Global alignment – u and v translations

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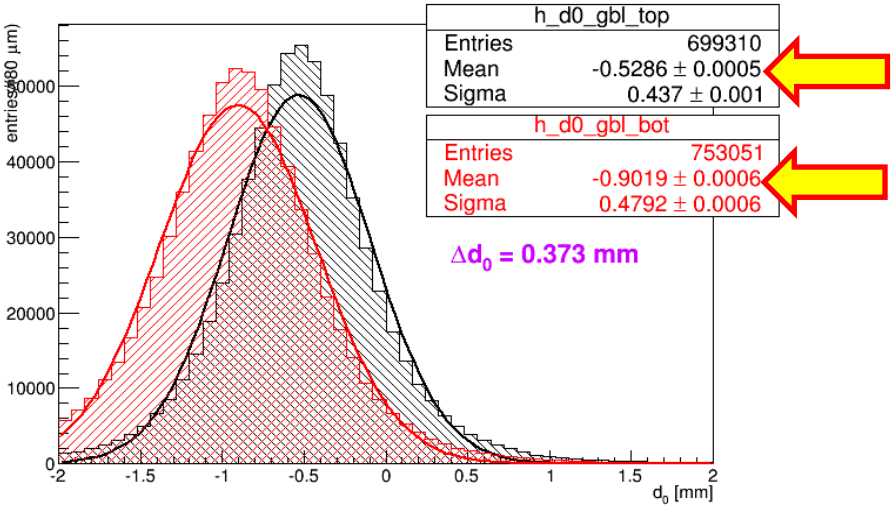
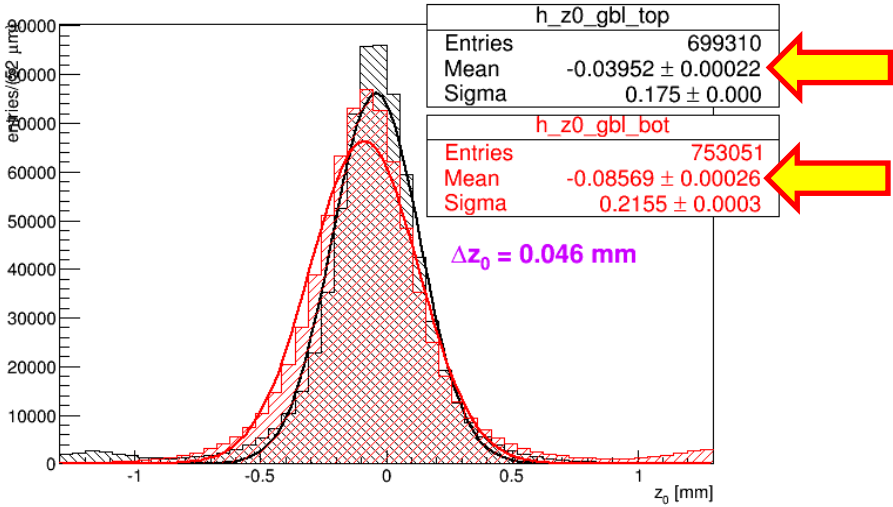
Global alignment

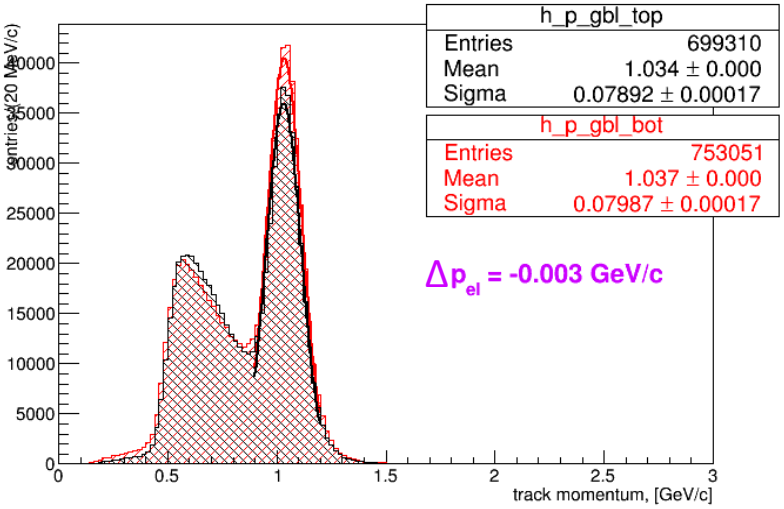
- Same offset added (as MP correction in the compact.xml file) for translations along u and along v
  - Translations along u: mean value of z_0 impact parameter distribution, for t&b
  - Translations along v: mean value of d_0 impact parameter distribution, for t&b

