Phi Structure Update

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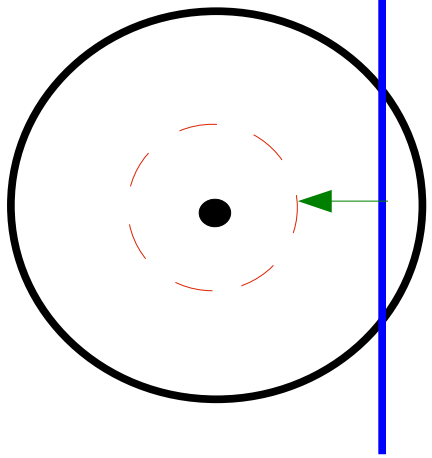
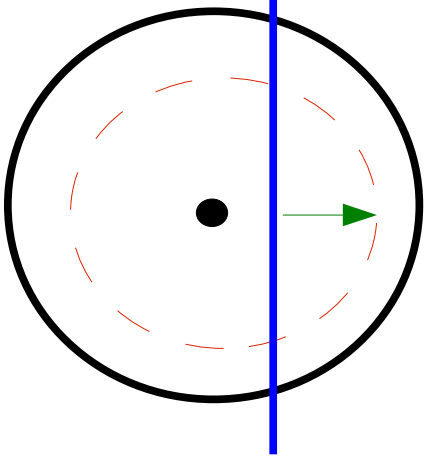
TRT Residual in Alignment Monitoring

residualR = hitR – perdictedR
*both hitR and perdictedR are signed the same.

4 Cases to Consider

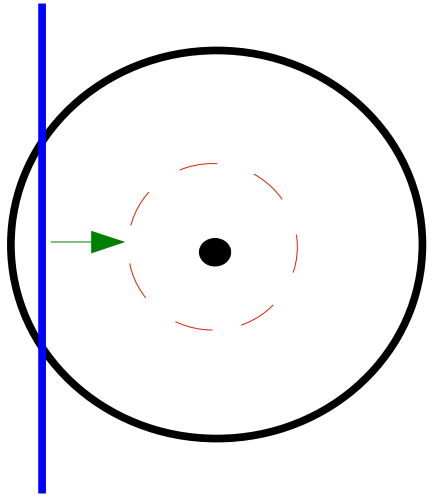


hitR && perdictedR > 0

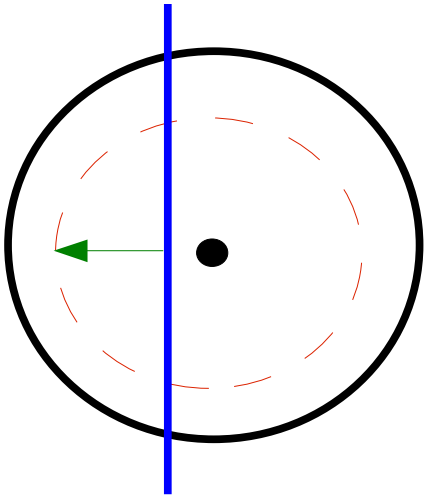


hitR && perdictedR > 0

Straw
Straw Center
Measured Drift Circle
Reconstructed Track
Residual (arrow indicates sign)

