

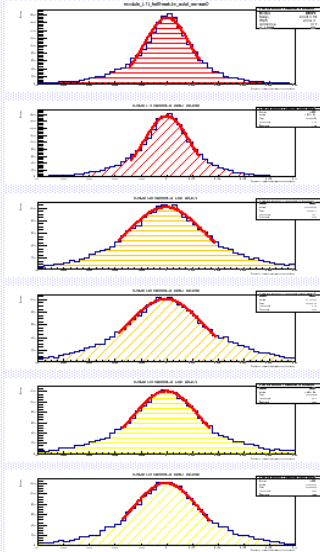
Millepede alignment translations along u only

- Alignment tests on one single run (5772), ~220000 reconstructed events
- Starting geometry: v2_nominal (with optical survey)
- GhostHits removed, + GBL
- Tracks available after GBL: ~42000
- Millepede runs:
 - only u translations floating
 - 4 iterations (so far, tuning in progress)
- Comparison of u residuals after GBL in the sensor reference system (yellow histograms: v2_nominal, magenta: millepede_step4)

Millepede step 4 result: u residuals in sensor reference system, after GBL

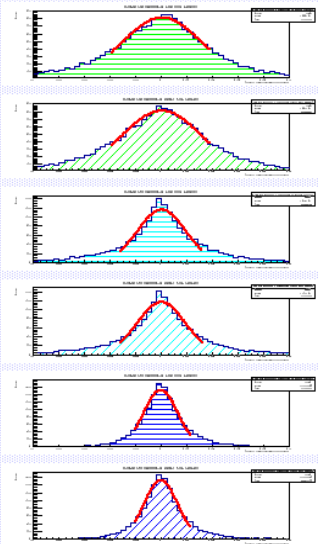
TOP

axial
stereo

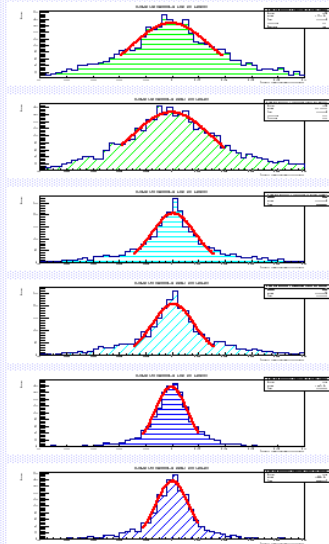


L1
L2
L3

hole



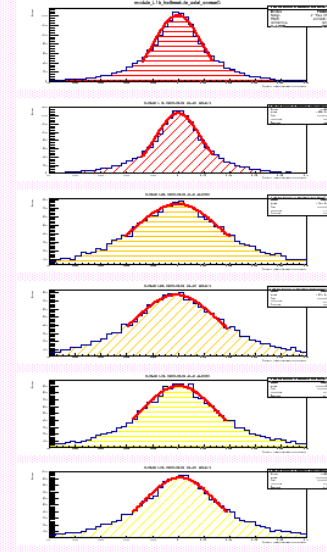
slot



L4
L5
L6

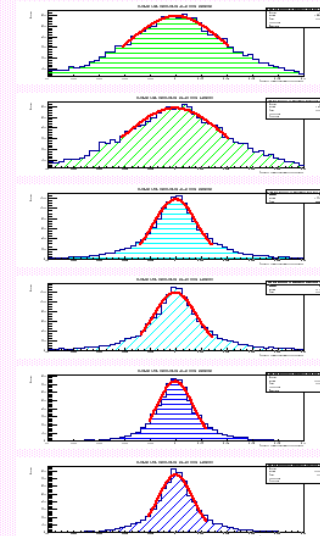
BOTTOM

axial
stereo

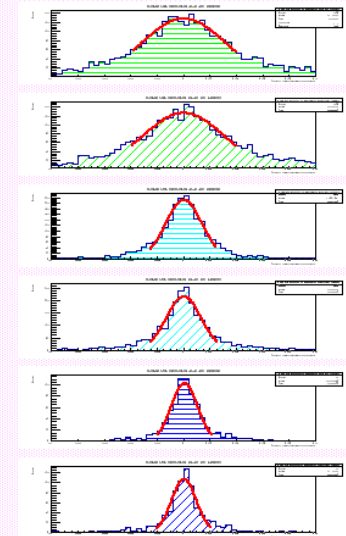


L1
L2
L3

hole



slot



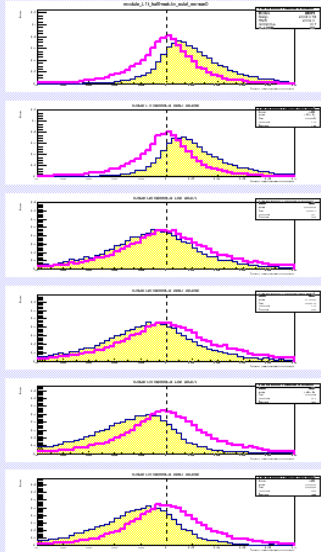
L4
L5
L6

Axes limits: -10um -> 10 um (for all)

