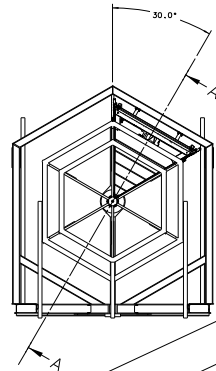


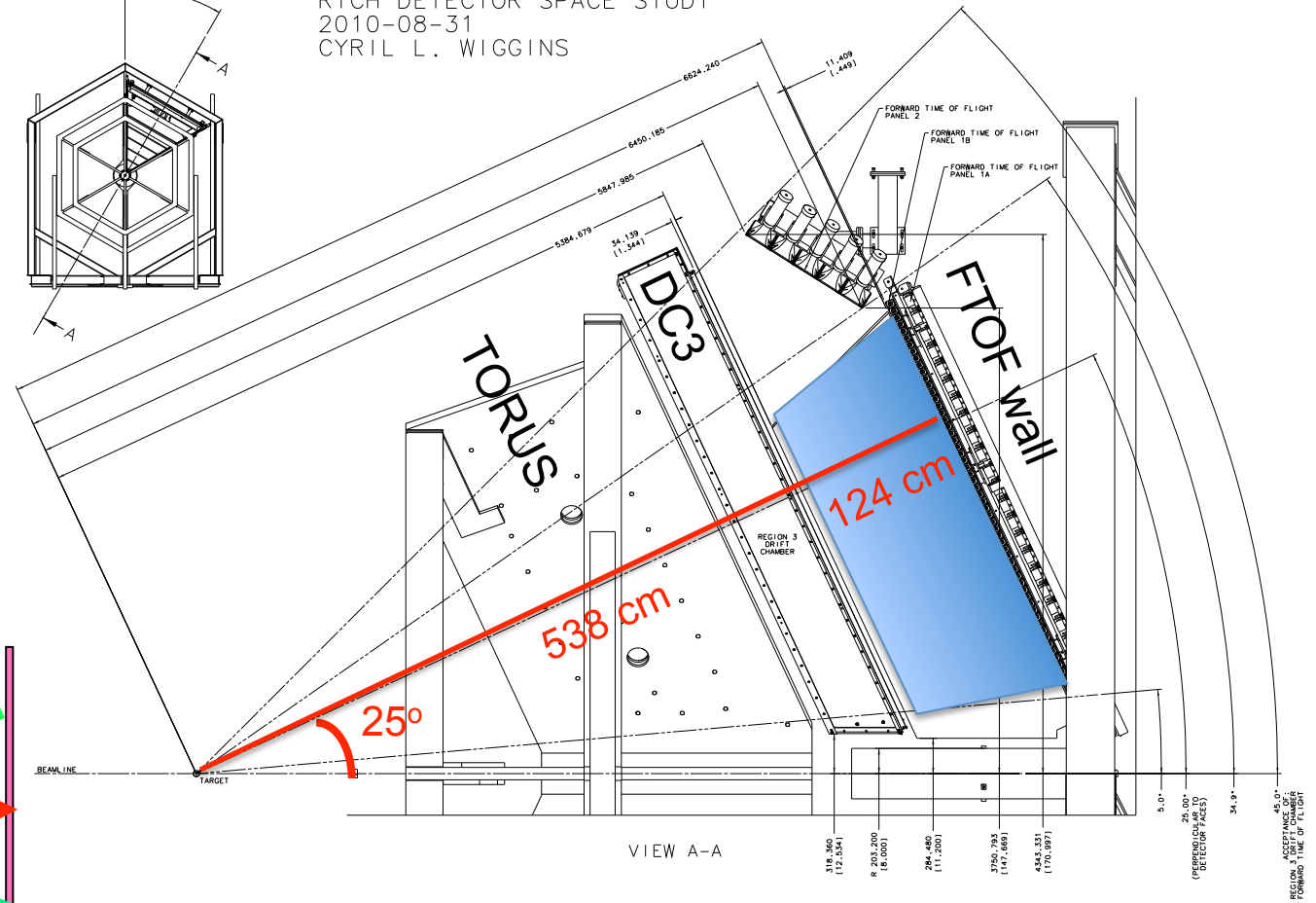
# CLAS12 Geometry Constraints

## Base Numbers

- ◆ 5 m from IP
- ◆ ~ 1 m gap
- ◆ Several m<sup>2</sup> surface



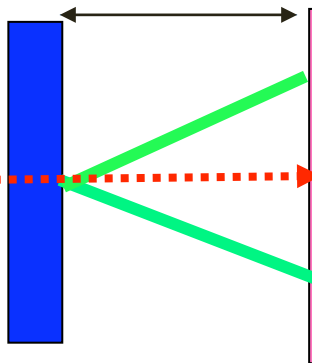
RICH DETECTOR SPACE STUDY  
2010-08-31  
CYRIL L. WIGGINS