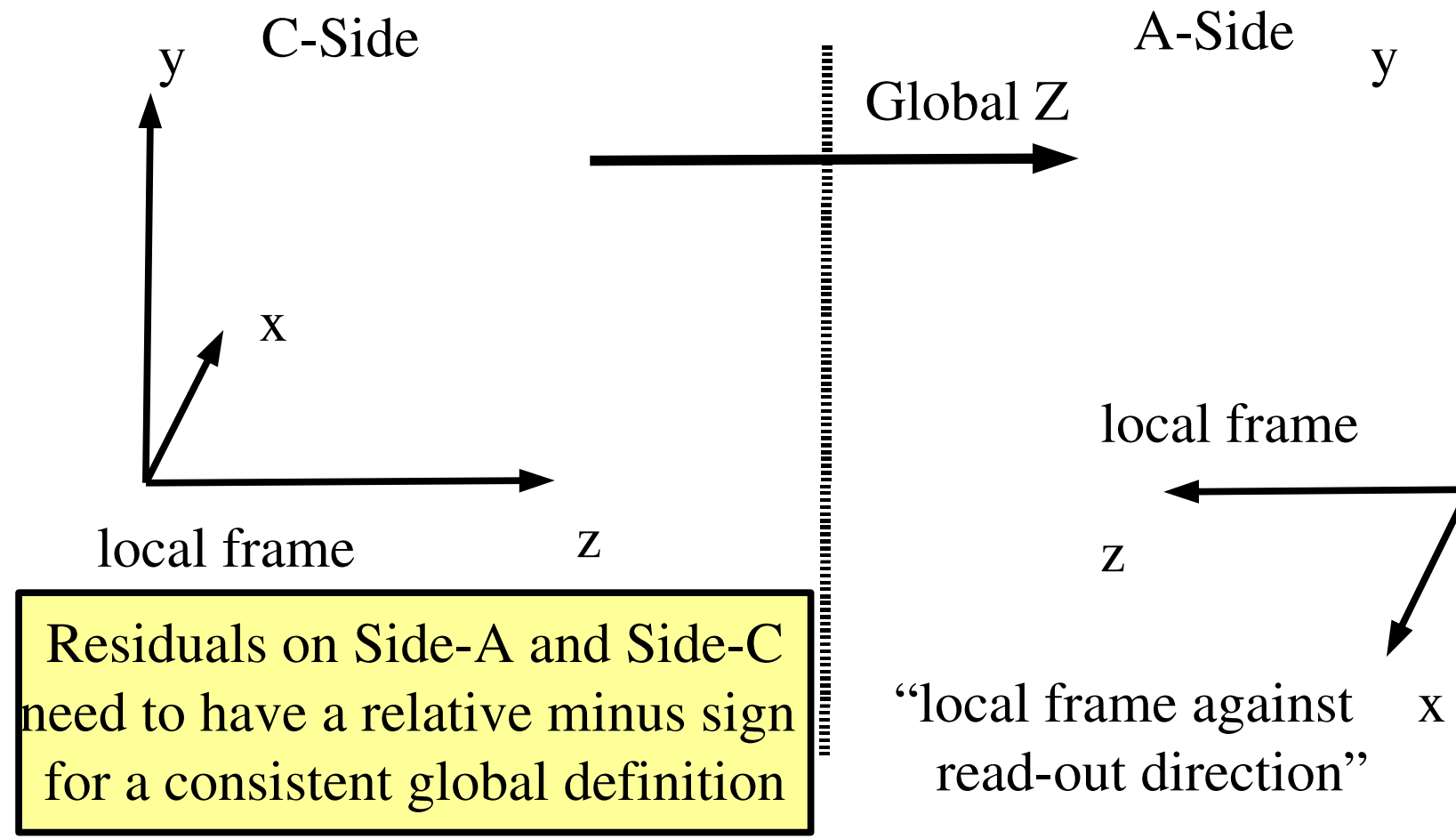


hitR && perdictedR < 0



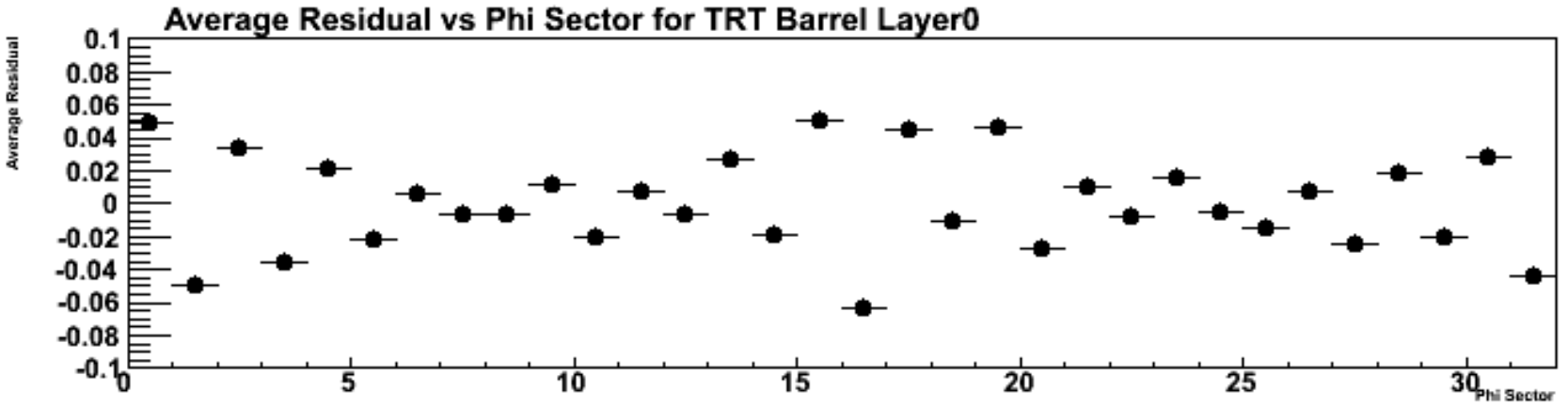
hitR && perdictedR < 0

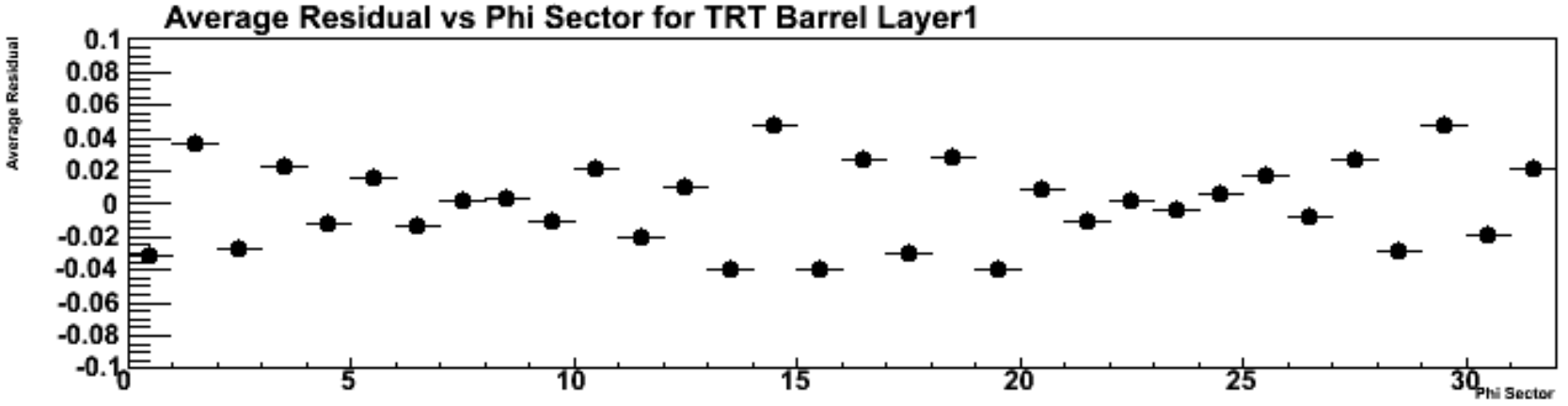
Local Straw Coordinate Frame

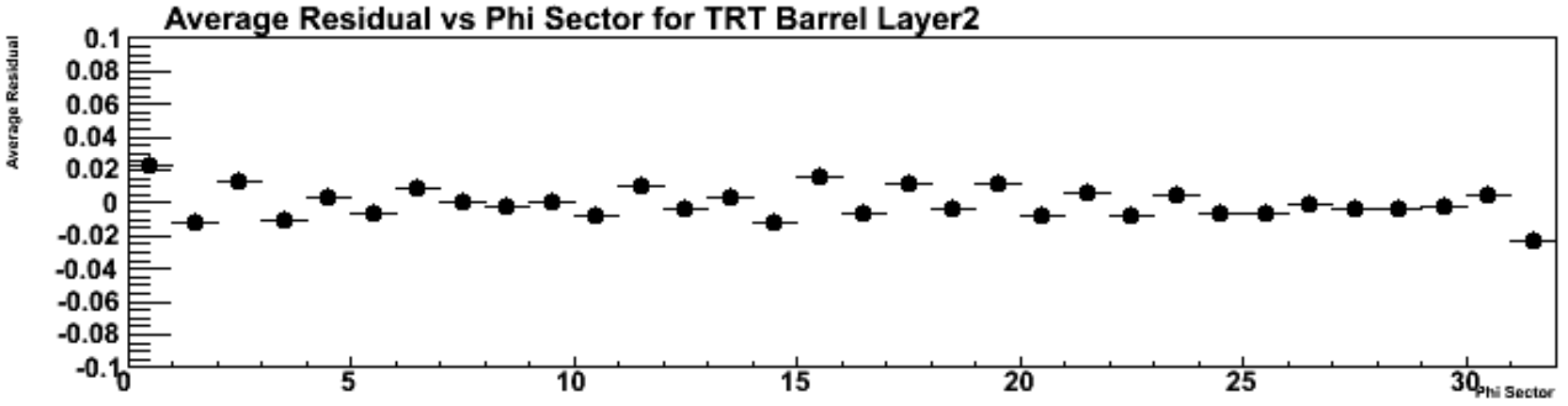


Residuals on Side-A and Side-C need to have a relative minus sign for a consistent global definition

