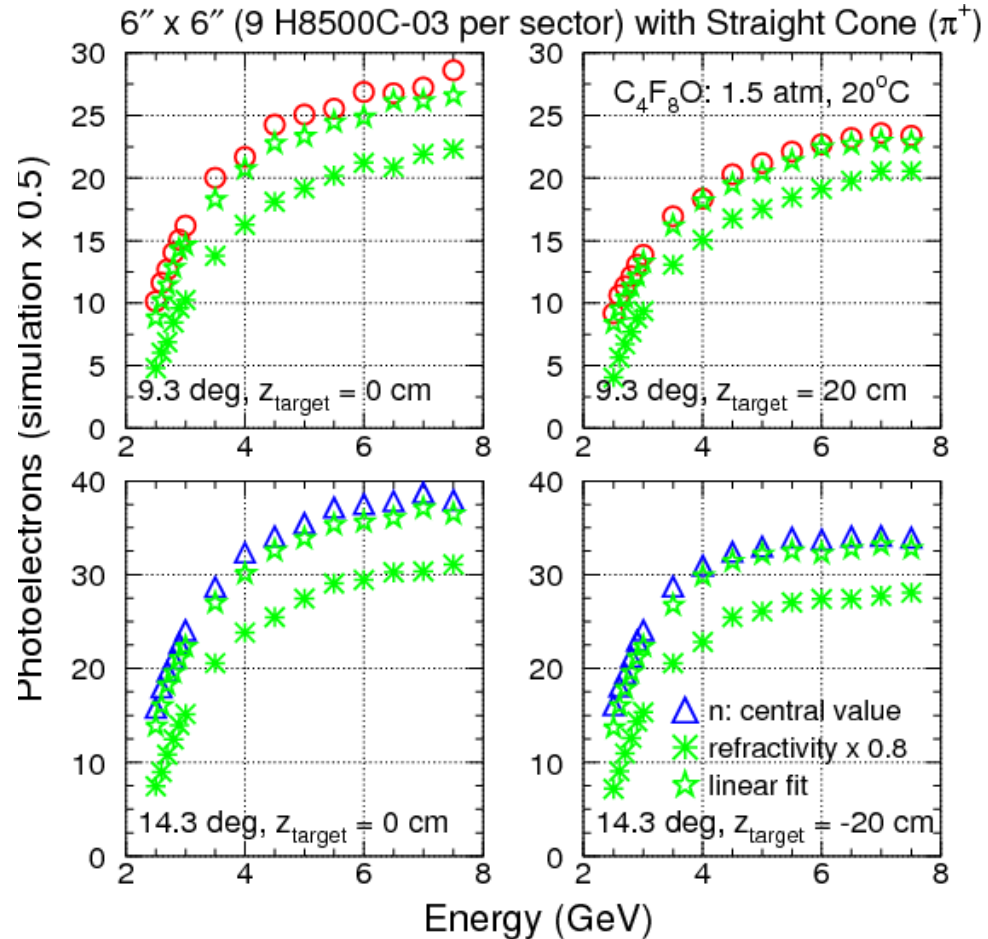
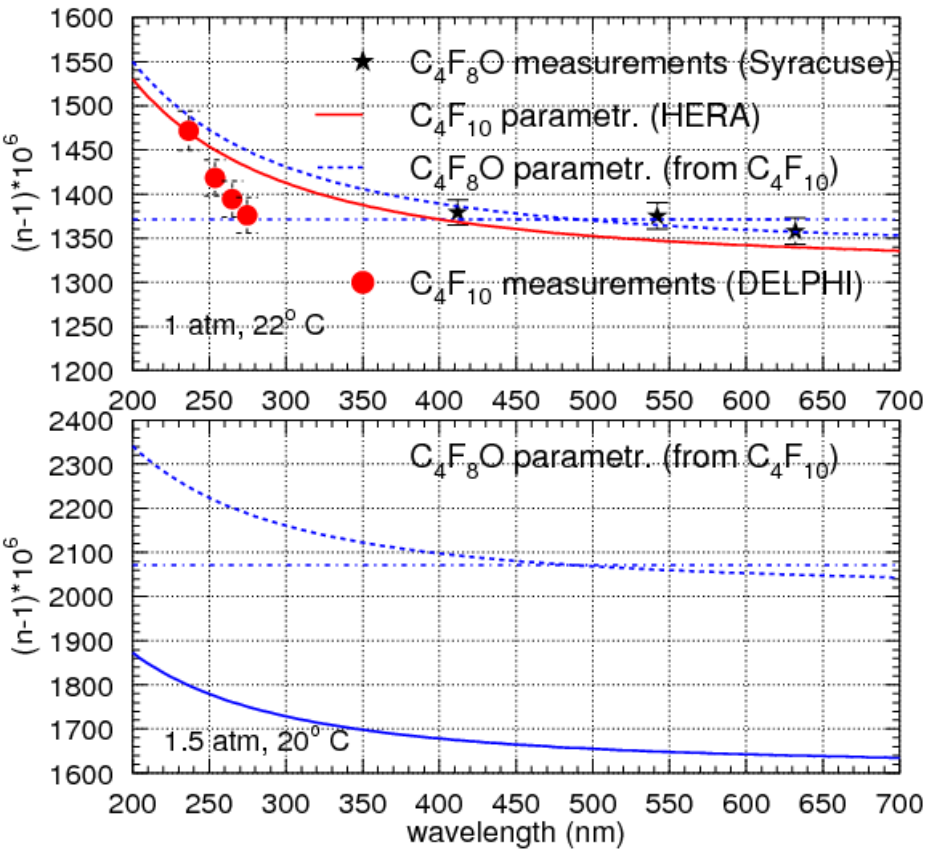
The Pion Cherenkov: Signal

