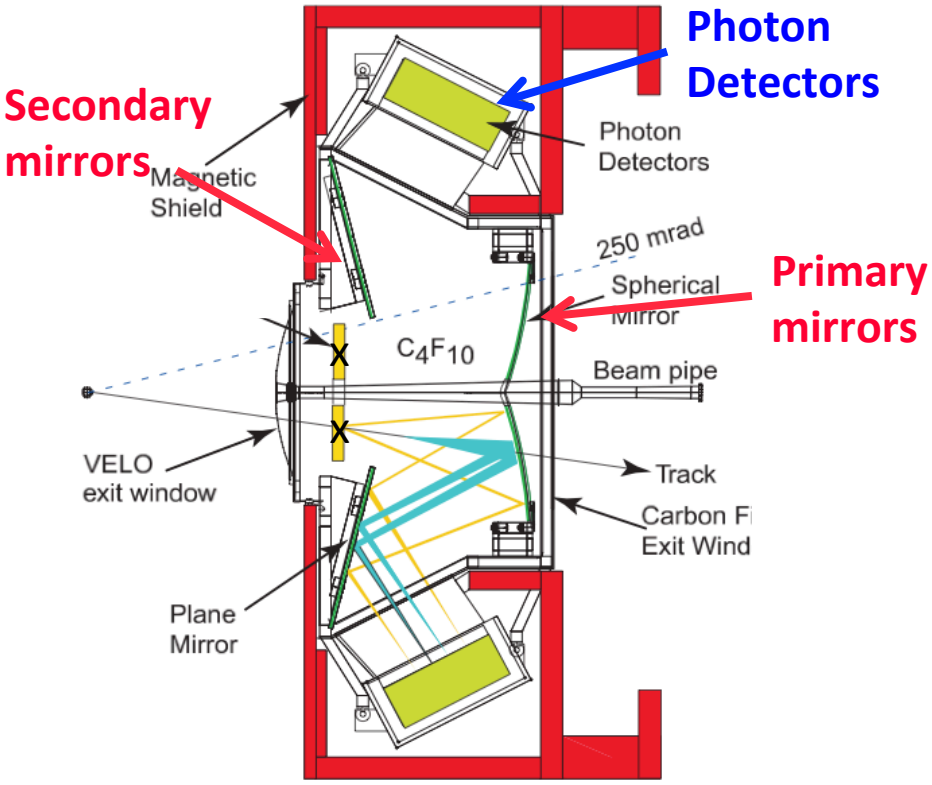
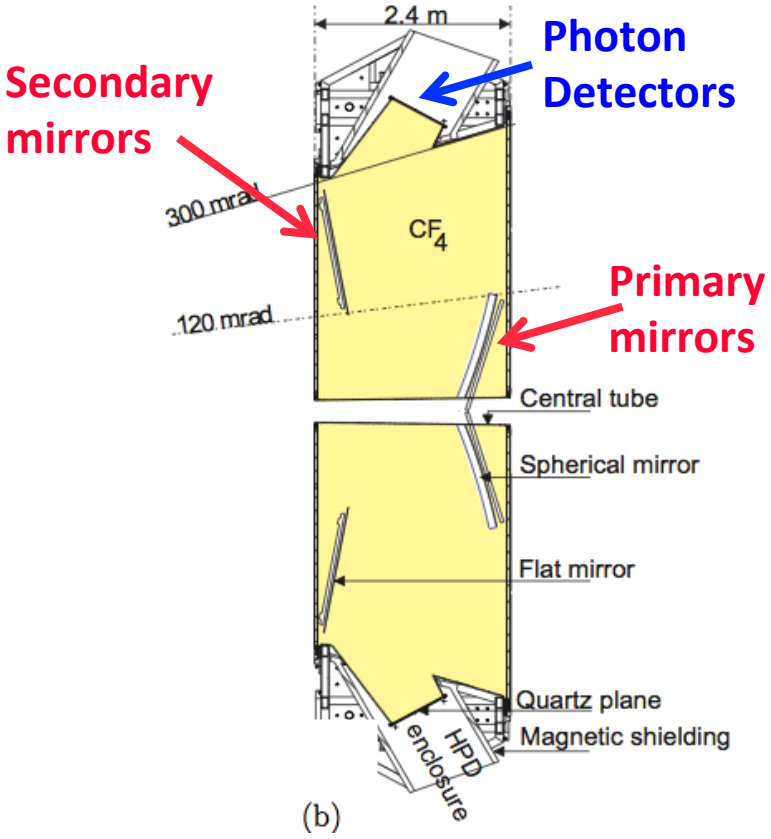
RICH Mirror Alignment

