

# Straight Through Fitting

Pelle

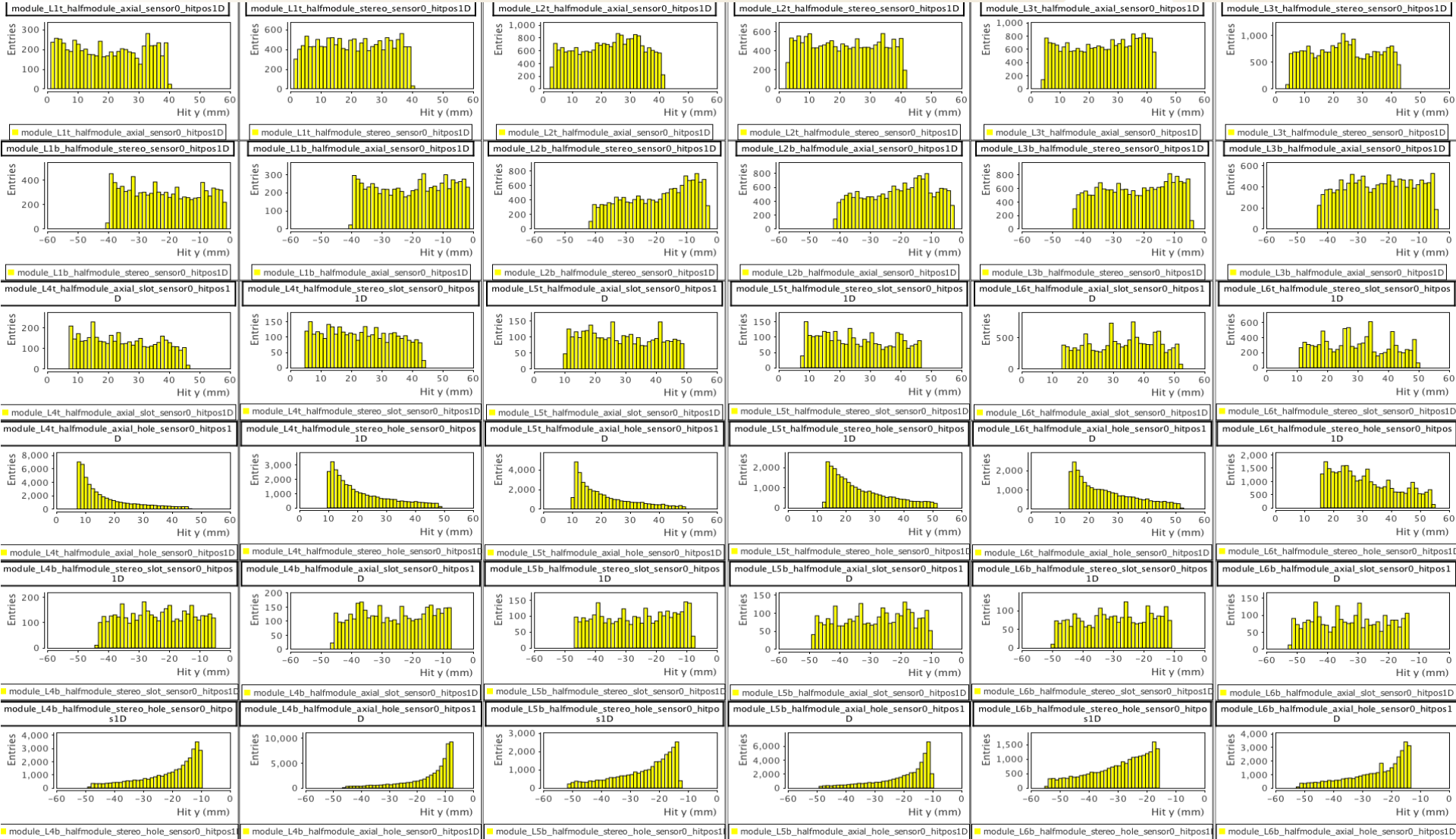
Wrote new algorithms in STUtils.java

- Input Strip clusters (SiTrackerHitStrip1D)
- Pattern recognition: 1 hit per sensor
- Stereo hit maker: copy of existing one
- Fitting: apache math SimpleRegression (no weights)
- Axial only or 2D fit
- A few weird 3D hits remain (no cuts applied here)