## Proximity RICH

Proximity gap

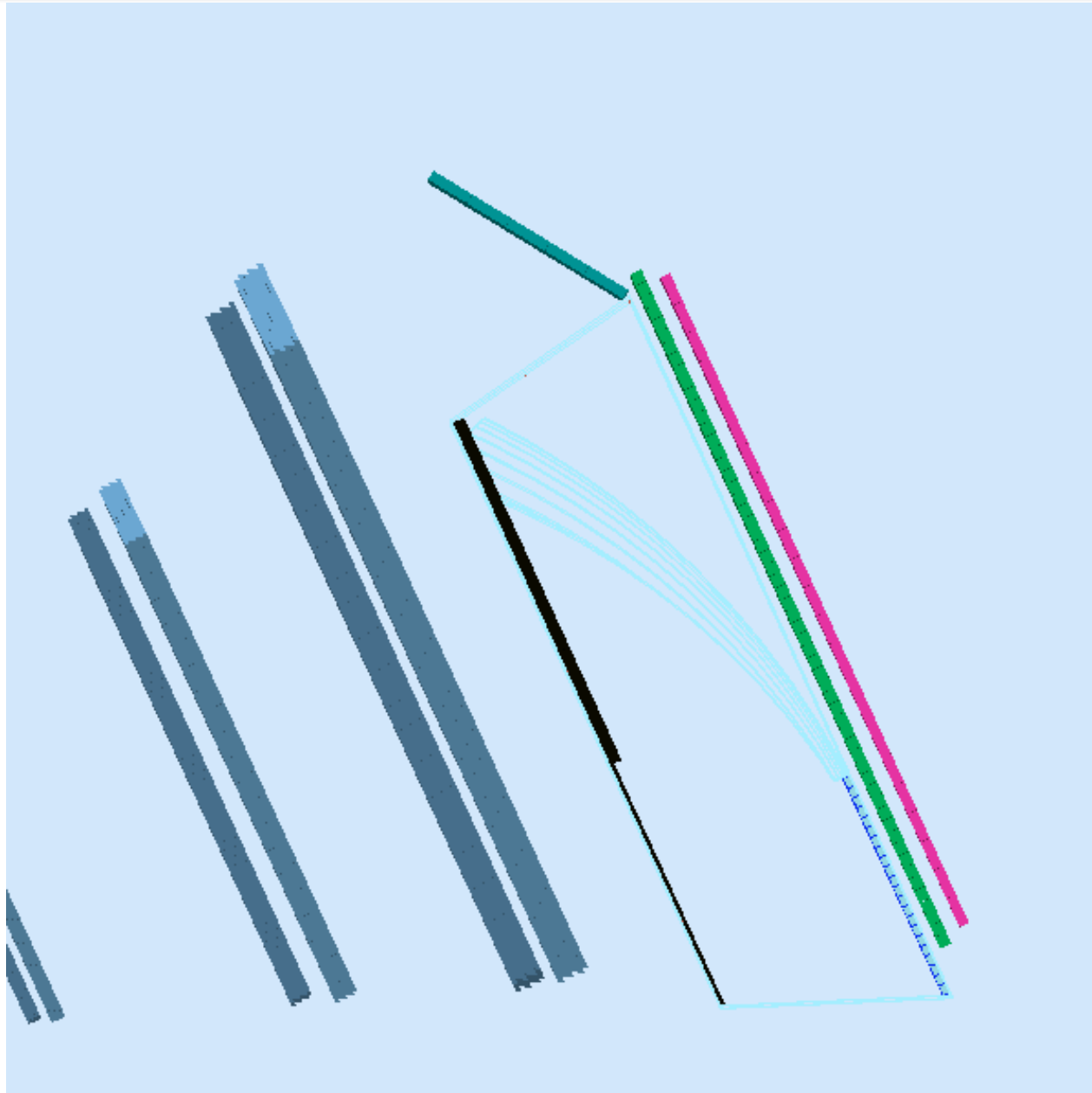
Charged particle



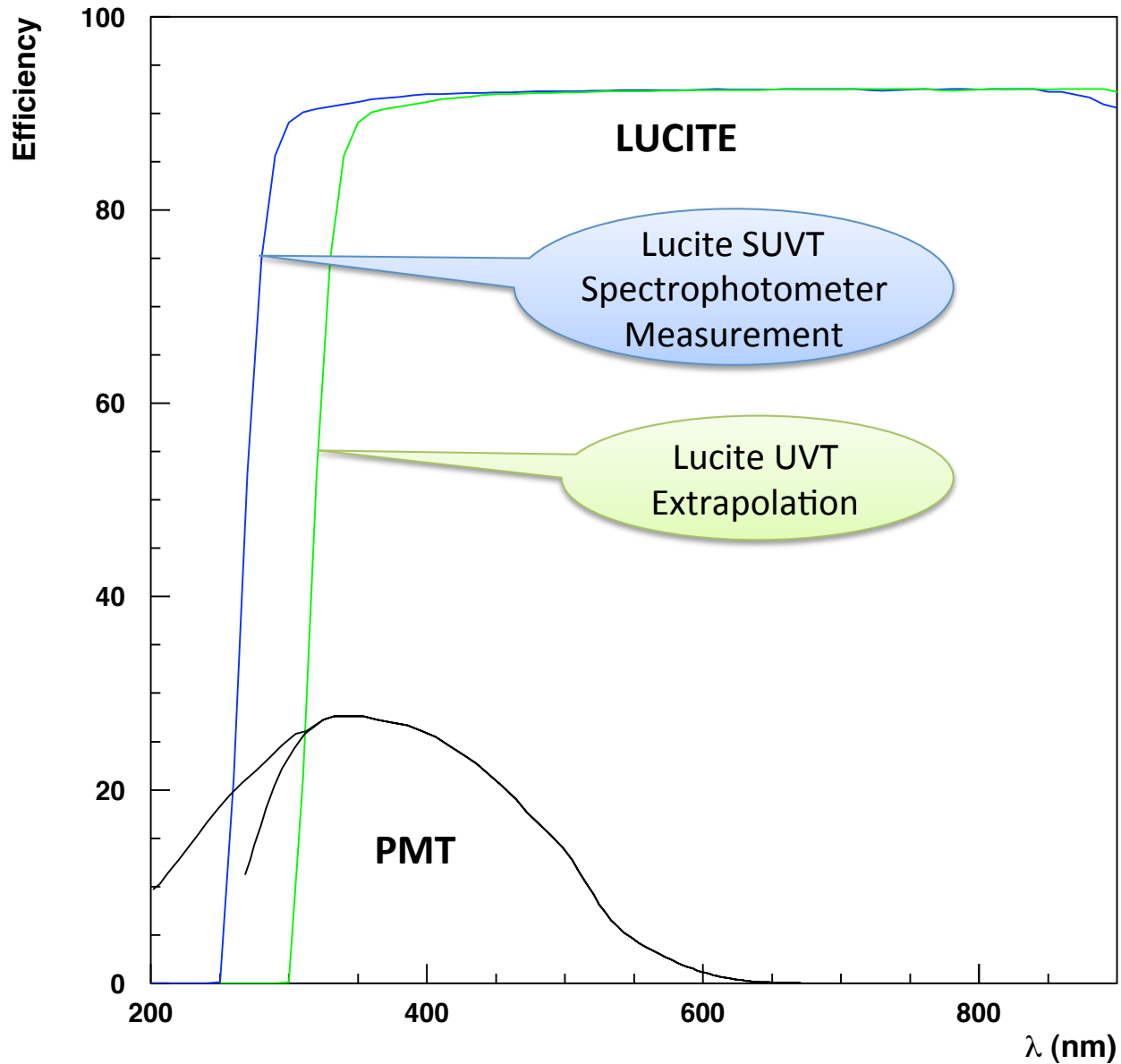