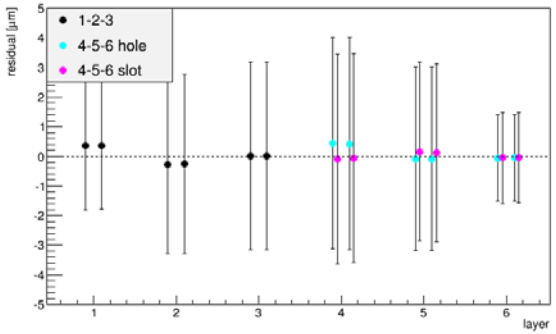
impact parameters – start

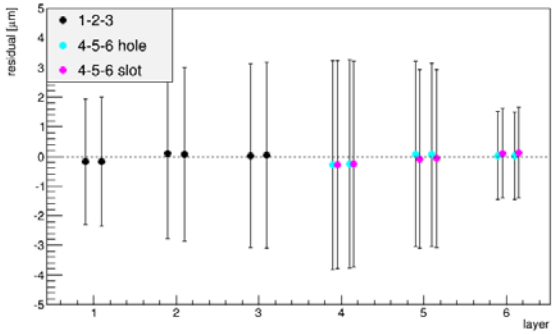




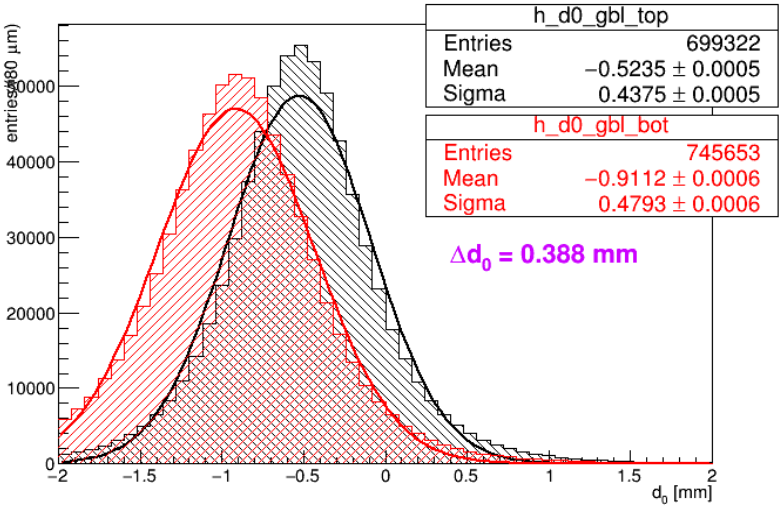
No beamspot



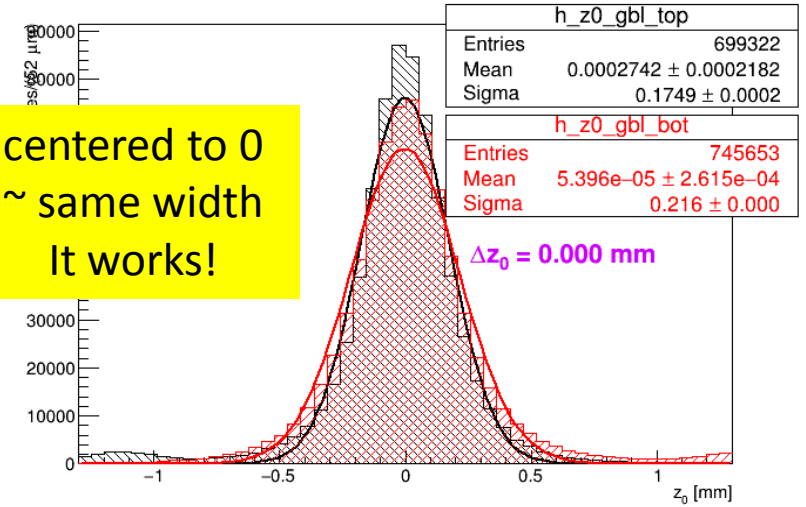