In these slides

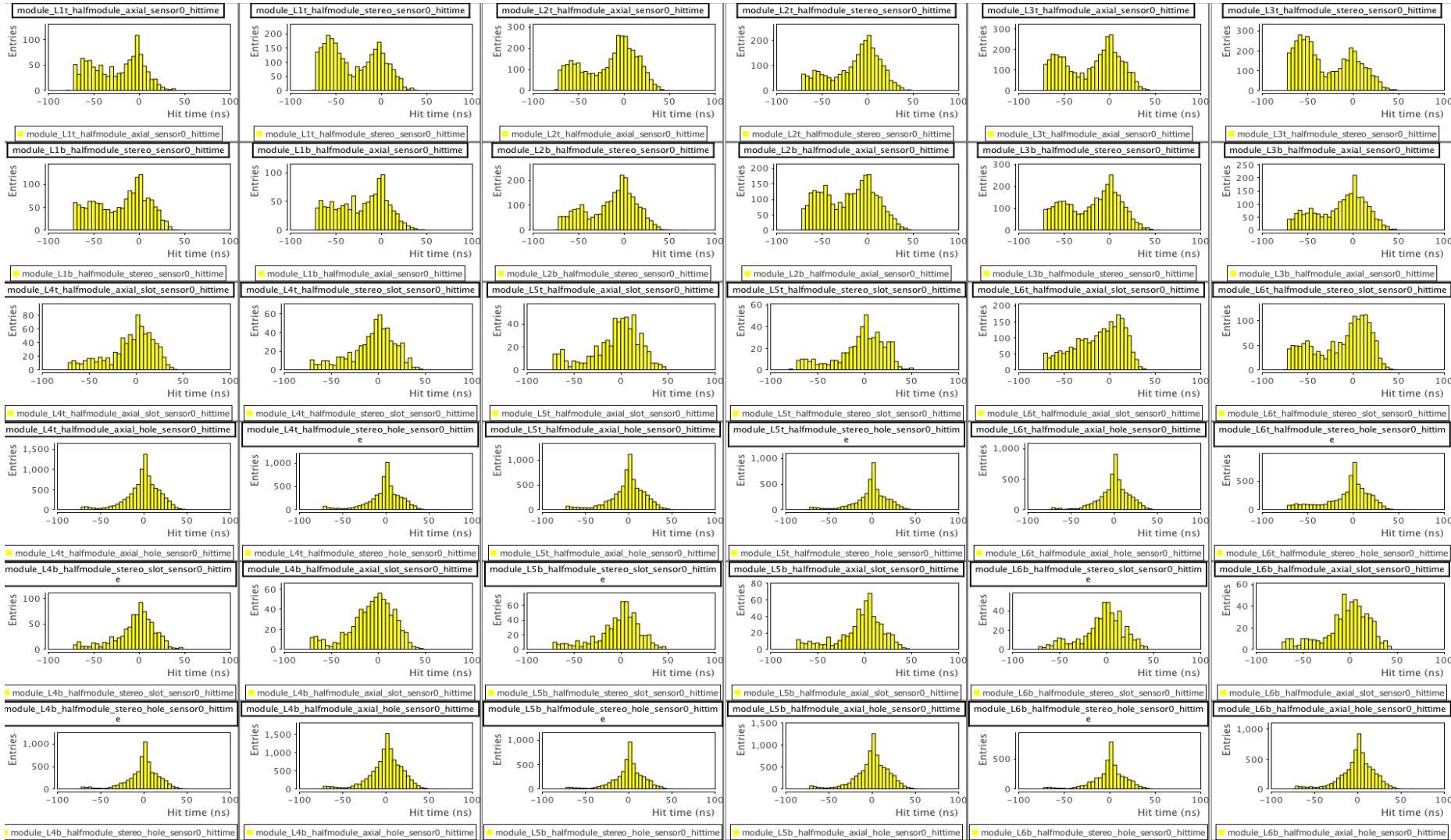
- Run 5784
- Require 6 hits
- Cluster hit times within  $\pm 8\text{ns}$