Before sign change

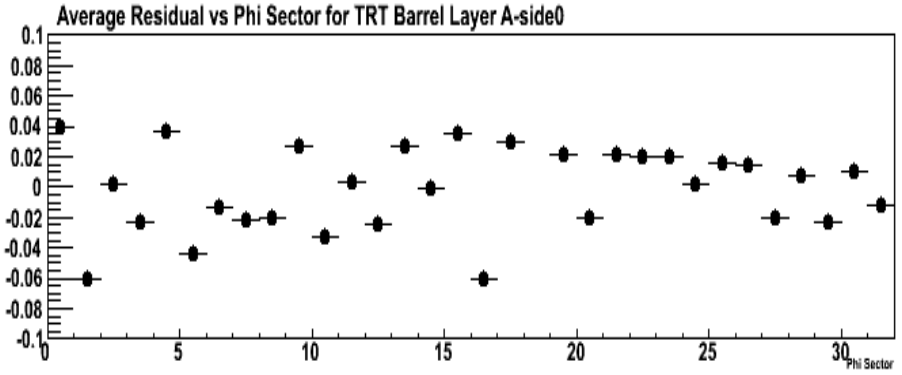


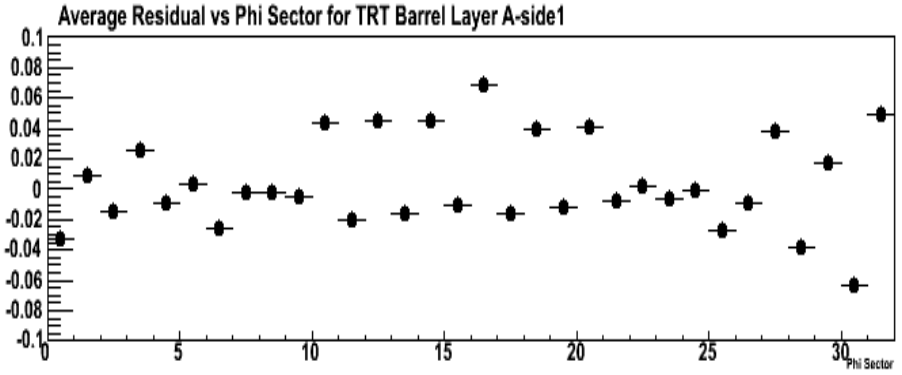


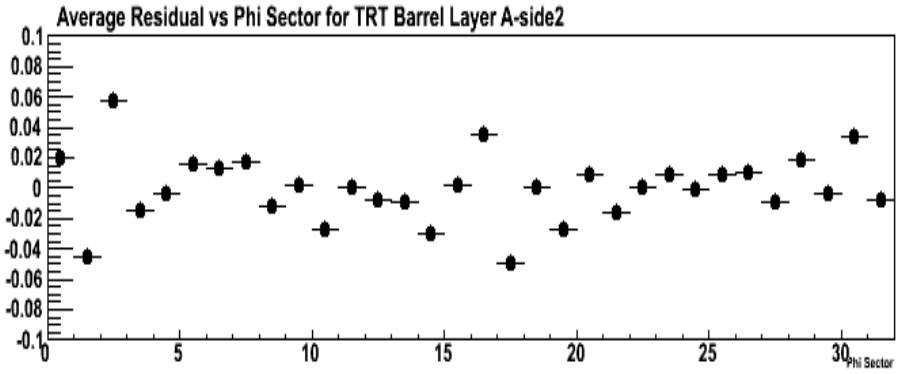


Before sign change

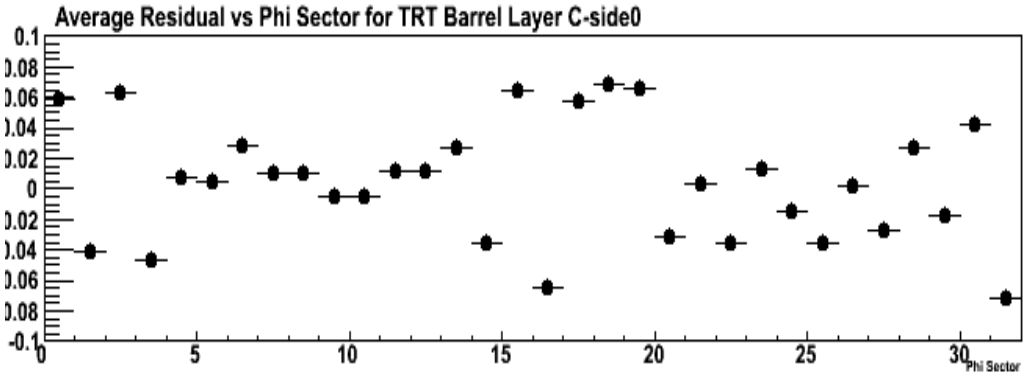
A- Side

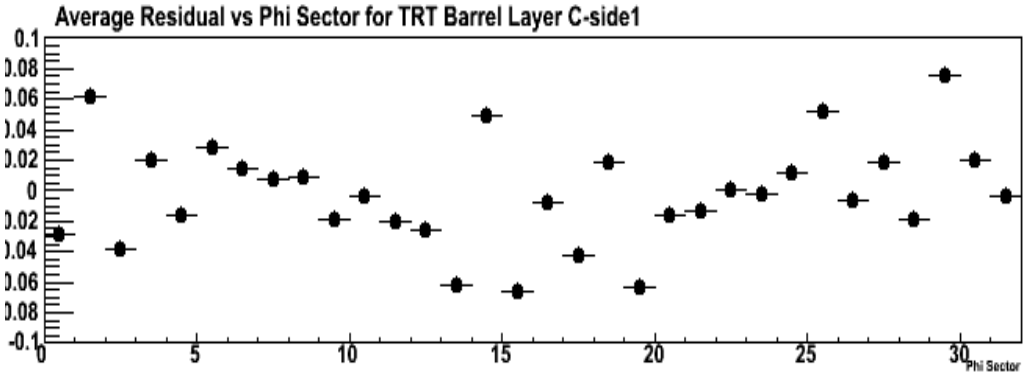


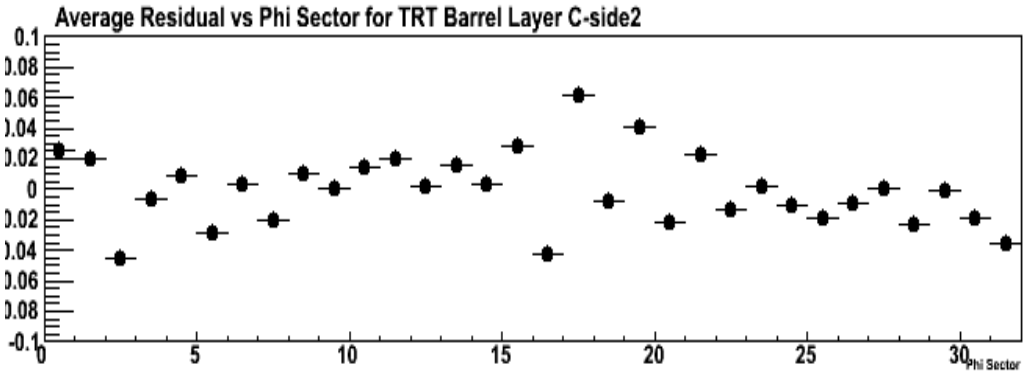




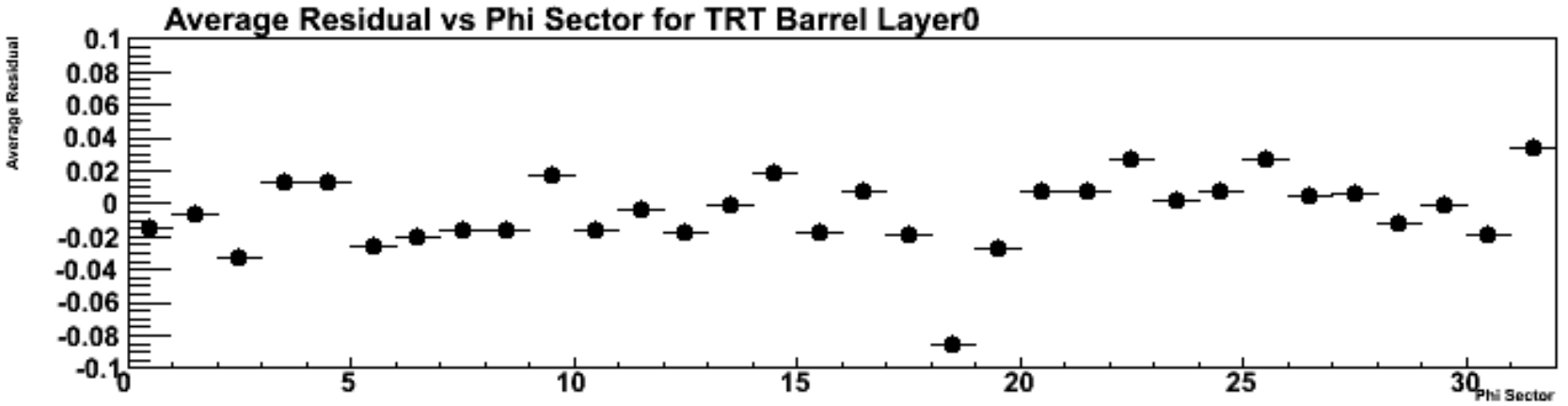
C- Side