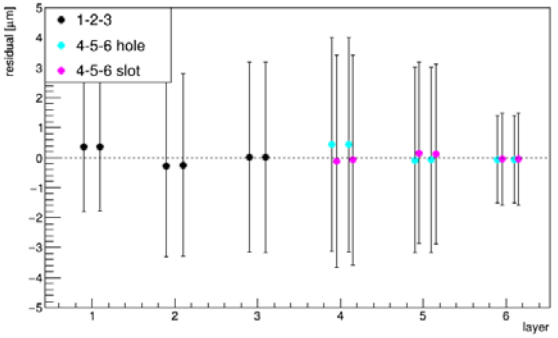
Global translations along u



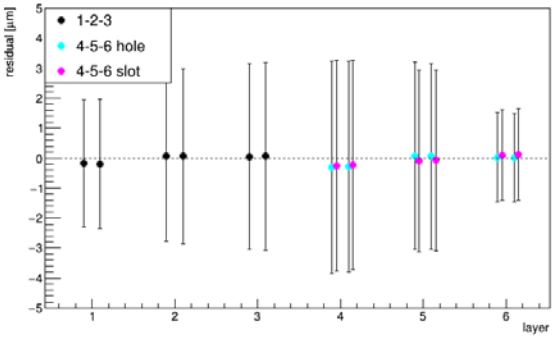
(slightly worse)

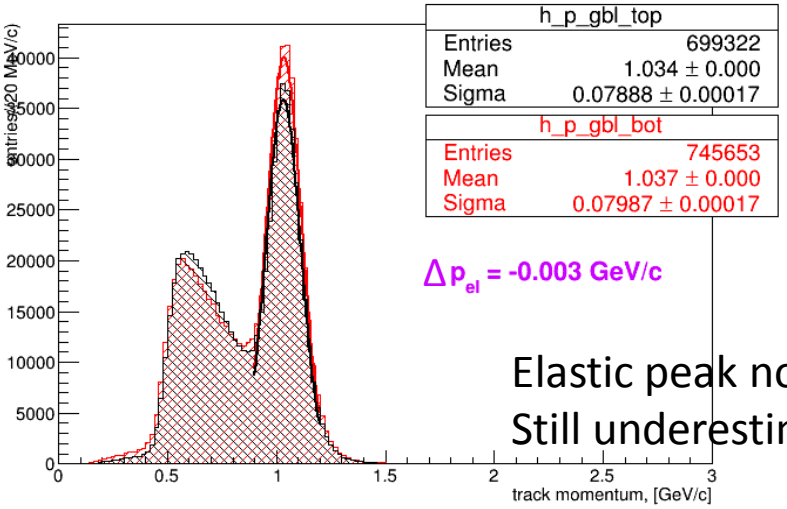


centered to 0
~ same width
It works!