# All strip cluster (global) Y positions (illumination)

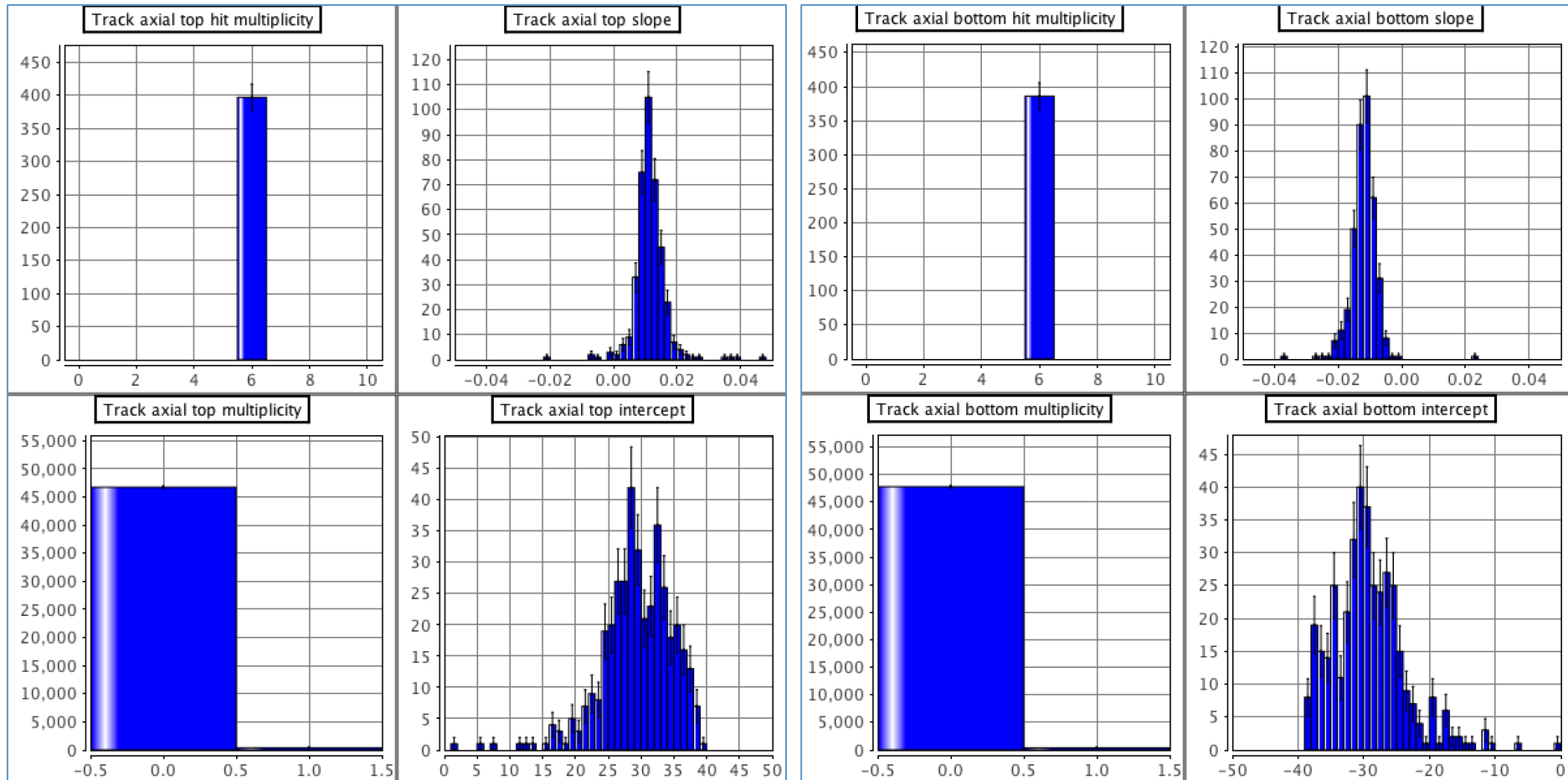


Beam centered ~ under L1-3 hybrids: few hits in L1-3 and L4-6 slot, lots in L4-6 hole