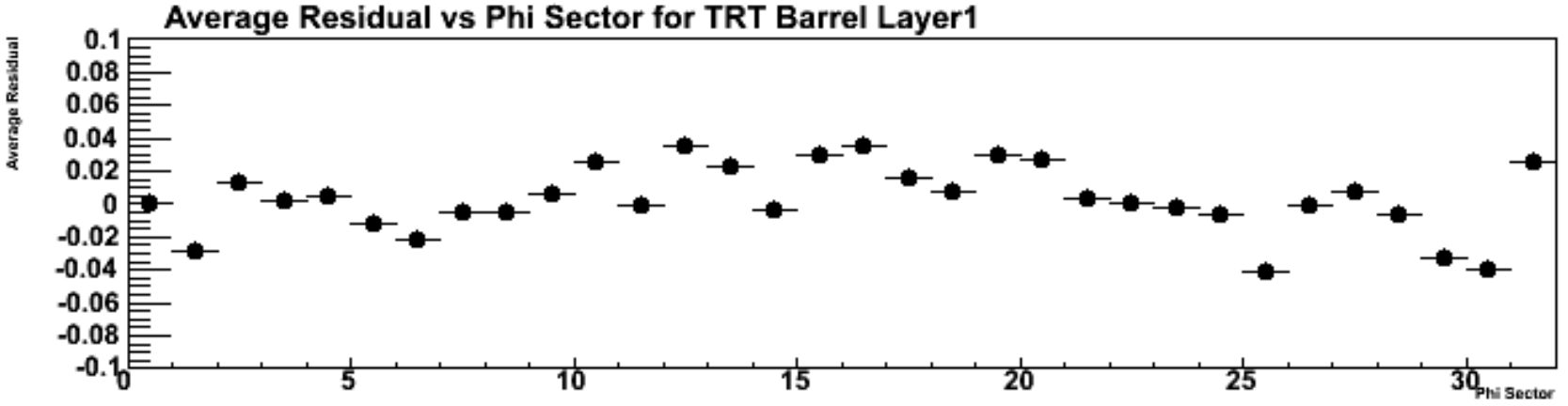


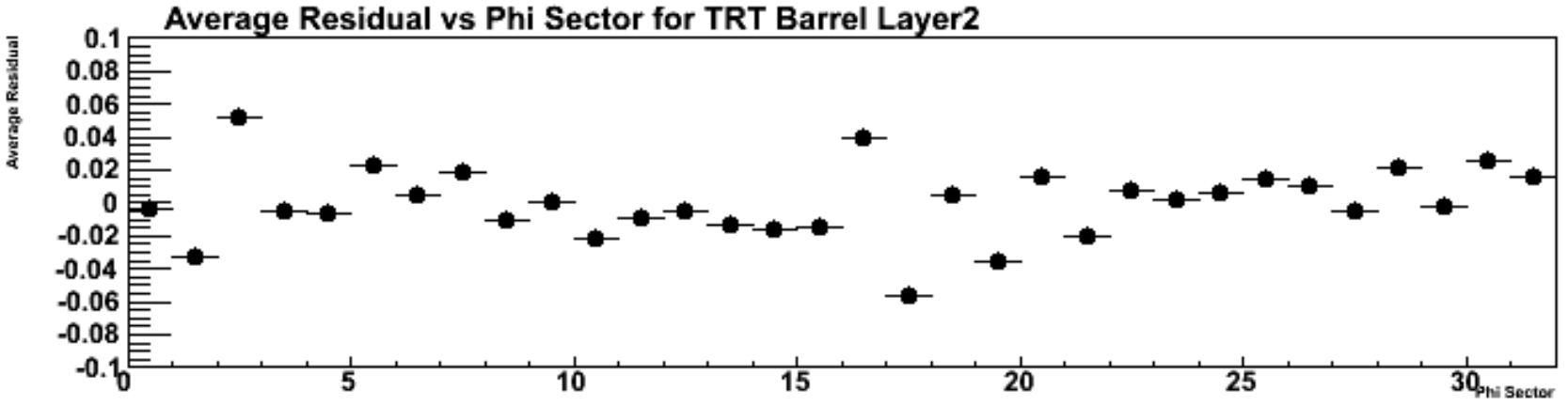




After sign change

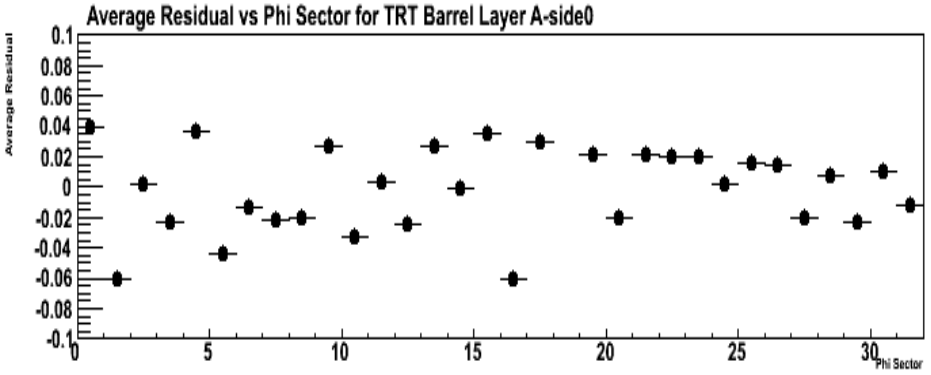


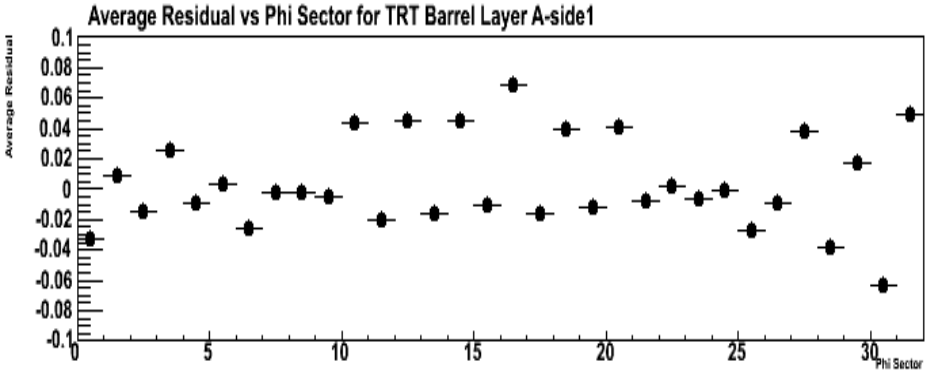


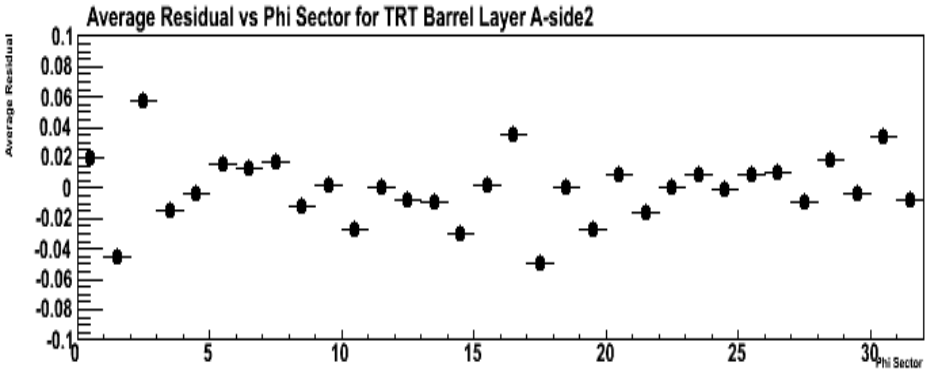


After sign change

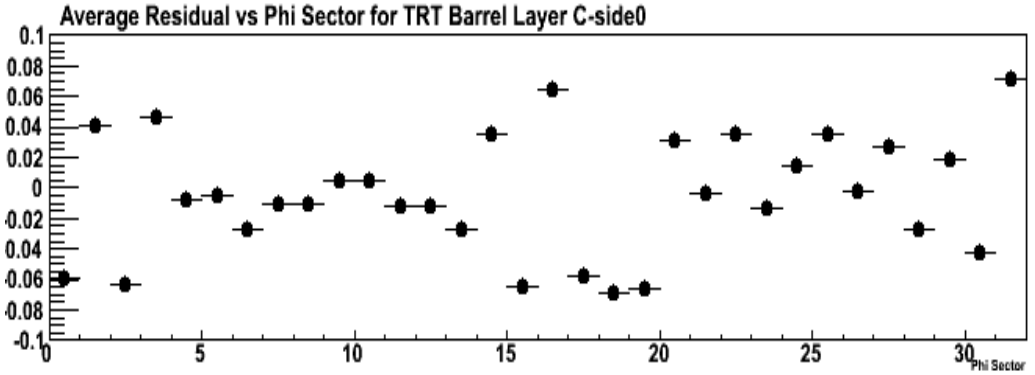
A- Side

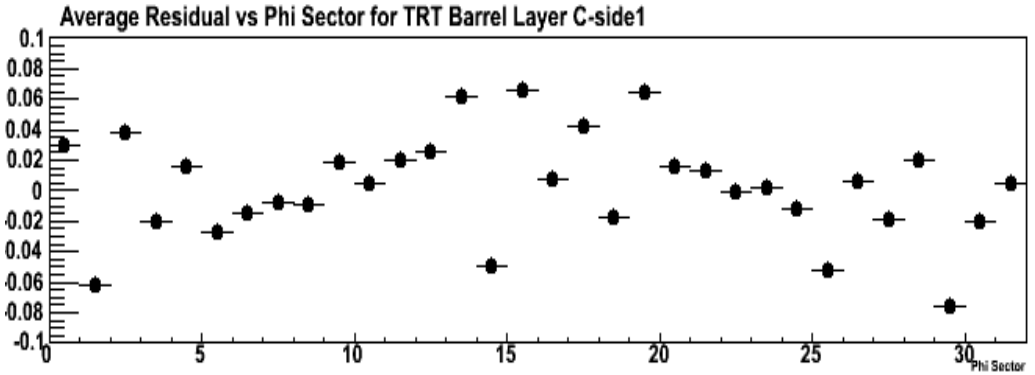


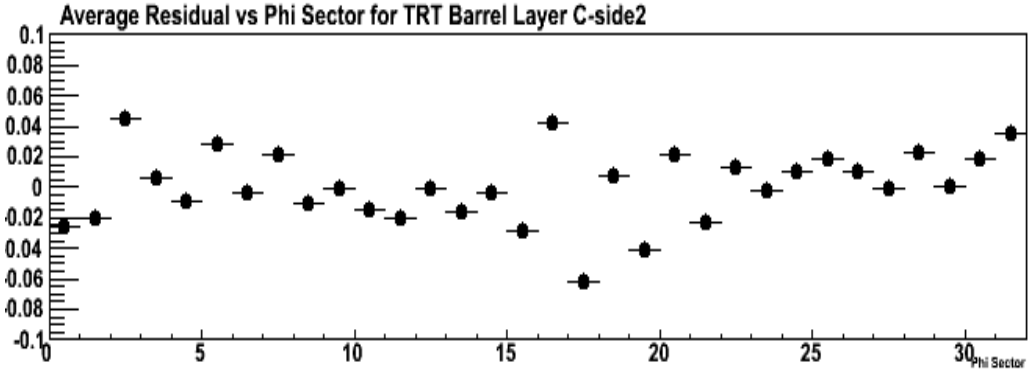