RICH 1: 4 primary mirrors
16 secondary mirrors

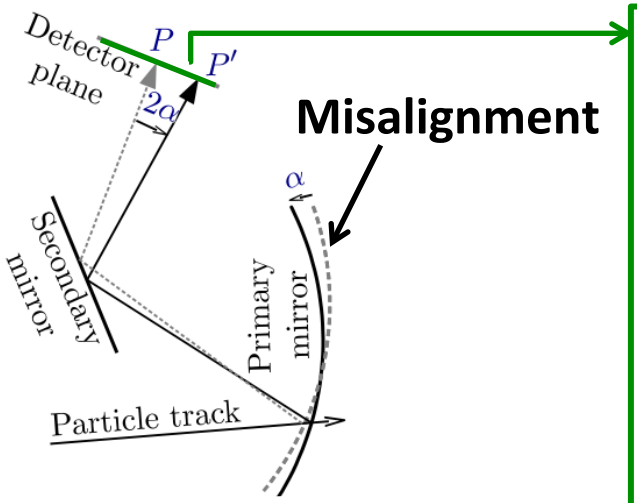
RICH 2: 54 primary mirrors
40 secondary mirrors



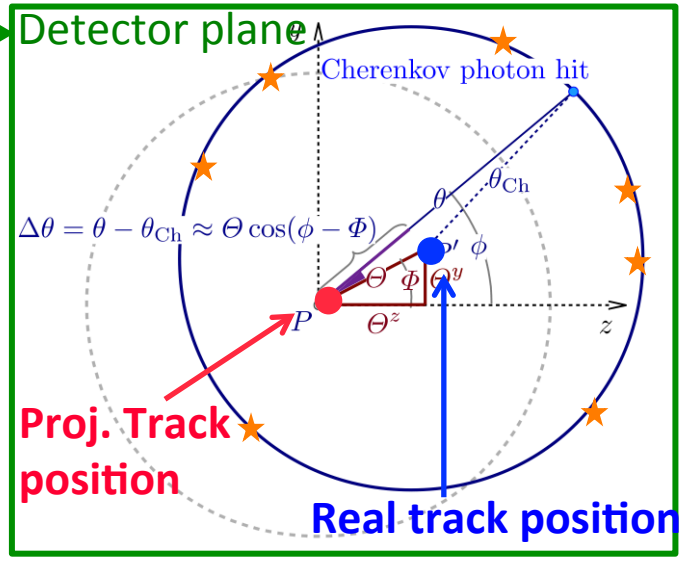


Misaligned mirrors will affect the PID due to incorrectly predicted Cherenkov angle!

RICH Mirror Alignment



Misalignment



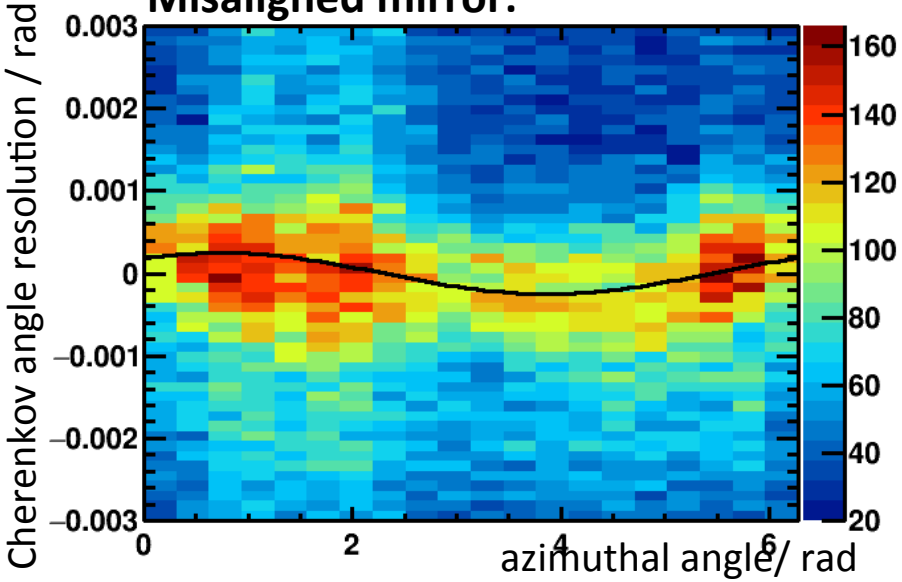
Identify misalignment:

$\Delta\theta_C(\Phi) = \theta_{meas.} - \theta_{exp.}$

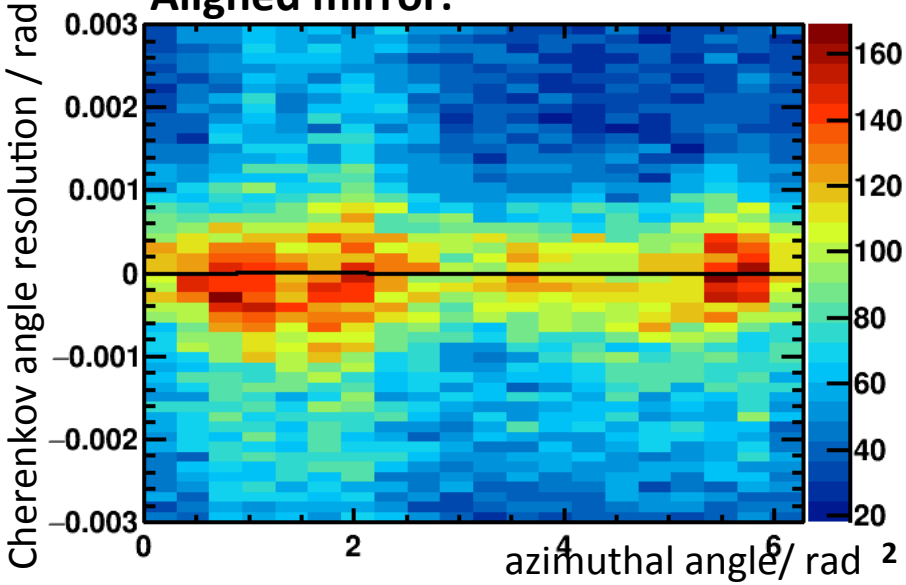
$\Delta\theta_C(\Phi) = \rho_y \cos(\Phi) + \rho_z \sin(\Phi)$

Misalignments on detector plane

Misaligned mirror:



Aligned mirror:



Alignment during Run II

HLT farm nodes (Analysers)

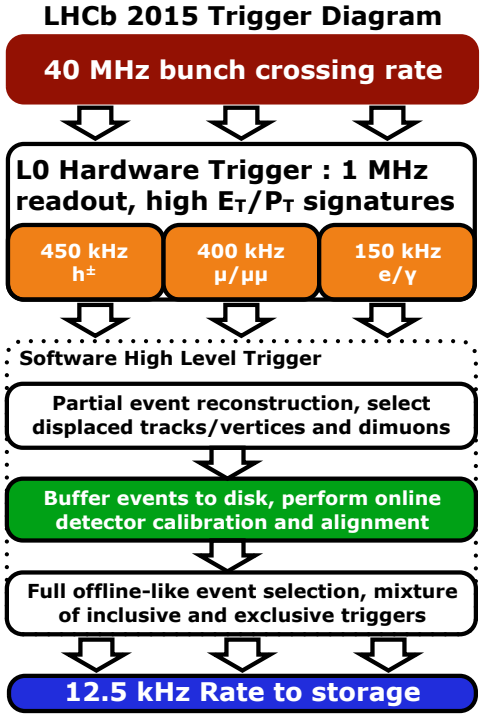
- Reconstruct data from HLT1 lines
- Make the histograms

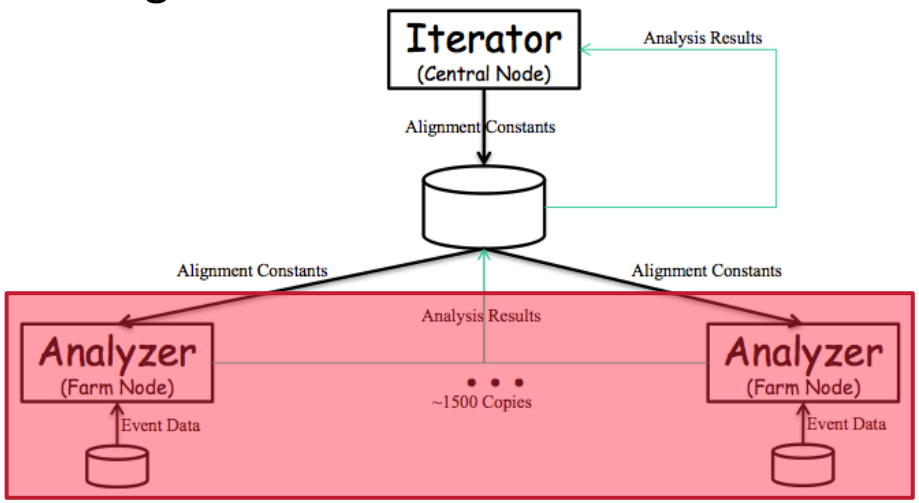
Central node (Iterator)

