

# RICH @ CLAS12

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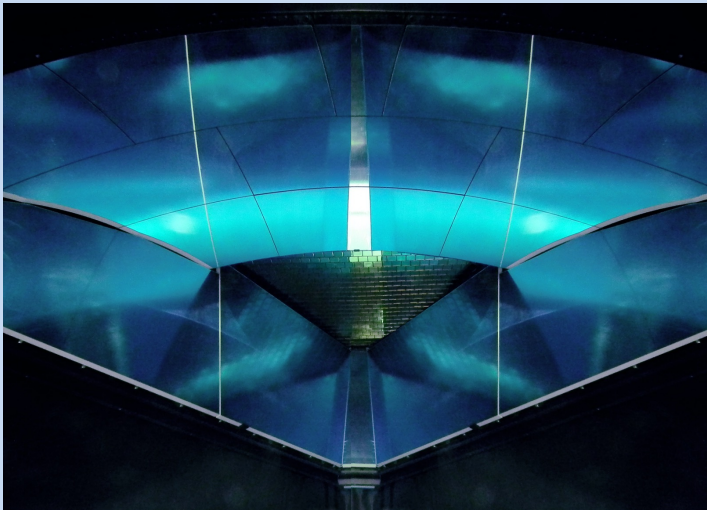
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Meeting - 6<sup>th</sup> April 2022

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# Large-area Hybrid-Optics RICH

Hadron identification in the 3-8 GeV/c range  
with  $\sim 1:10$  kaon to pion production rate



4 m



# Photon Path Reconstruction

## From CLAS12:

particle momentum  
photon emission point

## From RICH:

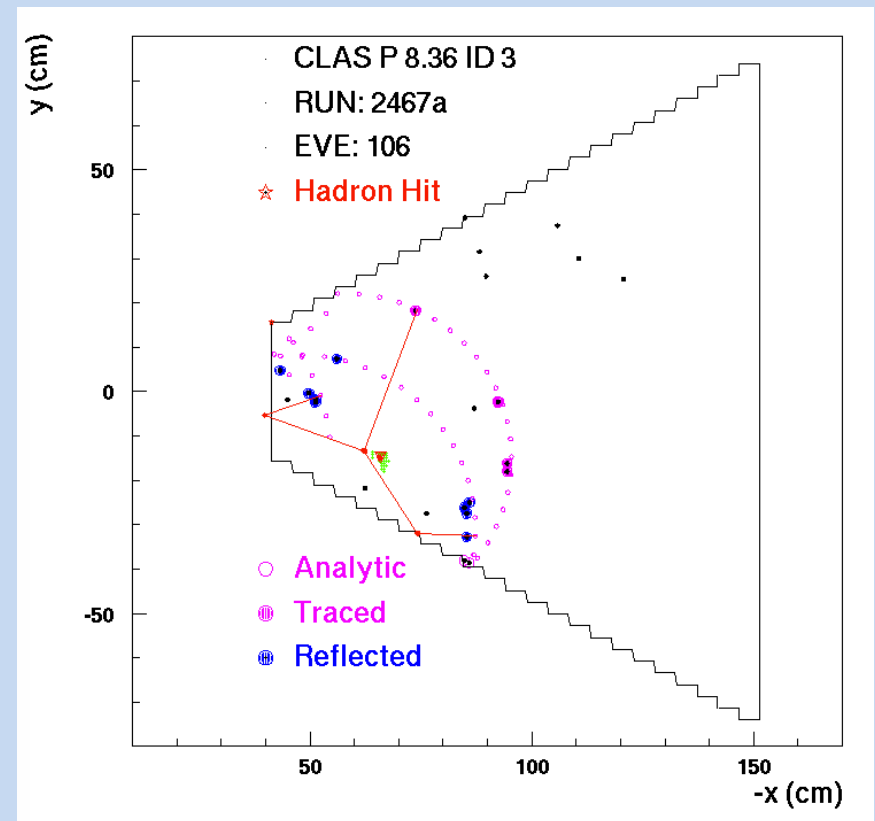
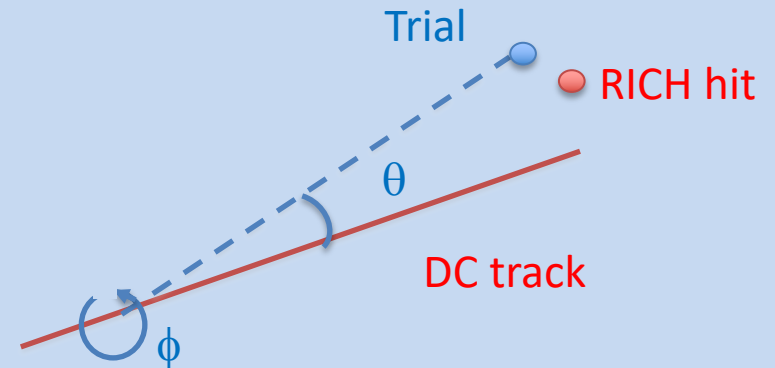
hit time and position