C- Side

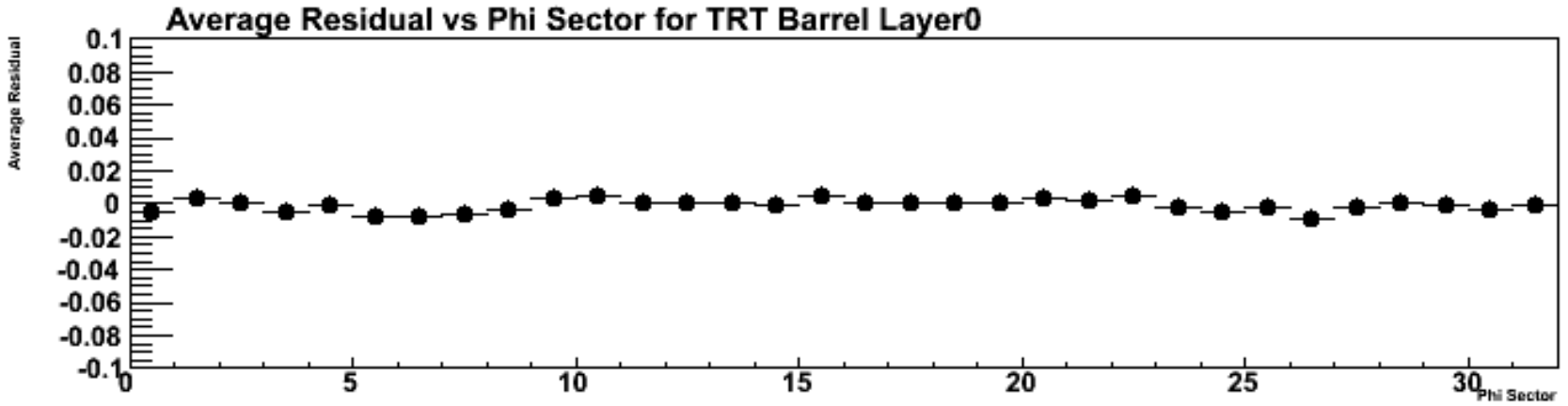


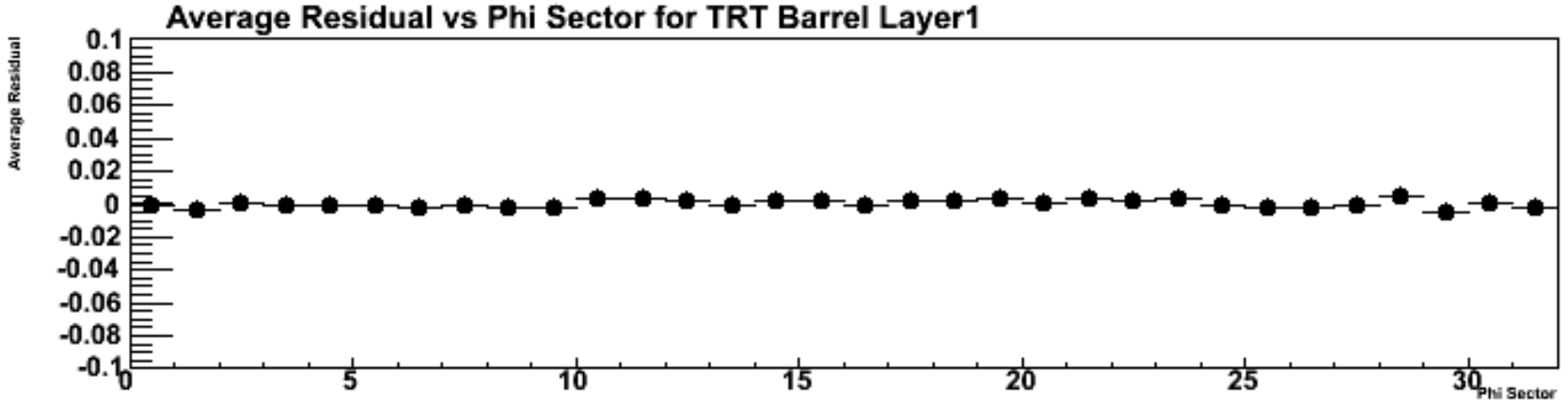


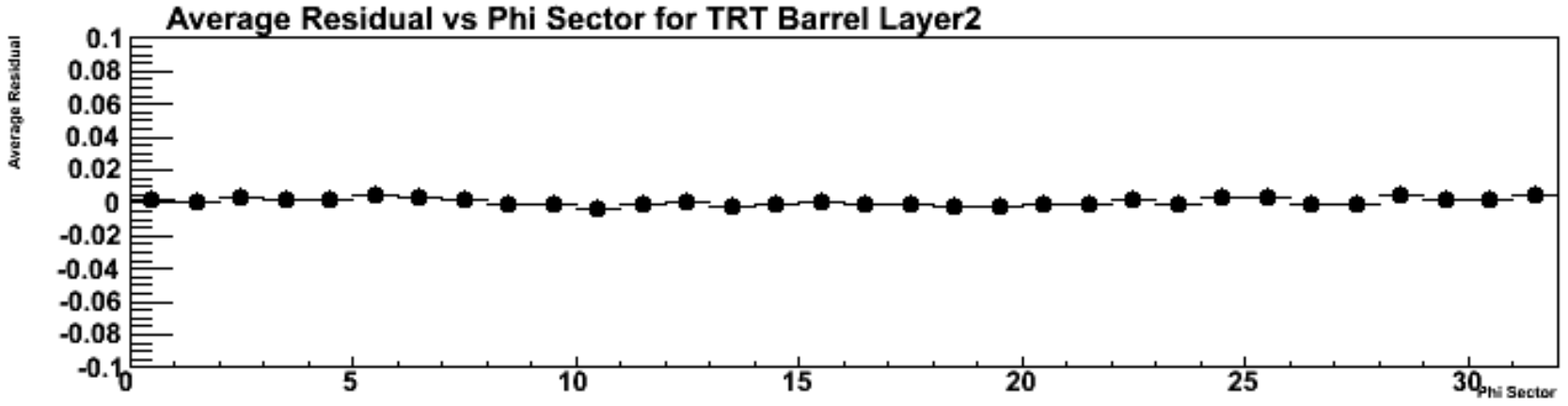


/

After L2 w/sign change

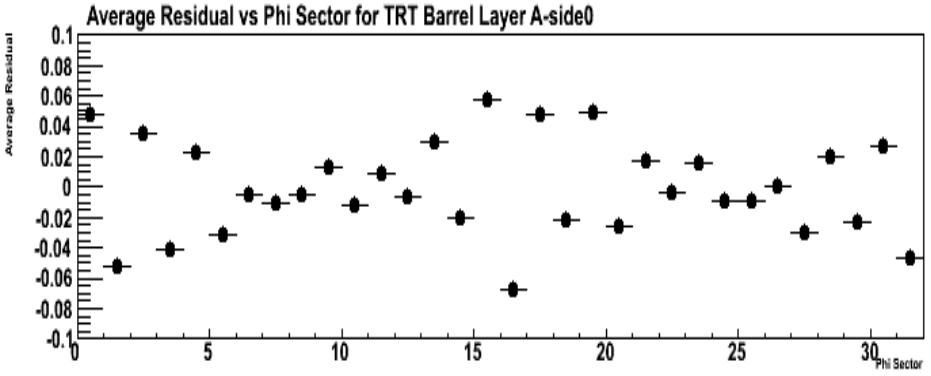


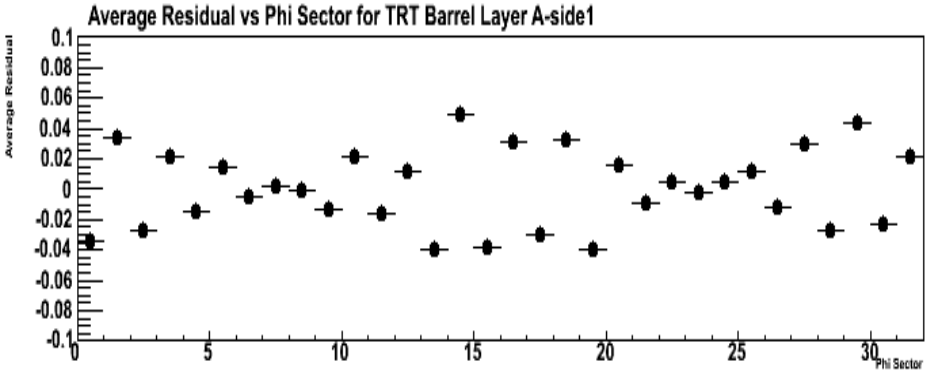


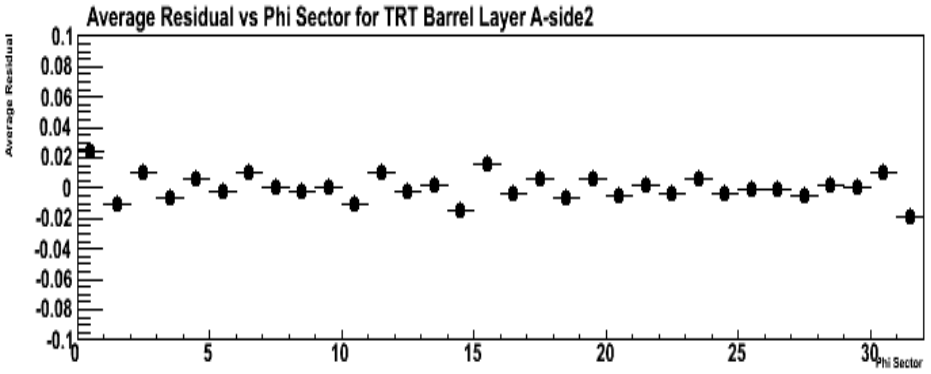


After L2 w/sign change

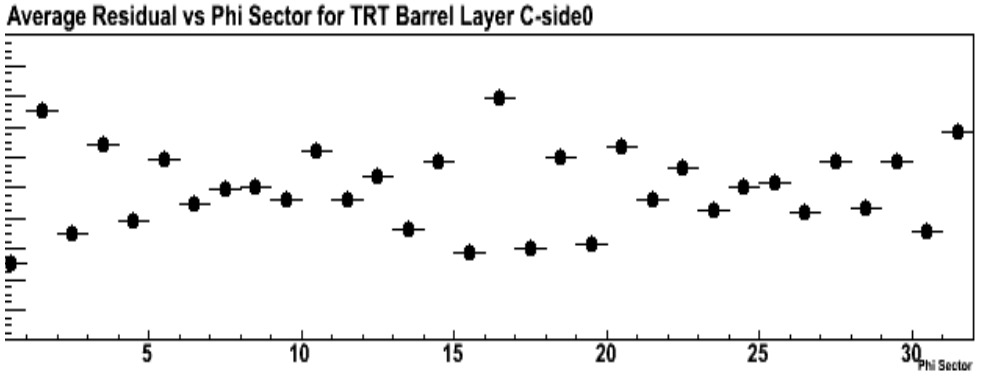