Radiator

Photon detector

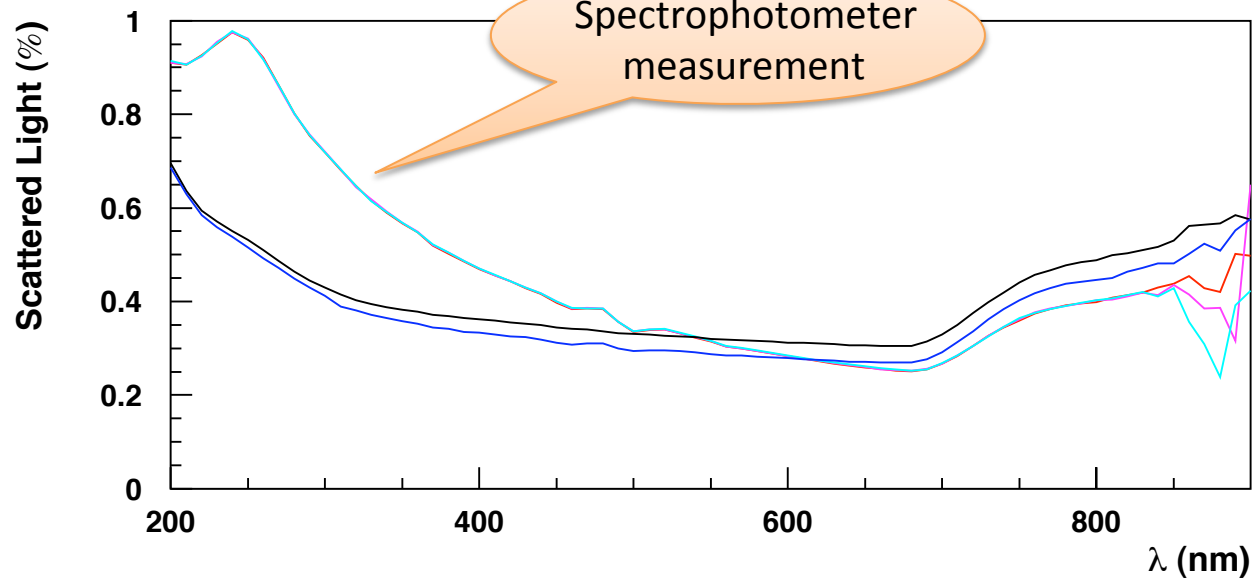
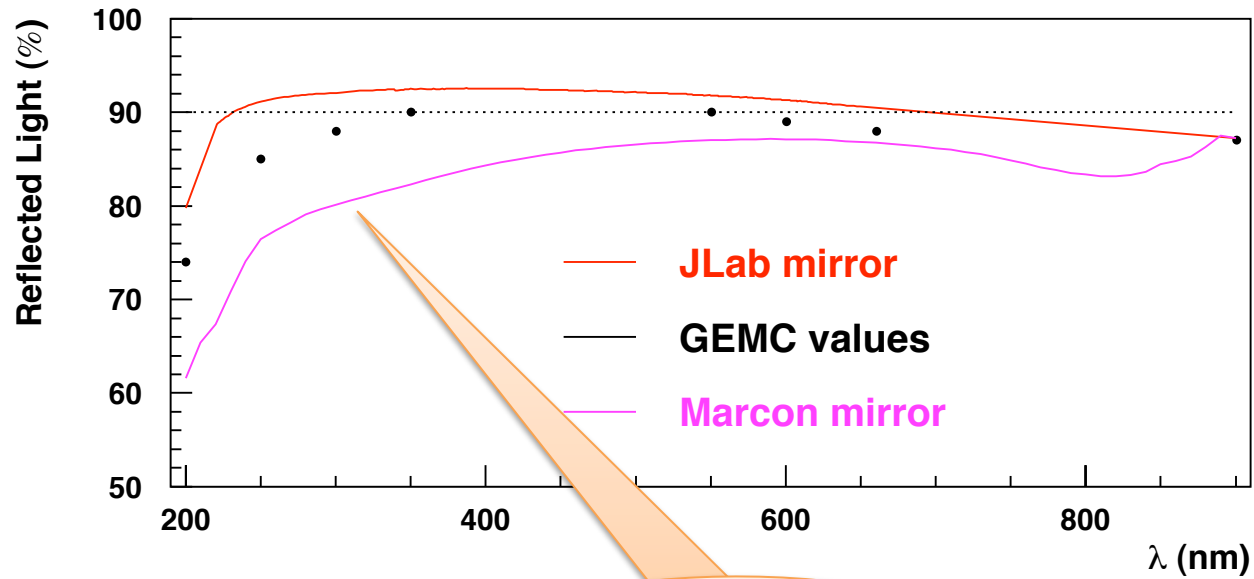
# GEMc Representation