# Cluster Hit Times

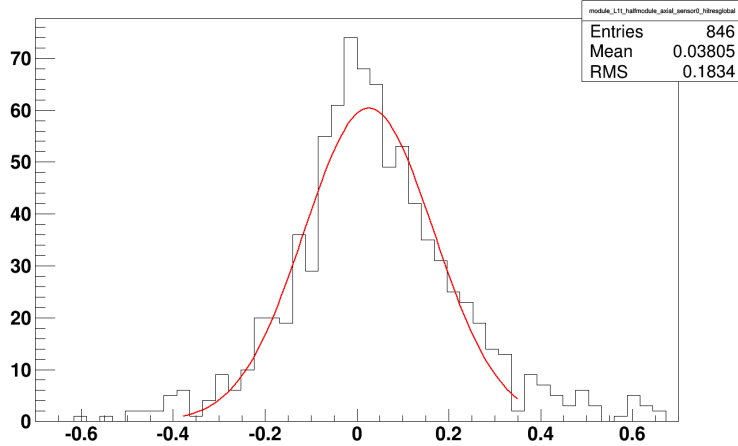


# Axial Fit

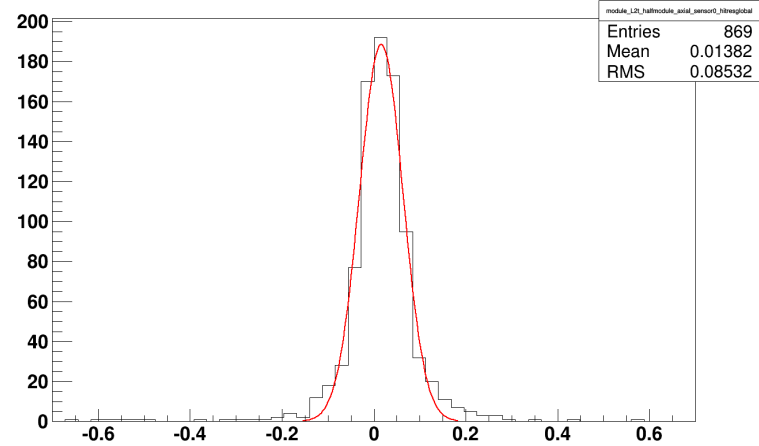


# Axial Fits Examples

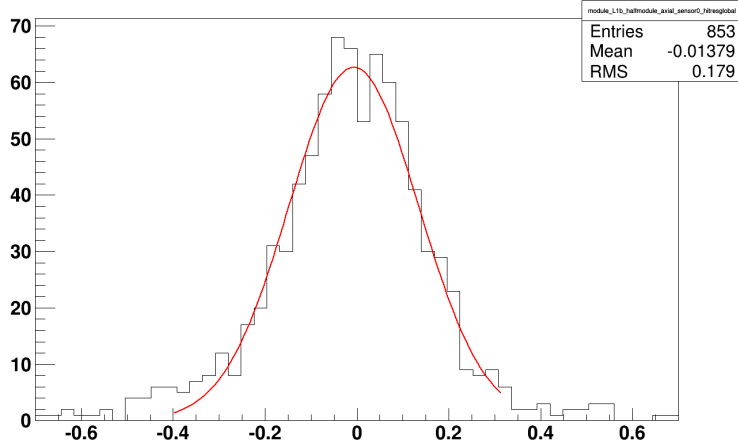
module\_L1t\_halfmodule\_axial\_sensor0\_hitsglobal