A- Side

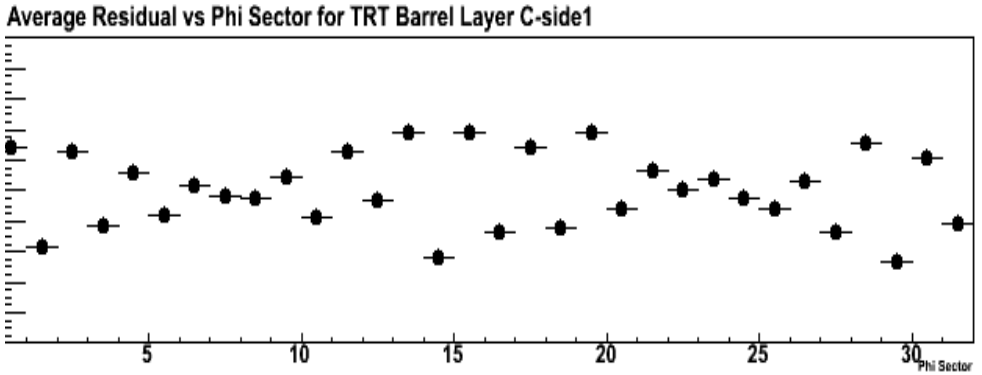


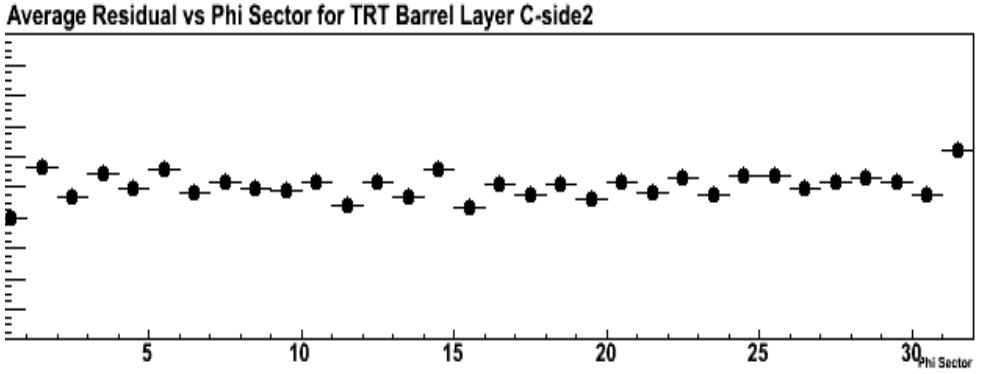




C- Side







Aligning A and C separately

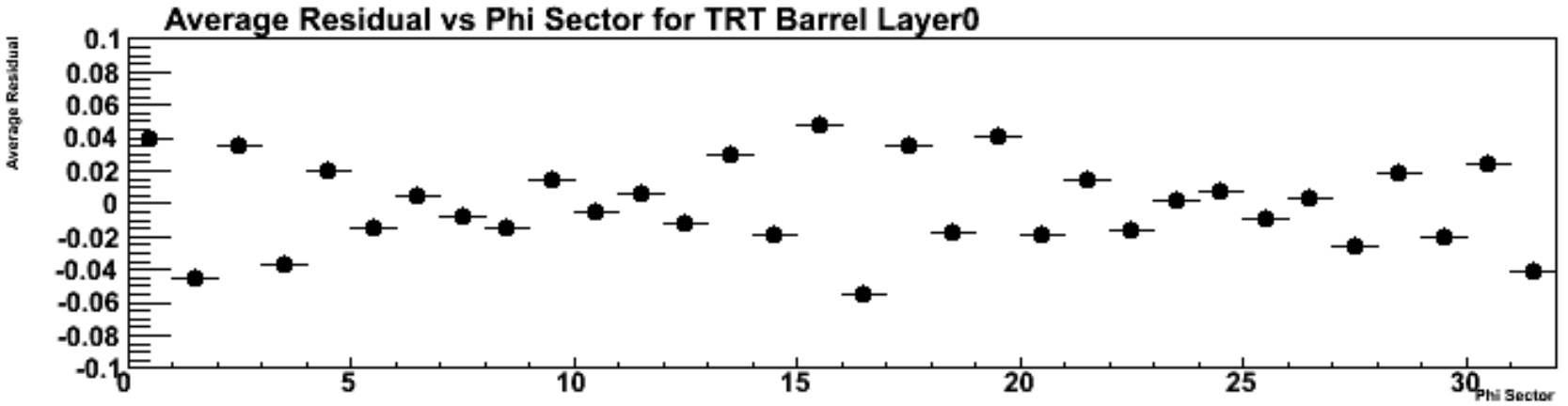
When Aligning at the module level, the reference taken to be the identifier of the "central" straw in the module.

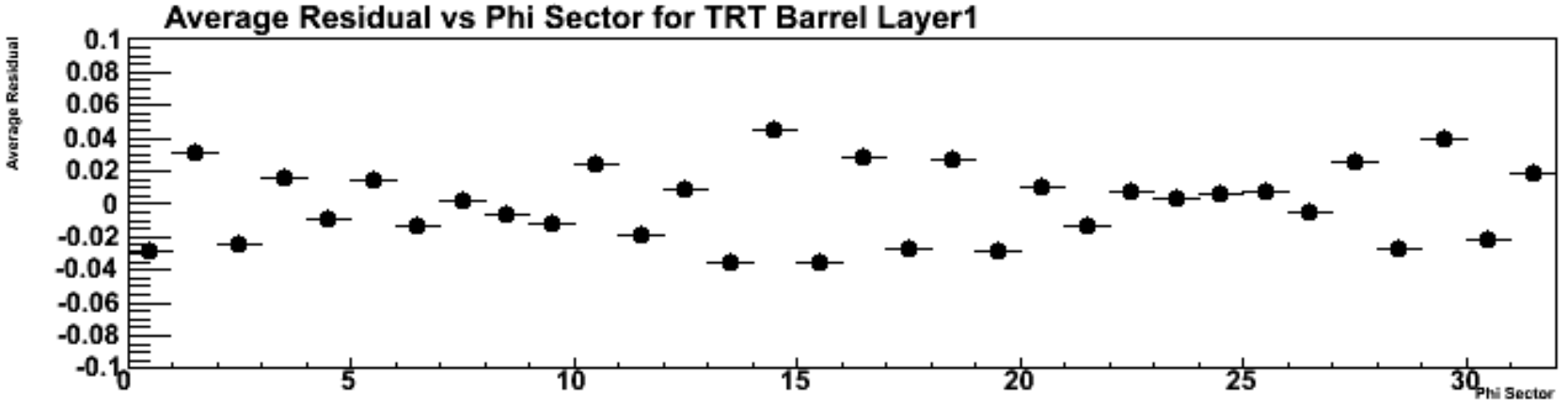