# Lucite

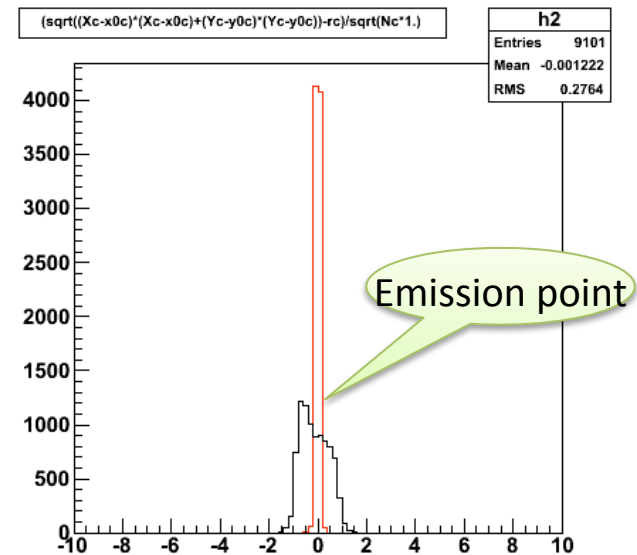
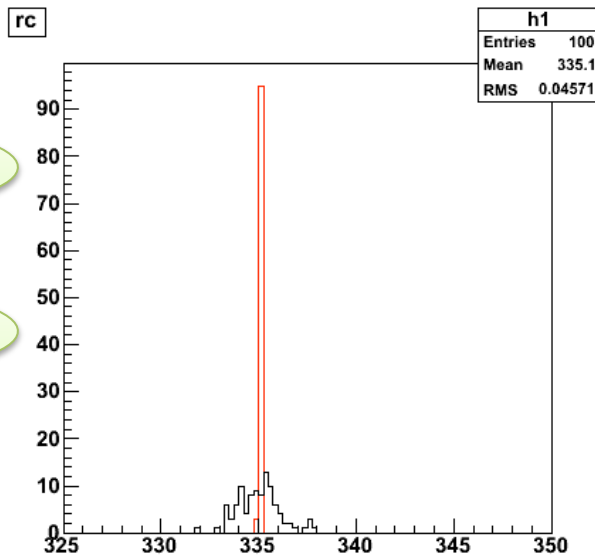
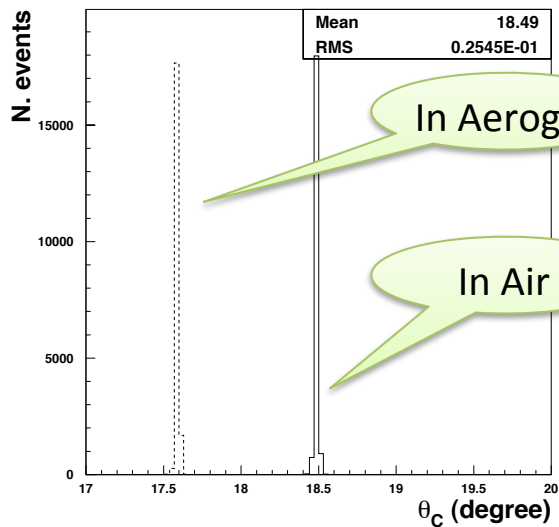