Design: one ring of spherical mirrors + 9 H8500C-03 PMTs per sector + straight cones + C_4F_8O at 1.5 atm and 20 C (pion threshold ~ 2 GeV)



The Pion Cherenkov: Systematic Study

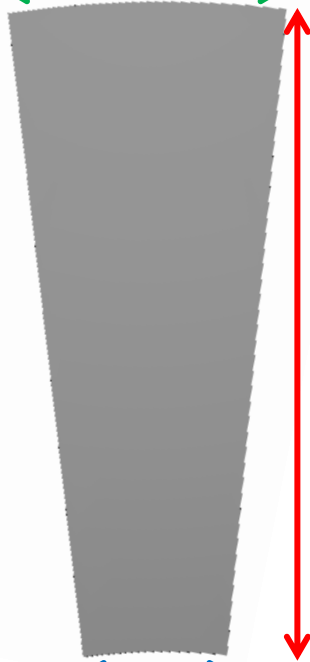
Index of refraction not well measured: study sensitivity to the value of n “plugged” in the simulation



The Pion Cherenkov: Mirrors

We contemplate making the mirrors of CFRP; sent a request for quote to Composite Mirror Application (CMA)

Upper edge width = 43.0998 cm

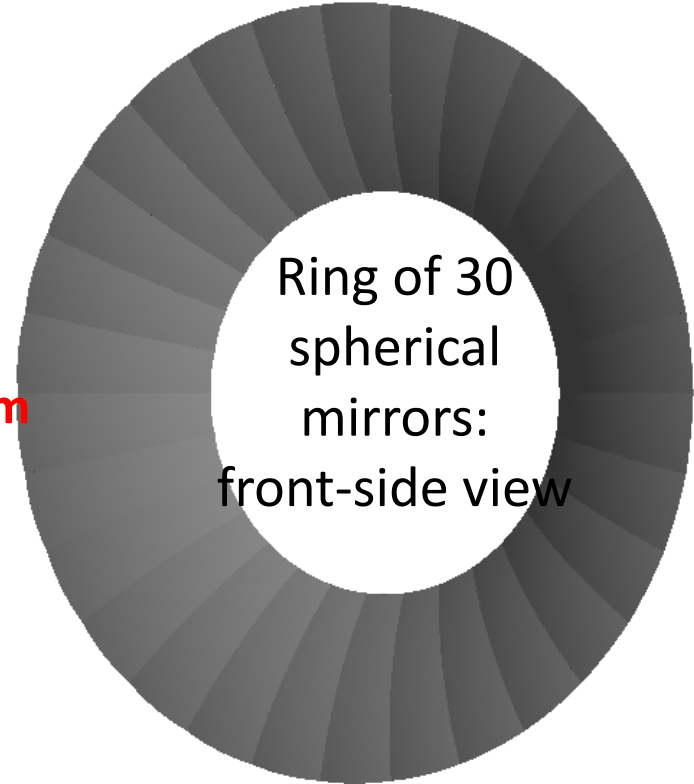


Length = 104.11 cm

Lower edge width = 22.2419 cm

Curvature radius = 215.389 cm

1 spherical mirror: front view



1 spherical mirror: side view