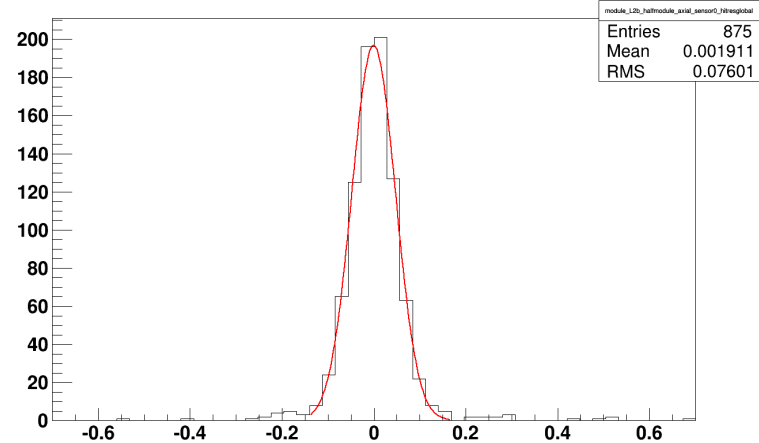
module\_L2t\_halfmodule\_axial\_sensor0\_hitsglobal



module\_L1b\_halfmodule\_axial\_sensor0\_hitsglobal

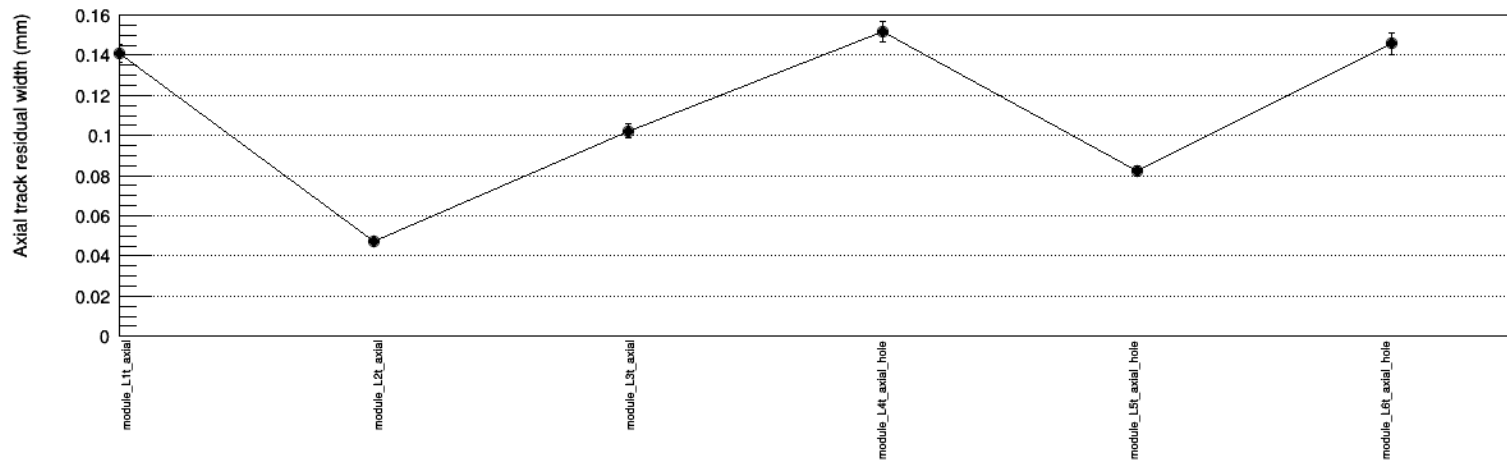
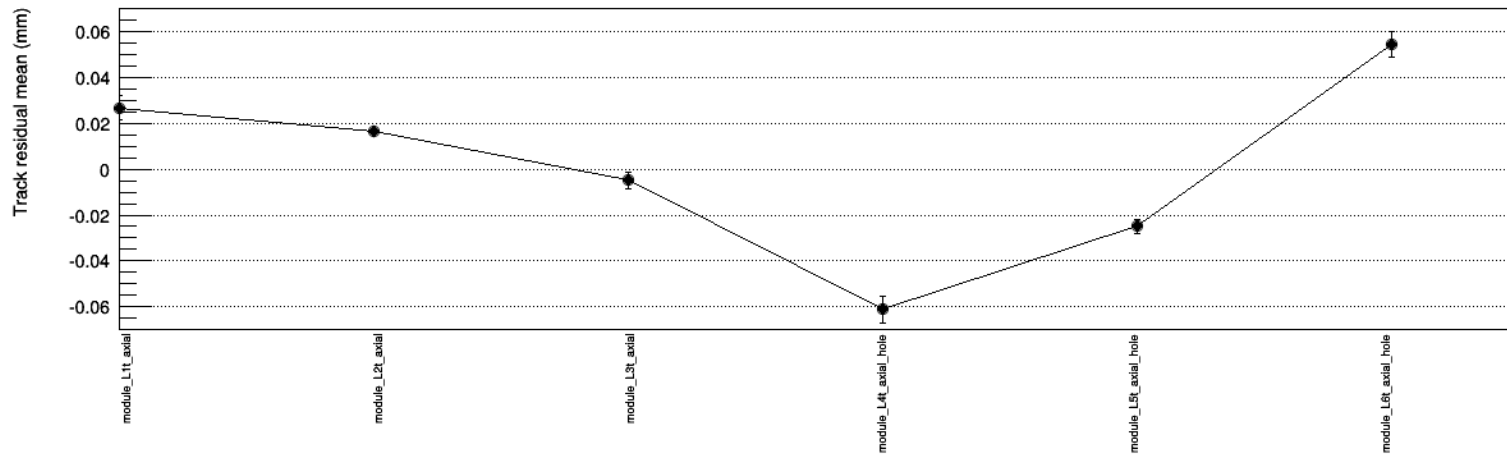