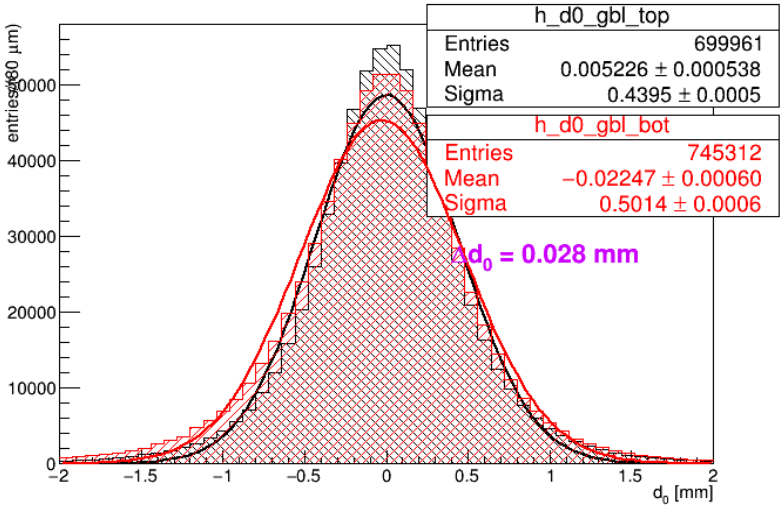
Residuals are not changed

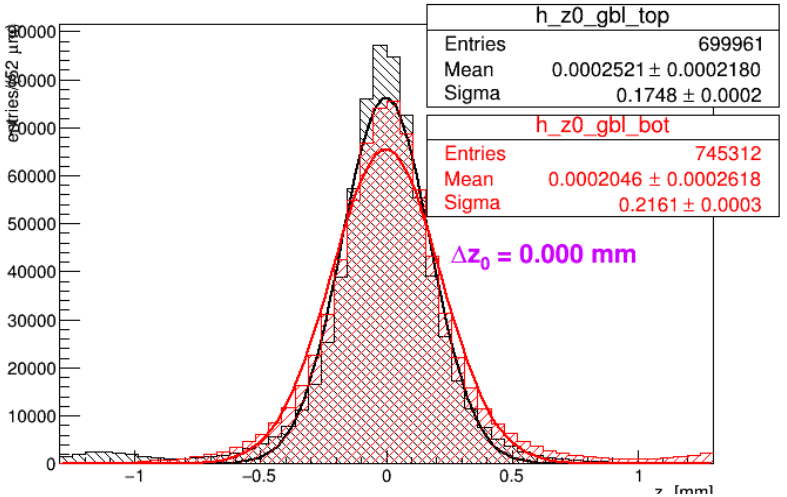




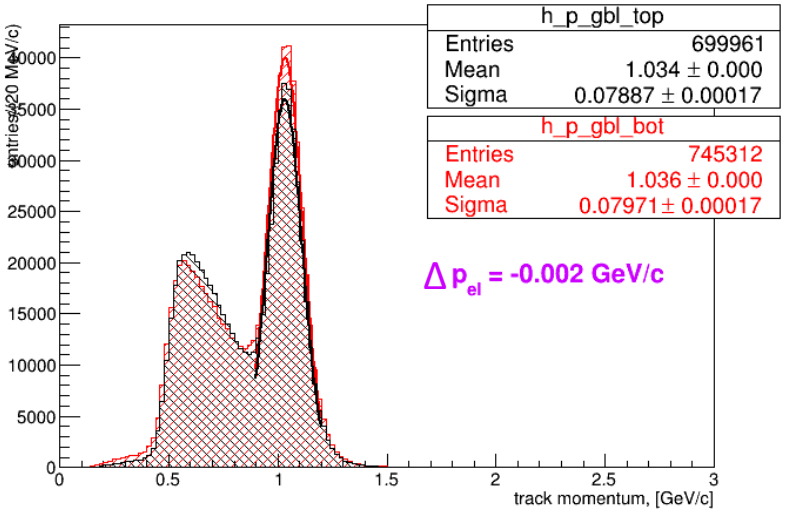
Elastic peak not moved
Still underestimated