- Receives histograms from Analysers
- Determines misalignment

➔ produces new database

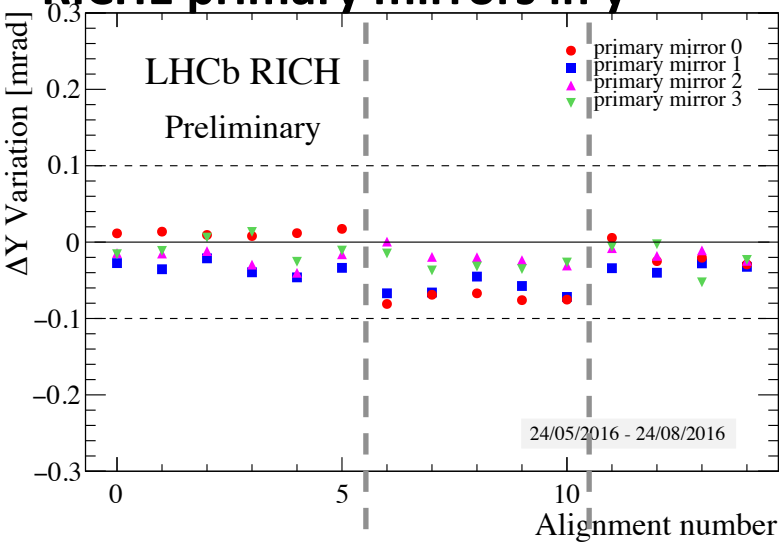
- decides if alignment has converged



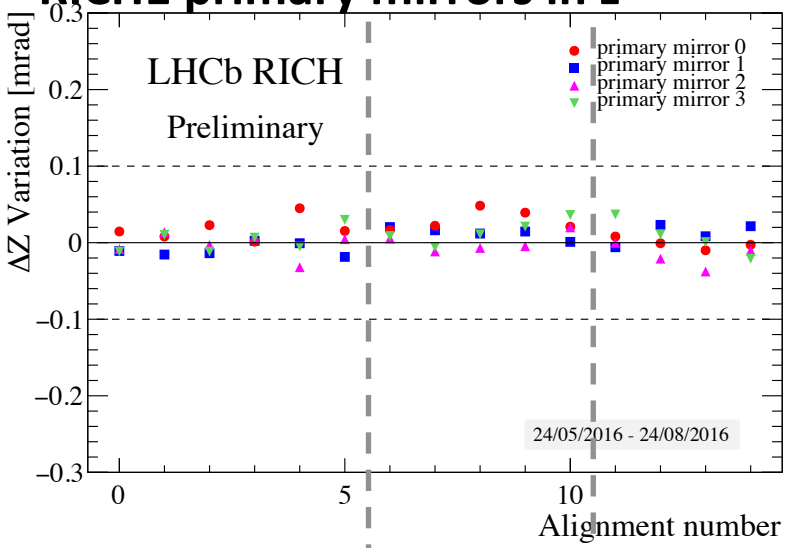


RICH Mirror Alignment

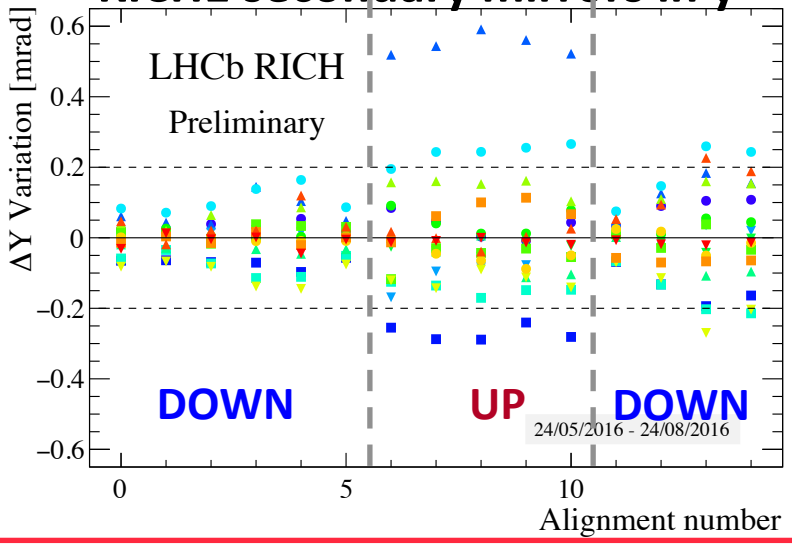
RICH1 primary mirrors in y



RICH1 primary mirrors in z



RICH1 secondary mirrors in y



RICH1 secondary mirrors in z