# Mirror Reflectivity

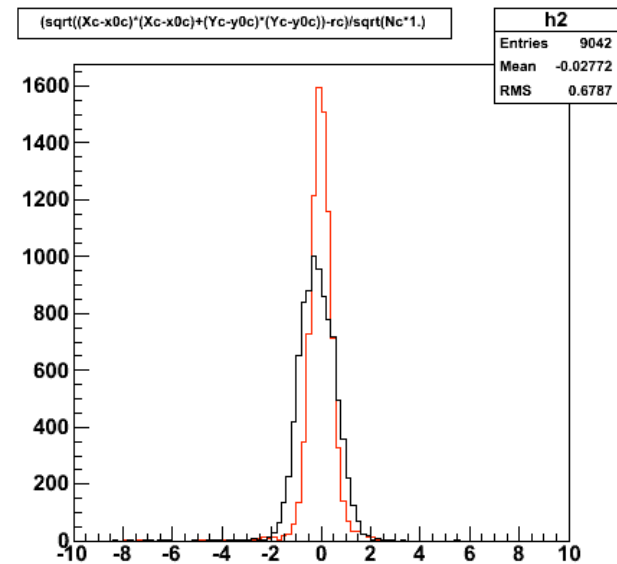
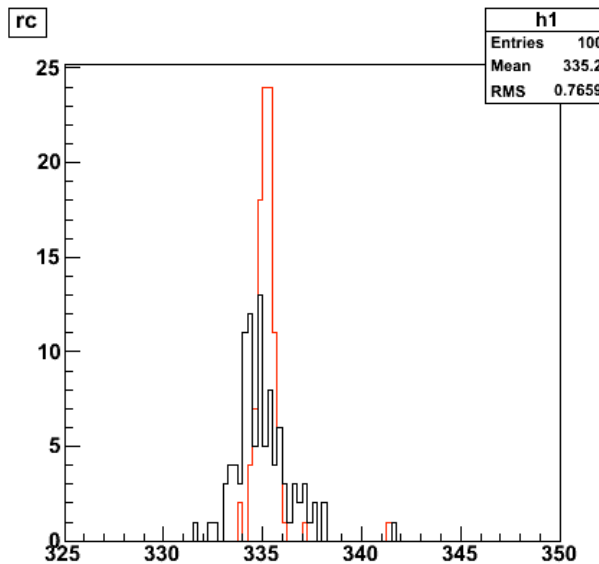
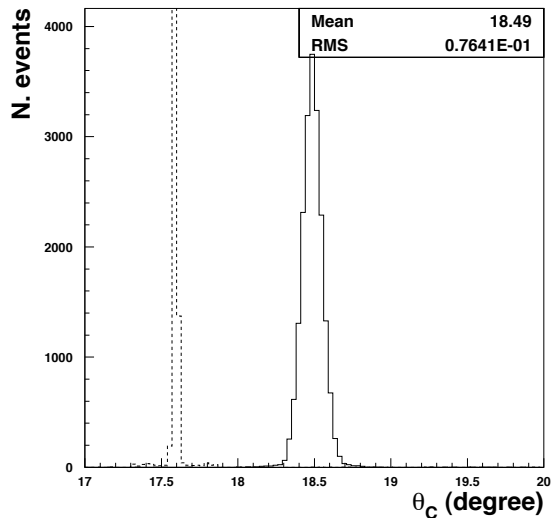