Nominal v2 (yellow) vs Millepede st4 (magenta): u residuals, sensor reference system

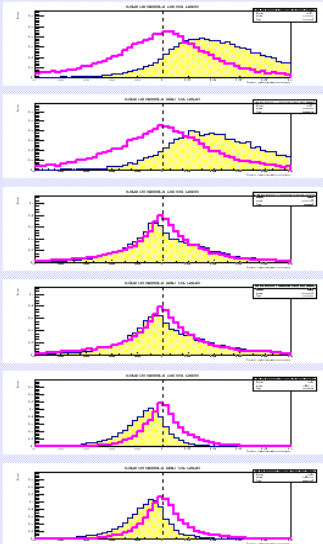
TOP

axial
stereo

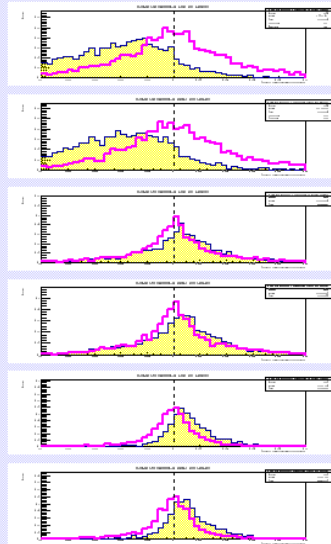


L1
L2
L3

hole



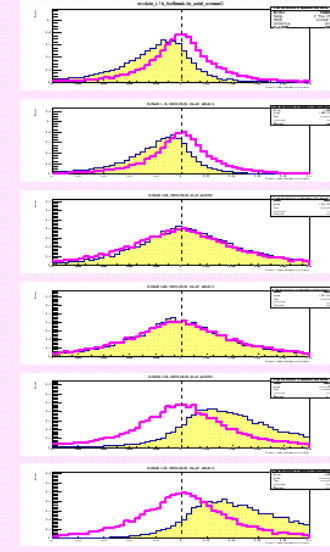
slot



L4
L5
L6

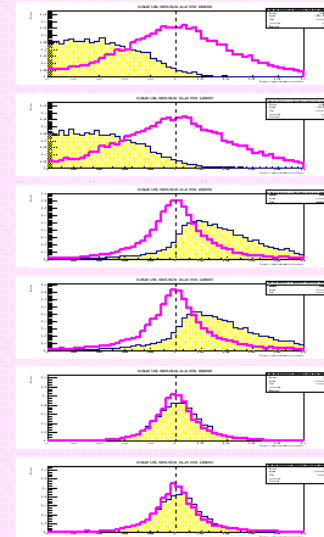
BOTTOM

axial
stereo

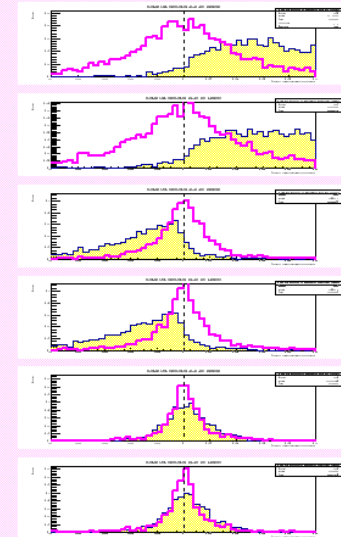


L1
L2
L3

hole



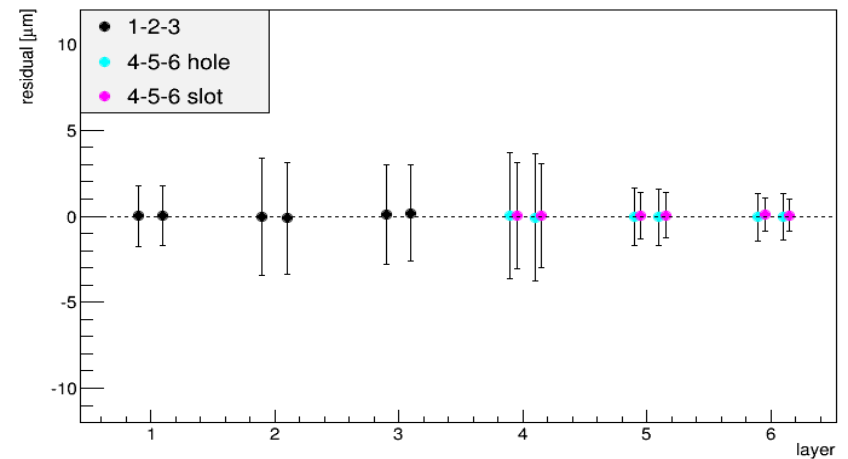
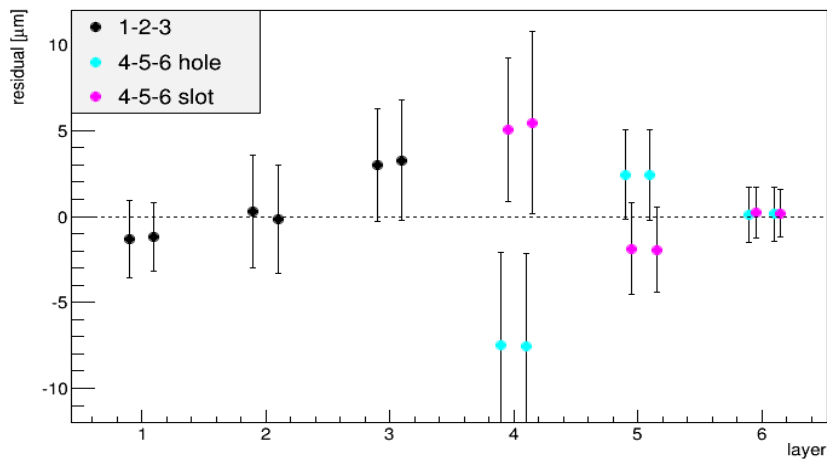
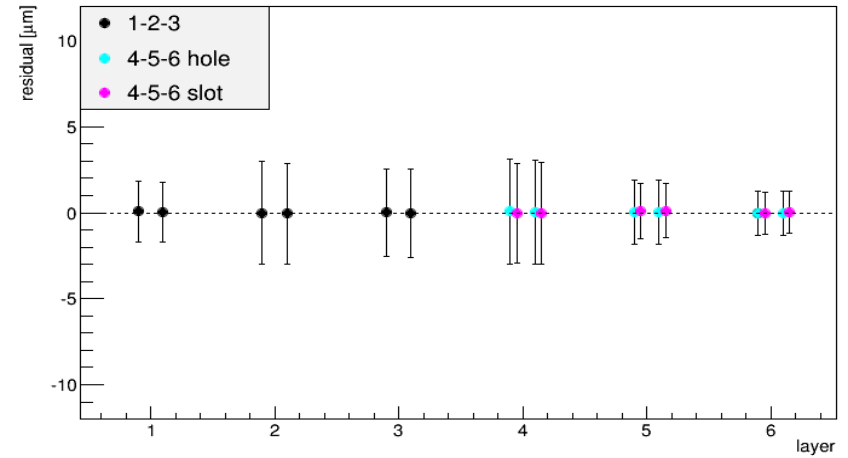
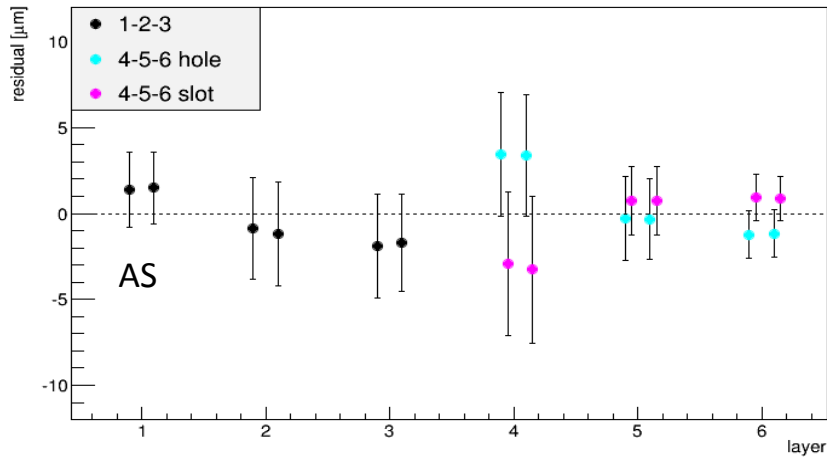
slot



L4
L5
L6

Axes limits: -10um -> 10 um (for all)

Residual mean values and σ 's (from gaussian fit – error bars = σ)



V2_nominal_geo

Millepede step 4

Improvements/notes

- Shape of residuals layers 4-5 (especially bottom) much better and symmetric
- Residuals centered to zero
- Widths to be improved (up to...?)
 - Largest width layers 4&5
 - Maximum width (sigma): 3.7 μm
- With 20x statistics:
 - Improvement on errors (of mean value and sigma from gaussian fit) of a factor of 5
 - Relative error on sigma with one run only: max 5%
- Clean up sample: about 15% of outliers rejected by Millepede (with v_2 at the starting step: 25%)
- Look at other distributions (d_0 , z_0 , vertex position, attack angles, etc)