- All transformations are then made wrt this straw.
- Differences in A and C sides are ignored. (C-side taken by default)

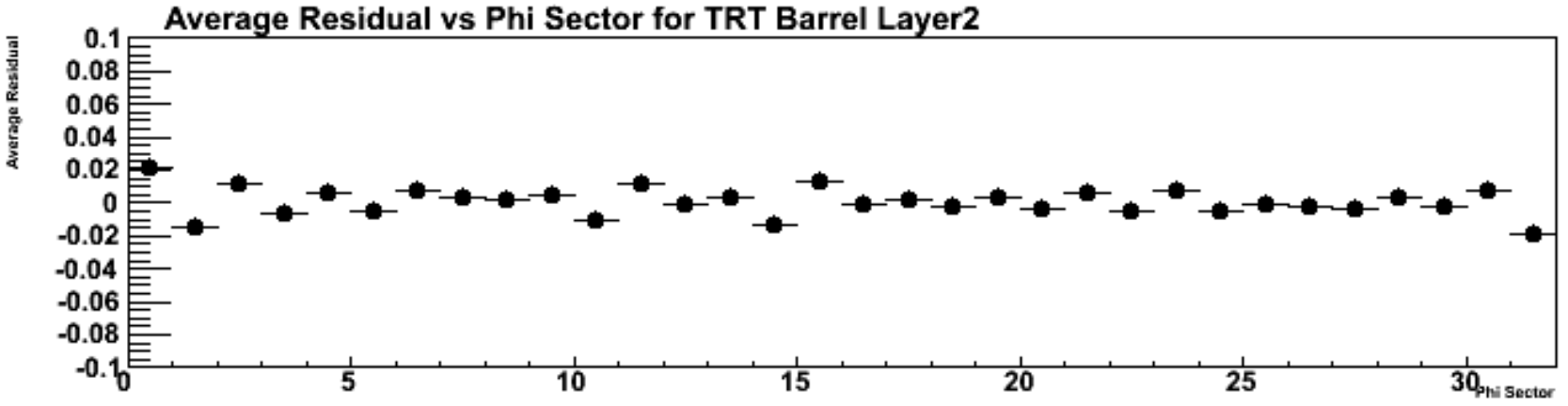
Double the "active align-able elements" by taking A and C differences into account

- Derivatives / transforms are abstracted to handle this automatically
- infrastructure in COOL to recognize/store the identifiers information

