Rotations and geometry debugging - update

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Debugging status

- **COMPLETED**

- Tests of the effect of known misaligment injected as offsets in the compact.xml file (the same way millipede does)
  - Same misalignment for stack of sensors, one (two) stack at a time, top and bottom (at the same time):
    - 123 Ax, 123 St
    - 456 slot Ax, 456 slot St
    - 456 hole Ax, 456 hole St
  - Visual misalignment effect OK
  - smaller misalignment (+10 mrad) effect checked to verify geometry consistency: verify sensor axes orientation in the measurement RF

- Results:
  - Full consistency for U rotations, all sensors
  - Full consistency for W rotations, all sensors
  - Full consistency for V rotations, all sensors

- **The introduction of offsets (corrections suggested by MP) is handled correctly in the reconstruction code**

Plan for further development

- Starting geometry: v3-4 with magnetic field on (translations + external constraints only)
  - Purpose: understand how one can modify the profiles of residuals vs position distributions
    - res u vs u $\rightarrow$ w rotations needed?
    - res u vs v: better shape

- Systematic study of rotations
  - One/two/few at a time
  - Study of “collective” effects
    - Compare corrections for rotations for:
      - axial vs stereo, same pair
      - axial/stereo for consecutive layers (opening angle?)
      - axial/stereo for slot/hole, same layer
  - Study of shadowing effects of upstream sensors

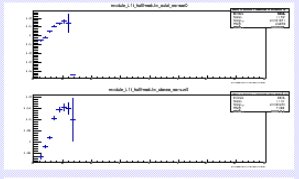
u residuals vs **u** profiles, v3-4 + mag field

Almost parallel profiles for axial/stereo in the same layer: angle wrt to hinge?

TOP

axial

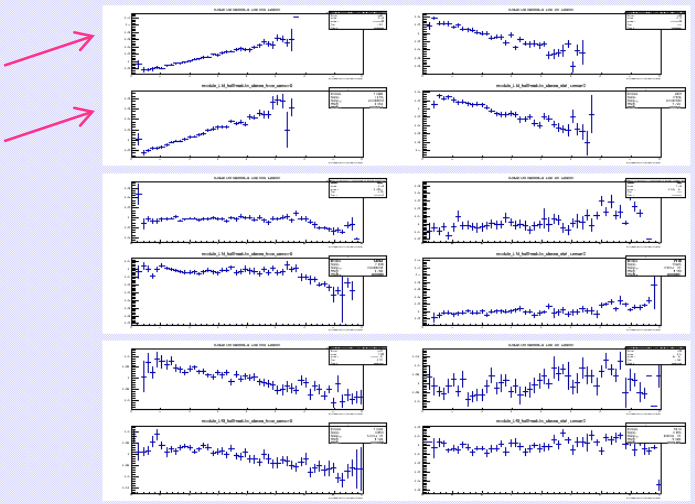
stereo



L1

L2

L3



L4

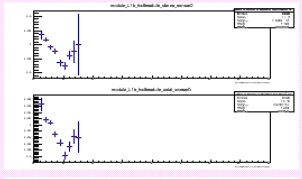
L5

L6

BOTTOM

stereo

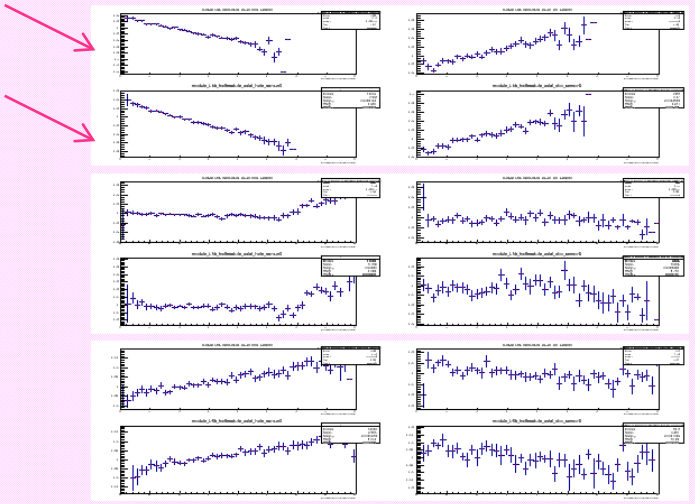
axial



L1

L2

L3



L4

L5

L6

u residuals vs **v** profiles, v3-4 + mag field

Better (except for the first layer)