## Direct ray-tracing:

ray-trace a limited sample of photon trials  
(selection of  $\phi$ 's for given  $\theta$ )

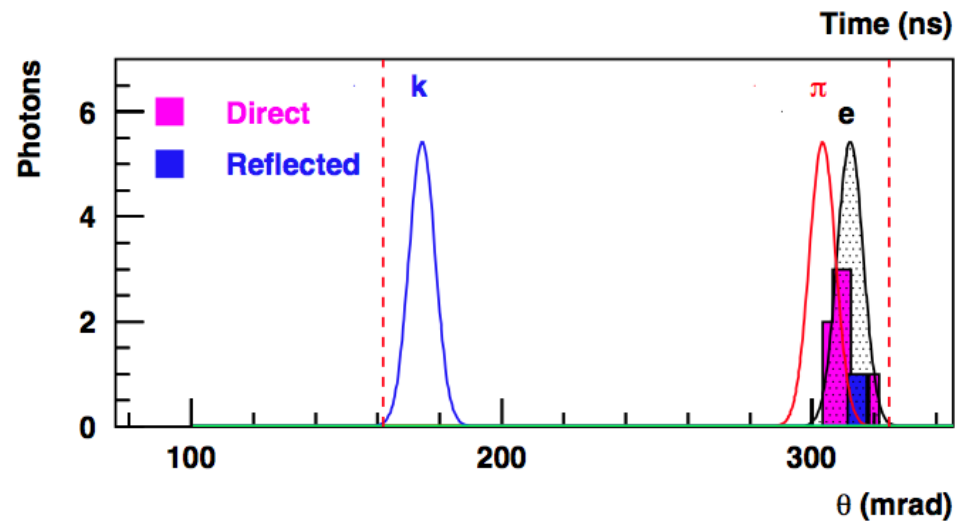
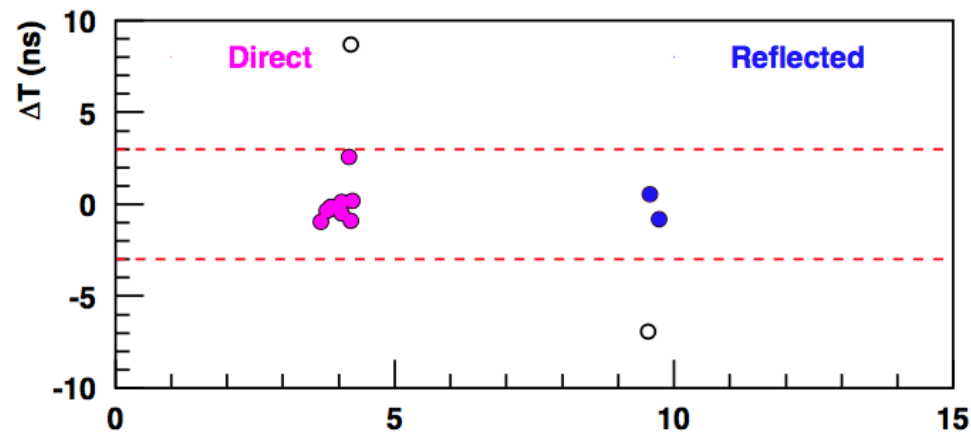
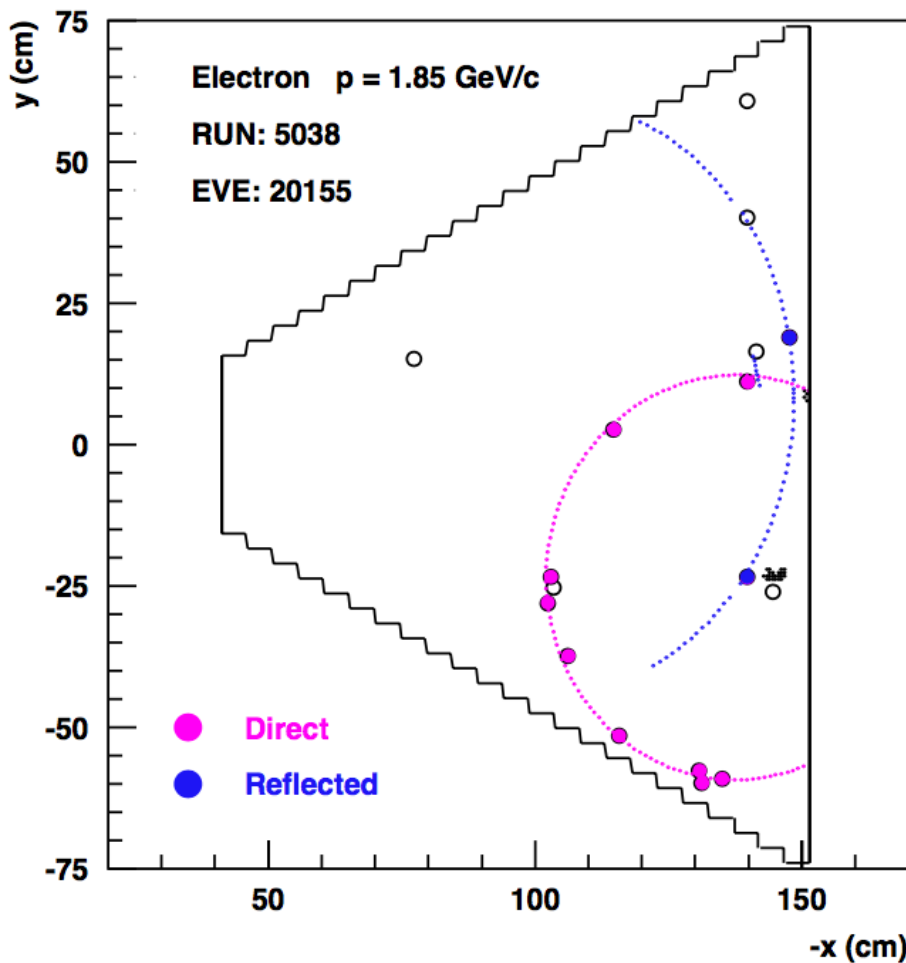
adjust the angles to match the hit  
starting from the closest trial  
(convergence in 2-3 iterations)

validate photon reconstructed  
Cherenkov angle and transit time



# Pattern Recognition

Assign the photon to the most likely hypothesis



Not really sophisticated but robust  
(easy handle multi-reflections, up to e.g. 5)

Works if trial number  $\leq$  hit number

Allow to disregard hit far from trials  
(no reasonable solution foreseeable)

Make available the full information  
(e.g. photon path, i.e. time, position and component of each reflection)

Acceptable reconstruction time