After L2 A/C separately w/s.c

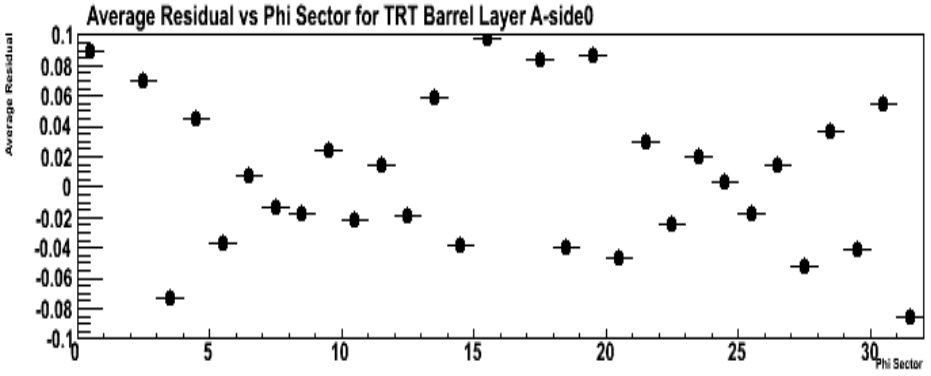


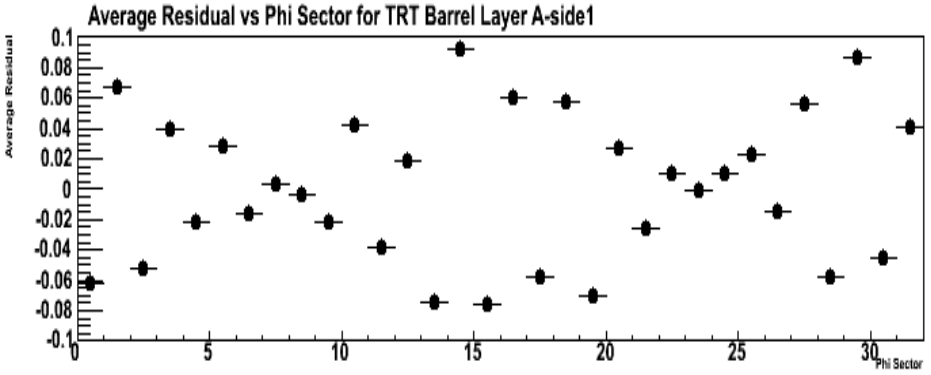


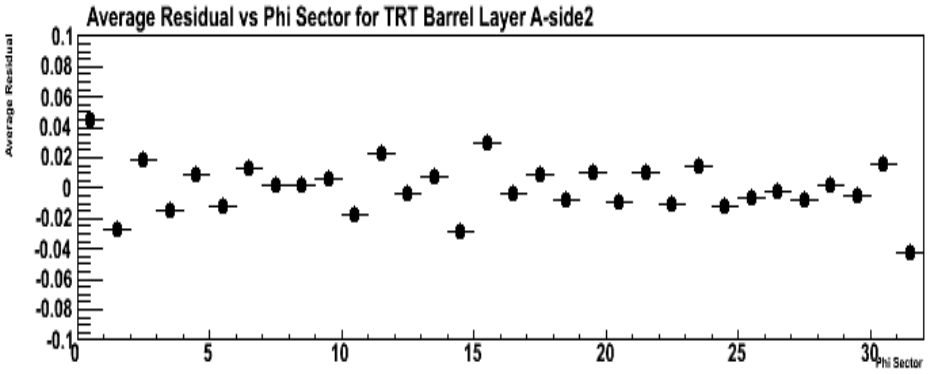


After L2 A/C separately w/s.c

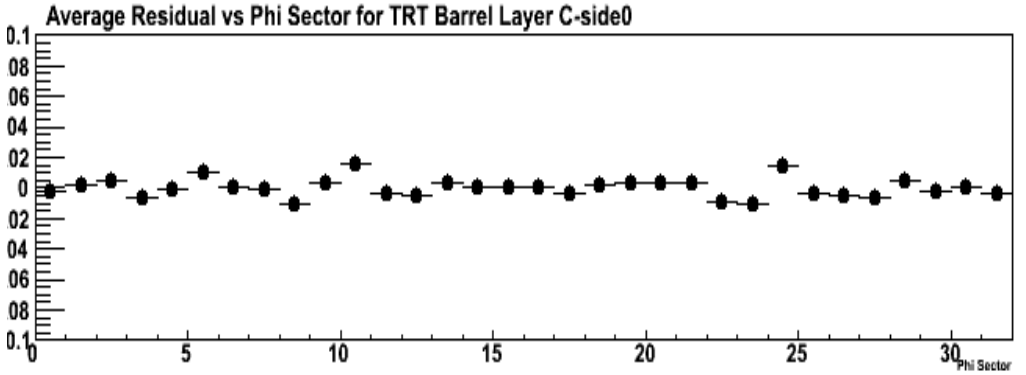
A- Side

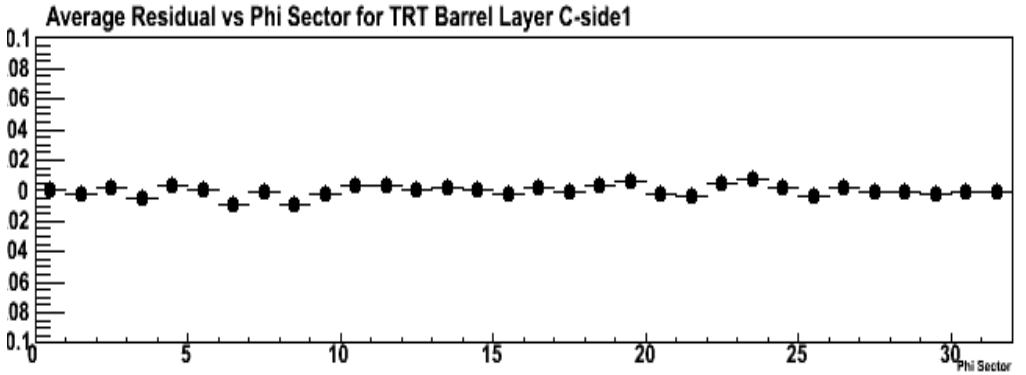


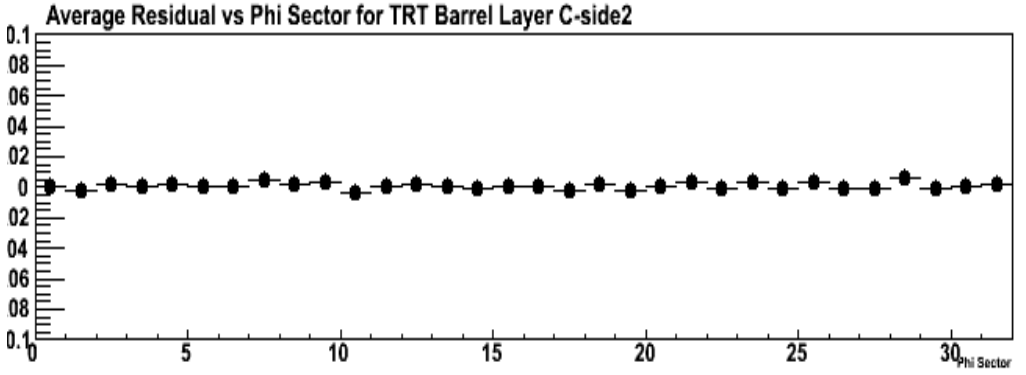




C- Side







Next Steps

- **Aligning side A and C separately, “by hand” to ensure we can eliminate structure on both sides.**
- **Determine significance of not being able to align the two separately**
  Structure only there for 'non-collision-like' tracks
- **We probably dont want to make a change to GEO_Model, but in the InDetReadoutGeometry interface**