# Aerogel Optical Surface

**POLISHED**

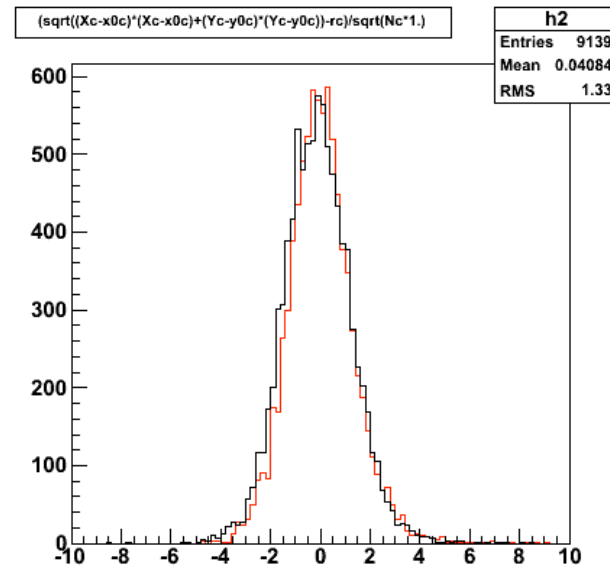
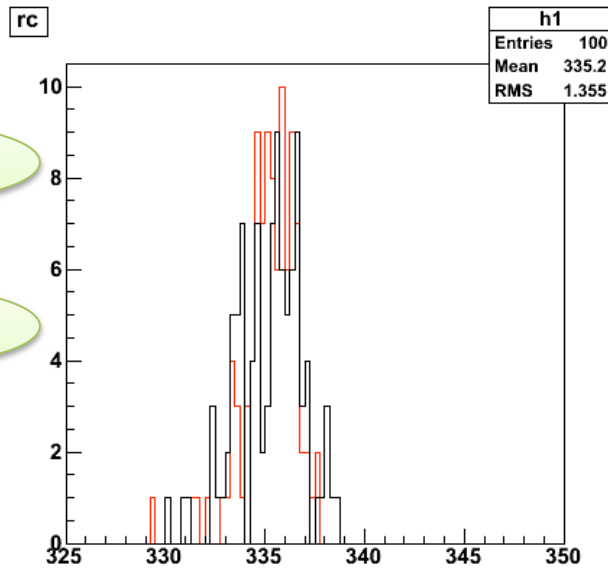
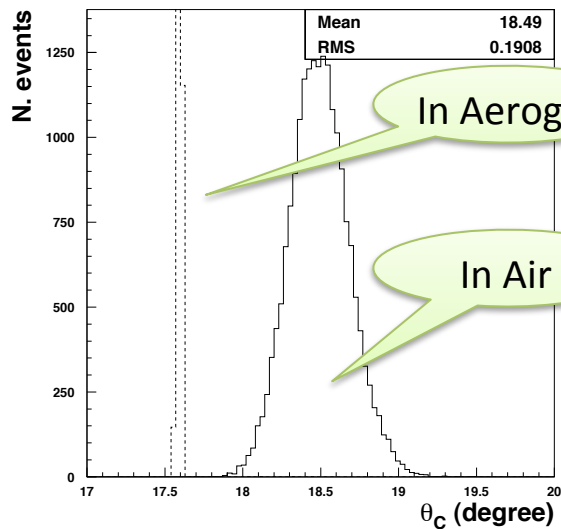


**$\alpha=0.02$**

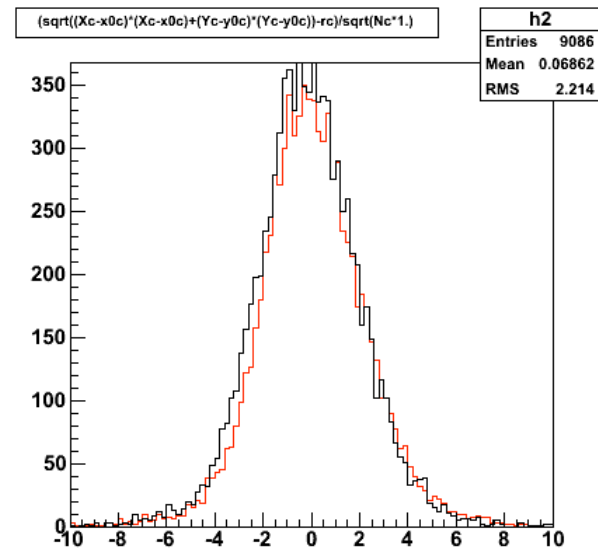
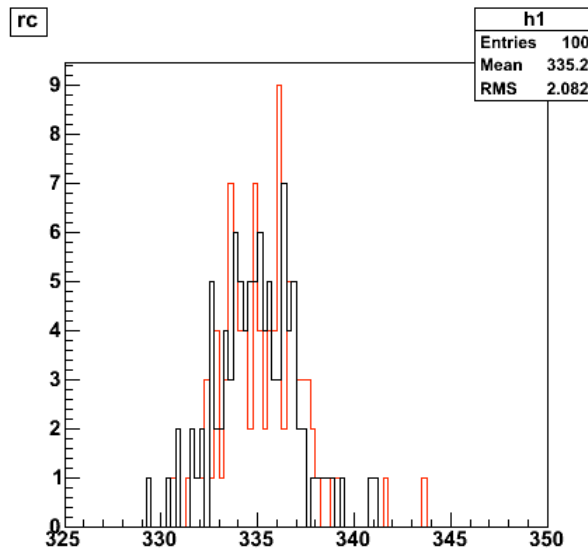
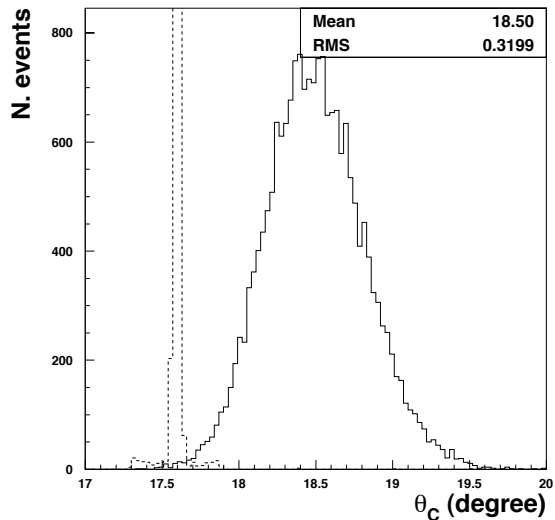