Global translations along u+v - SOLVED

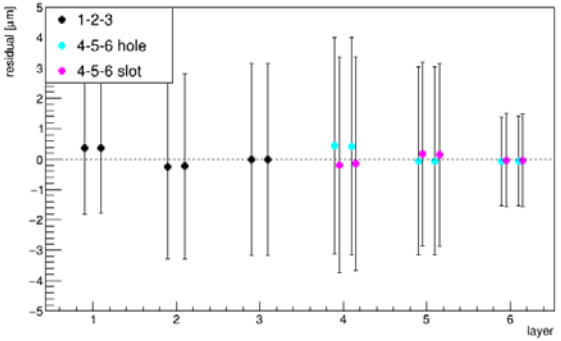


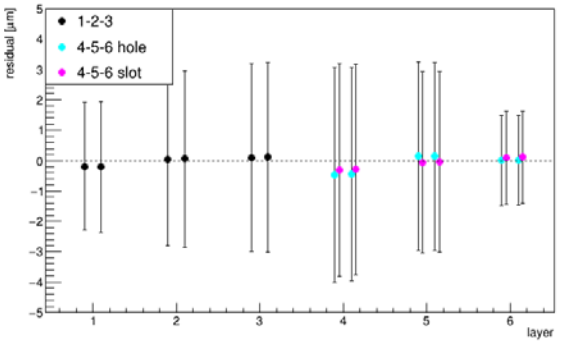


centered to 0, ~ same width



Residuals are not changed





Global translations along w

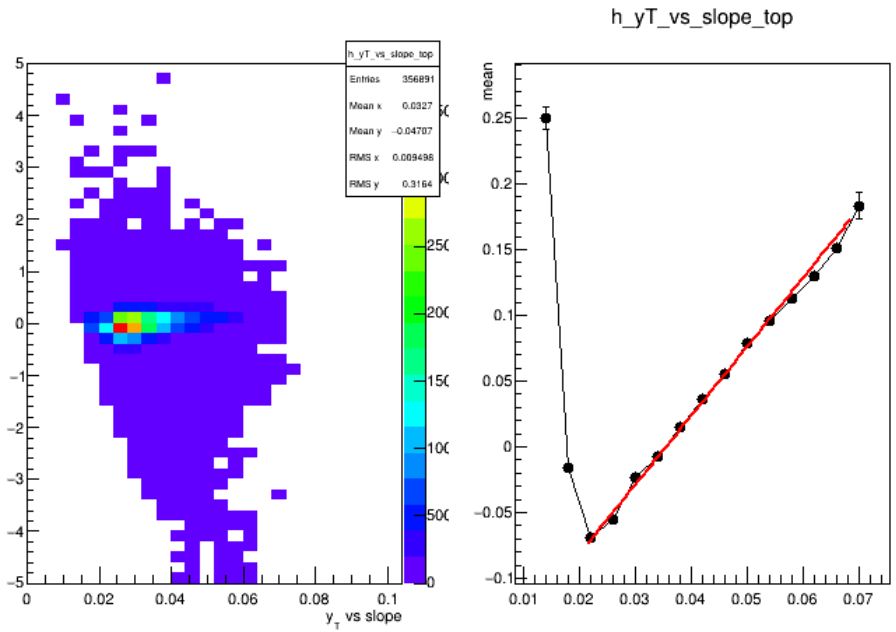
Use of tracks selected in the elastic peak

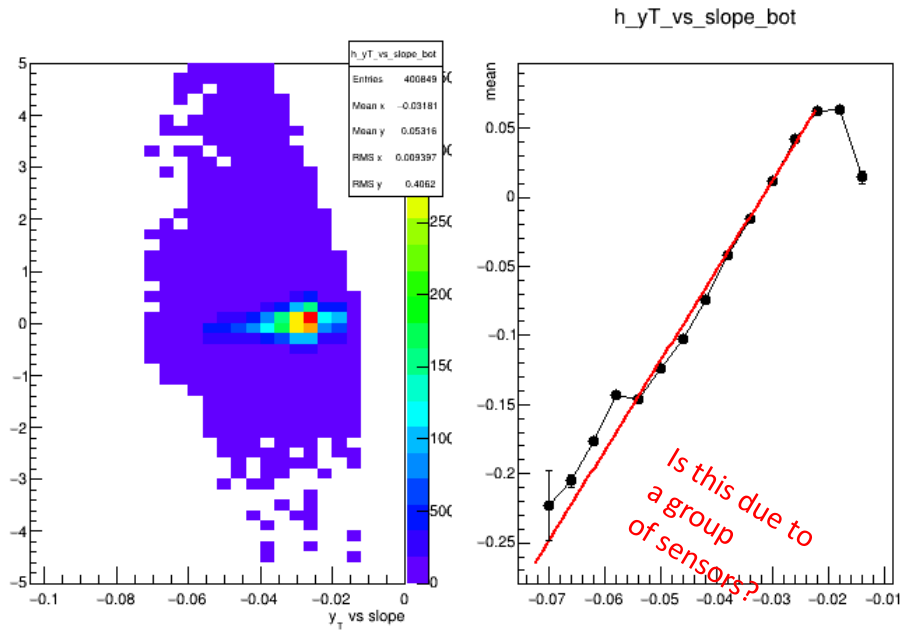
- Study of the profile distributions of y_T vs tanλ
- Linear fit of mean values of gaussian fit in y slices (NOT root TProfile)
- Best alignment + (u,v) global translations

$$y_T(z=0) = \underbrace{y_{beamspot}}_{p0} - \underbrace{z_{tgt}}_{-p1} \cdot \tan\lambda$$

Top tracks
p0 = -0.185
p1 = 5.23 (Sho: was about 5 mm)

bottom tracks
p0 = 0.207
p1 = 6.49





Global translations along w & momentum calibration

- Not sure they help to solve the systematic underestimation of the elastic peak
- Looks like…
  - The sensor z needs an overall a stretch?
  - Further adjustment along v needed?
    - MP has no power along this coordinate
  - Is there a shear which causes a macroscopic effect especially along v?
  - Does the magnetic field mean value need a correction?

- Need to check this version of alignment (+ global offsets) on the 2016 data (tracks are less bent)