module\_L2b\_halfmodule\_axial\_sensor0\_hitsglobal



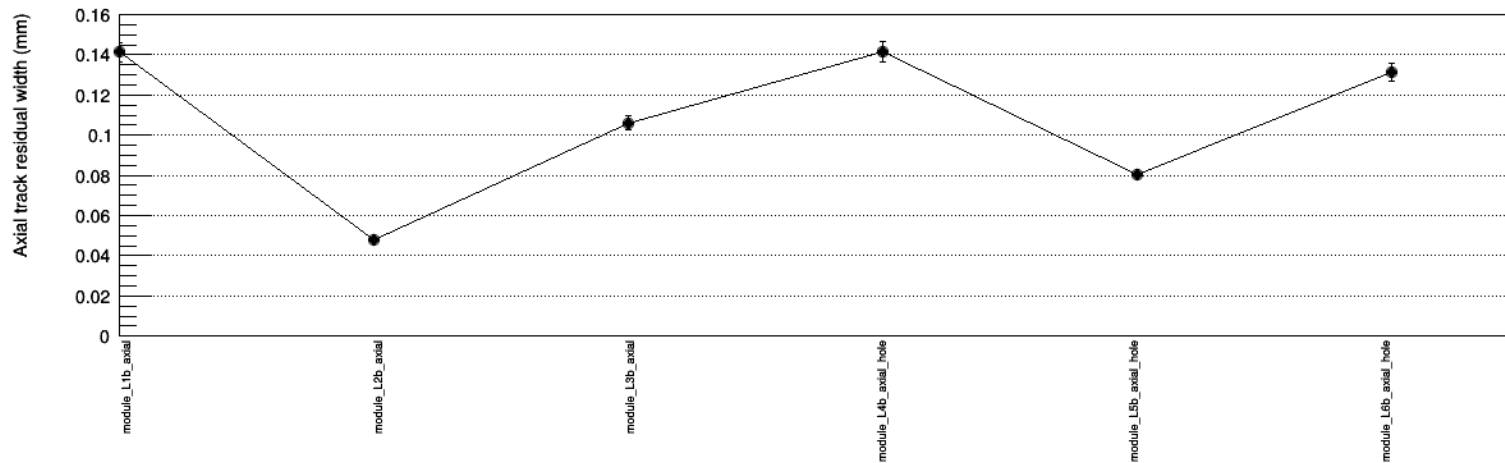
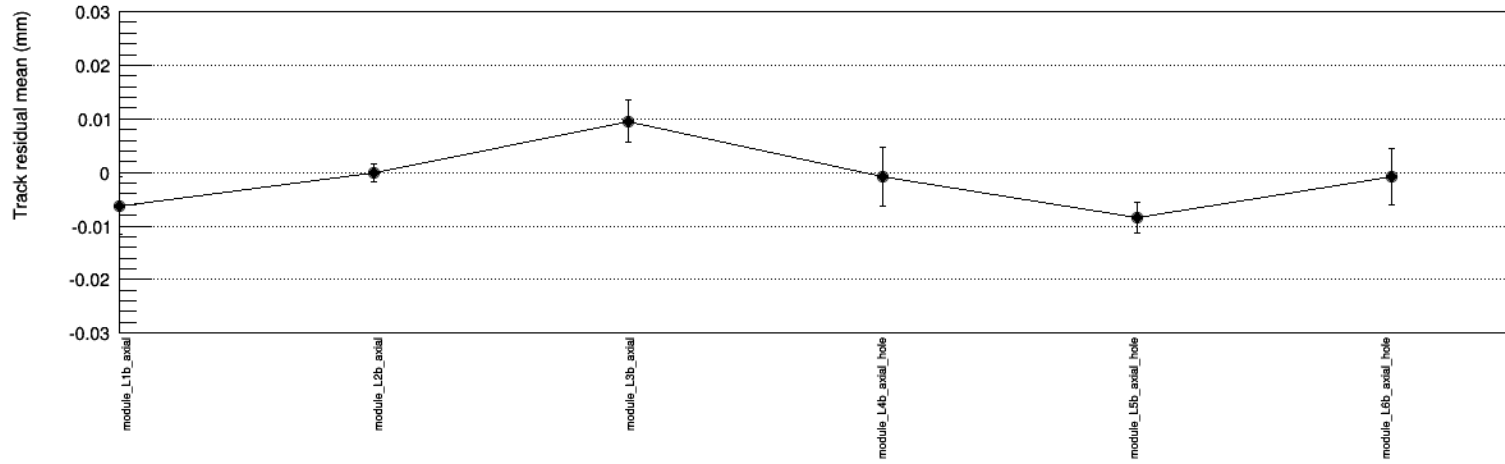
# Axial Fits Top