# Aerogel Optical Surface

$\alpha=0.06$

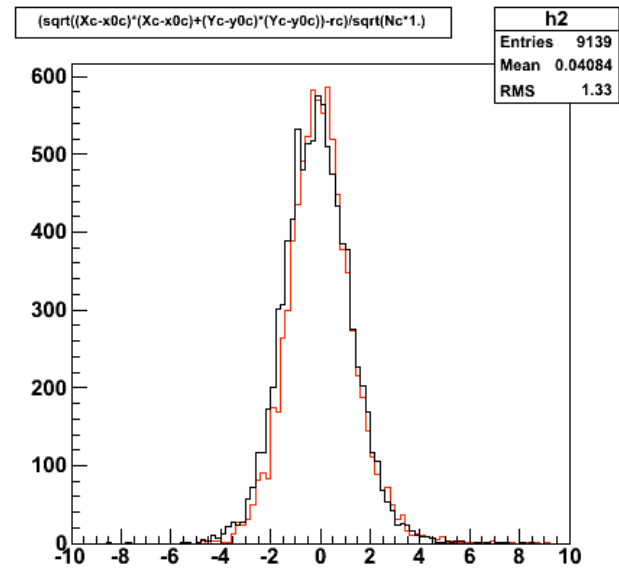
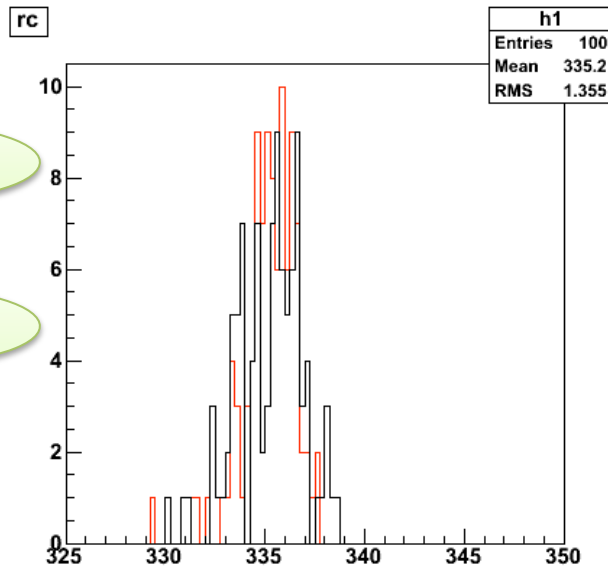
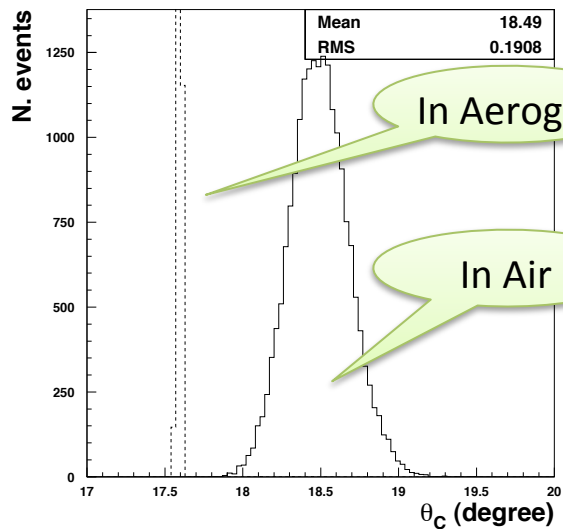