hitresglobal



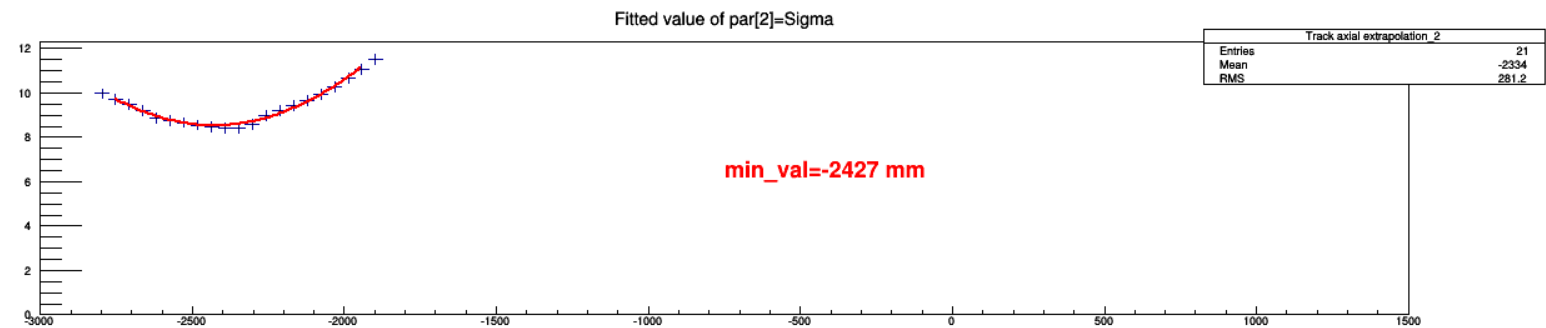
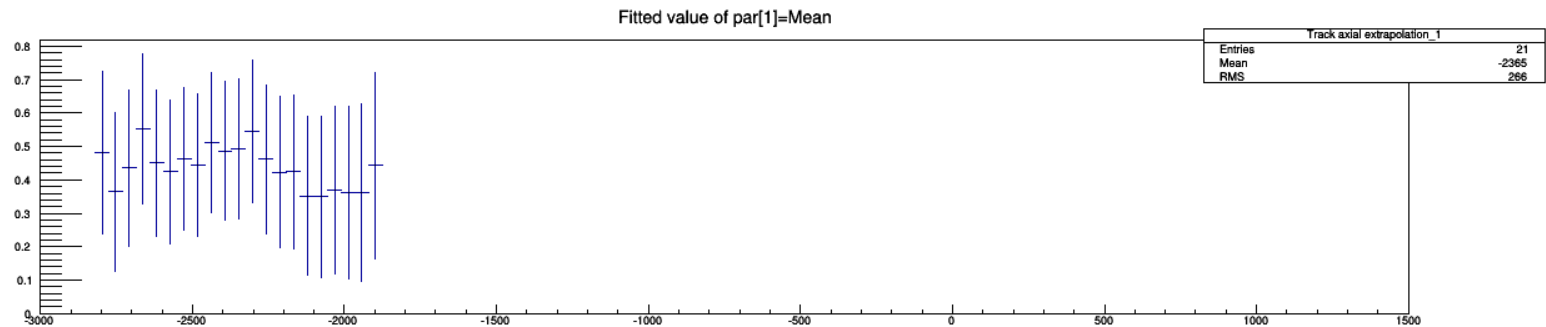
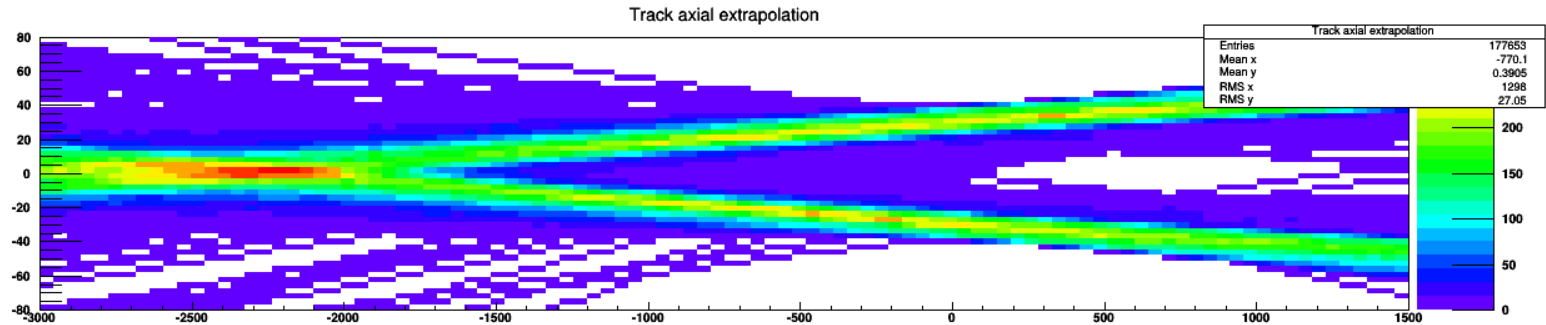
# Axial Fits Bottom