$\alpha=0.10$

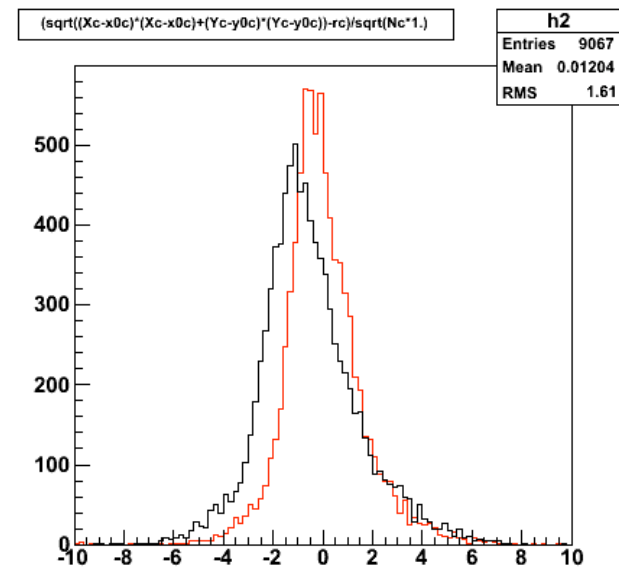
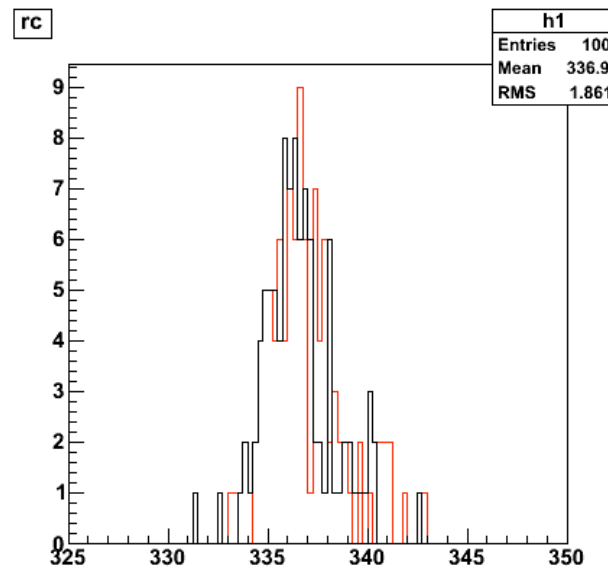
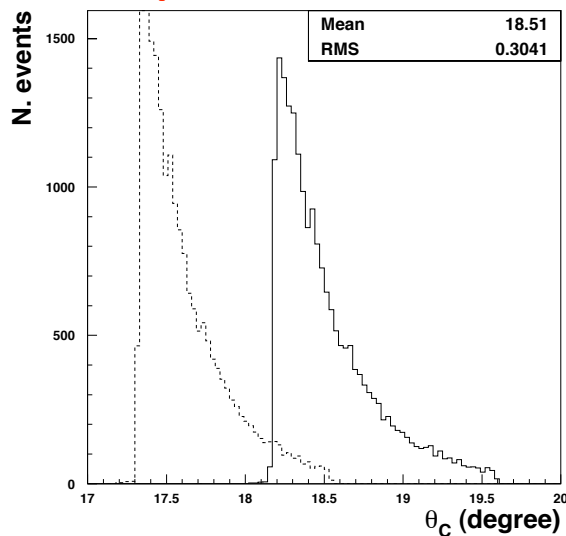


# Aerogel Dispersion

$\alpha=0.06$



Dispex0.7



# Scattering vs Roughness

Optical scattering

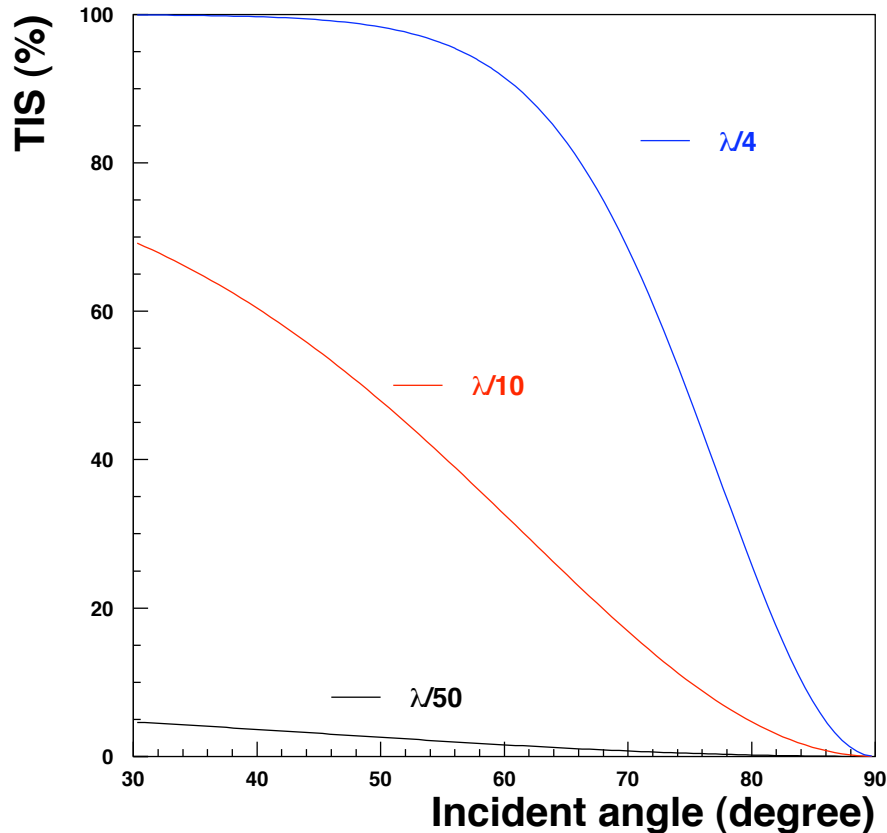
Reflectivity

Roughness RMS

$$TIS_{BP}(R_q) = R_0 \left[ 1 - e^{-\left(\frac{4\pi R_q \cos \theta_i}{\lambda}\right)^2} \right]$$

Wavelength

Incident angle



Bennet & Porteus, JOSA 51 (1961) 123