hitresglobal

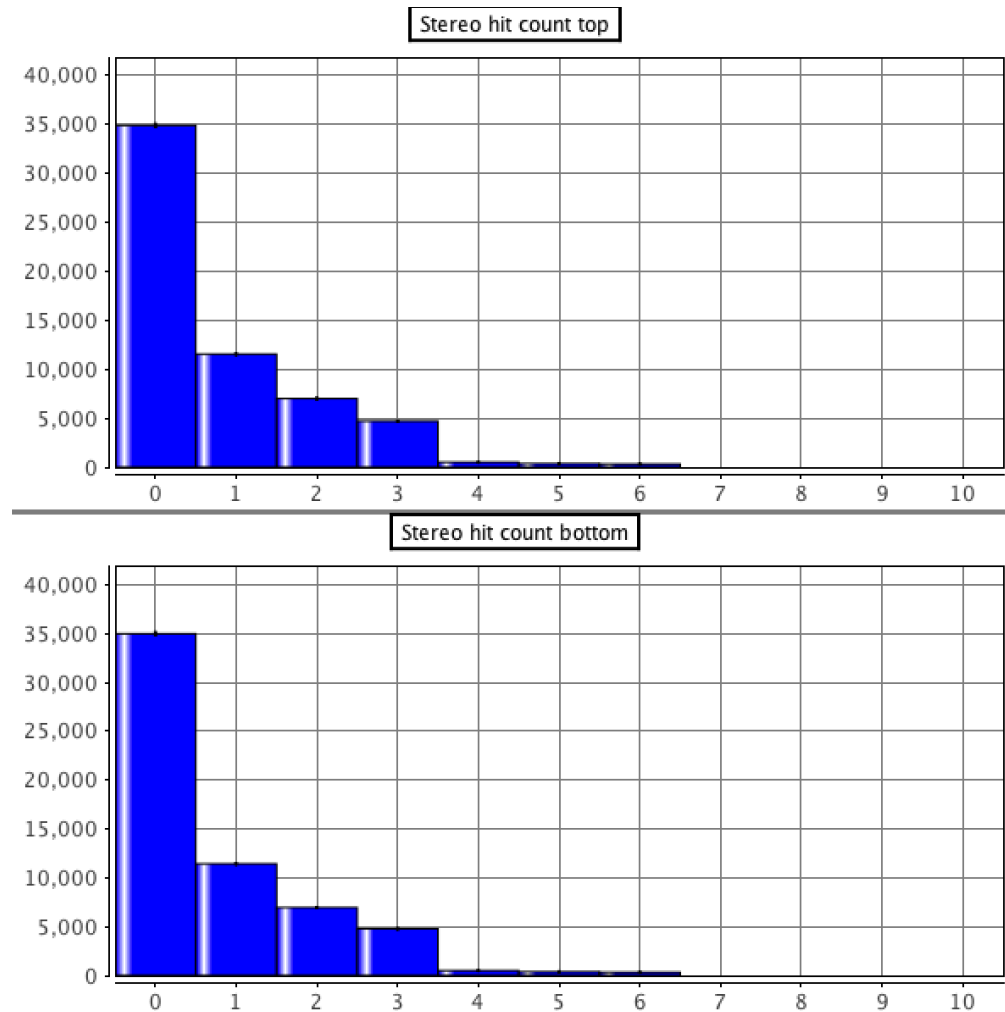




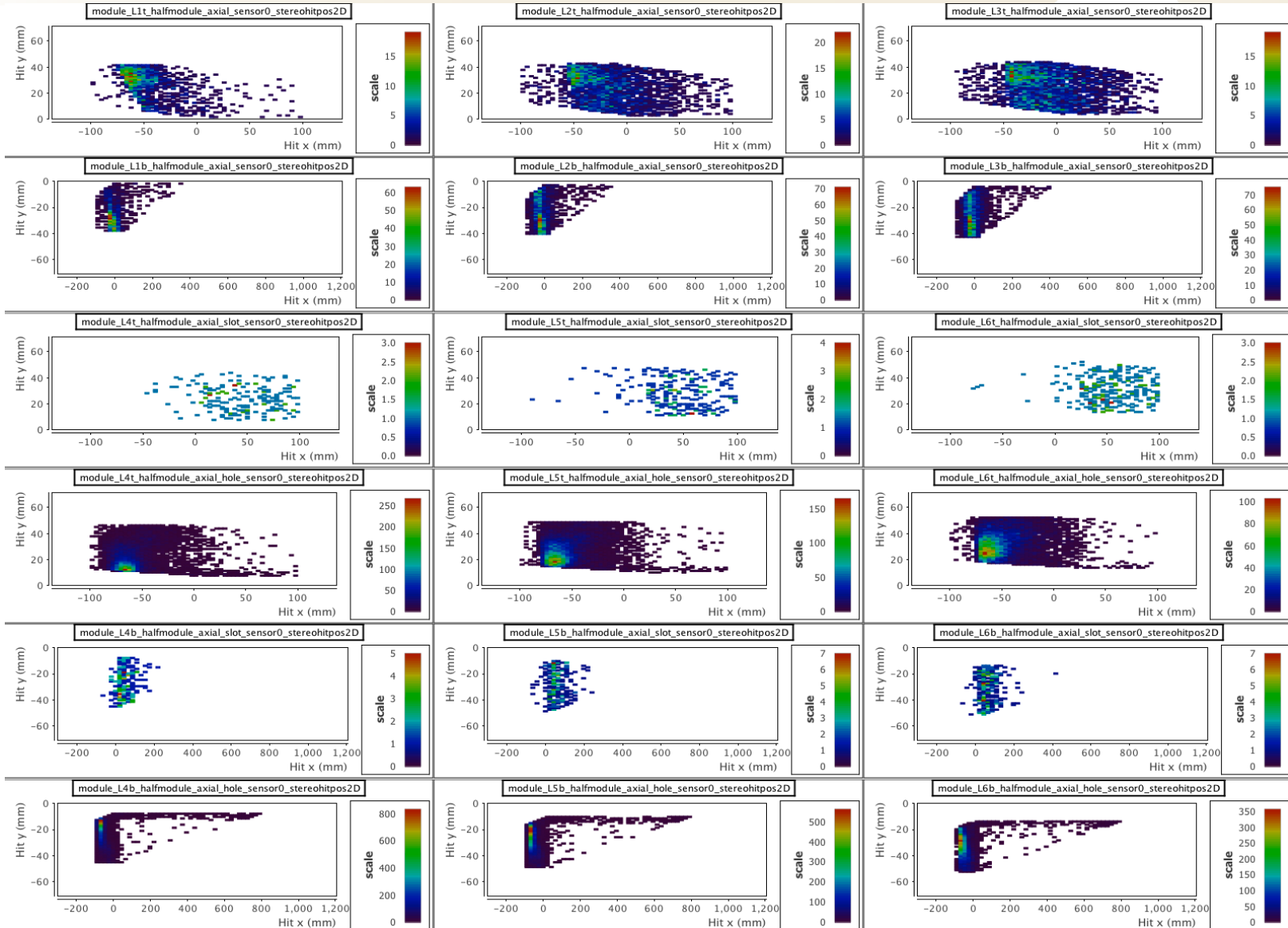
# Track Axial Extrapolation (wire @ {-67.23, 0.0, -2337.1})



# 2D Fits: stereo hit count (1 hit/sensor)

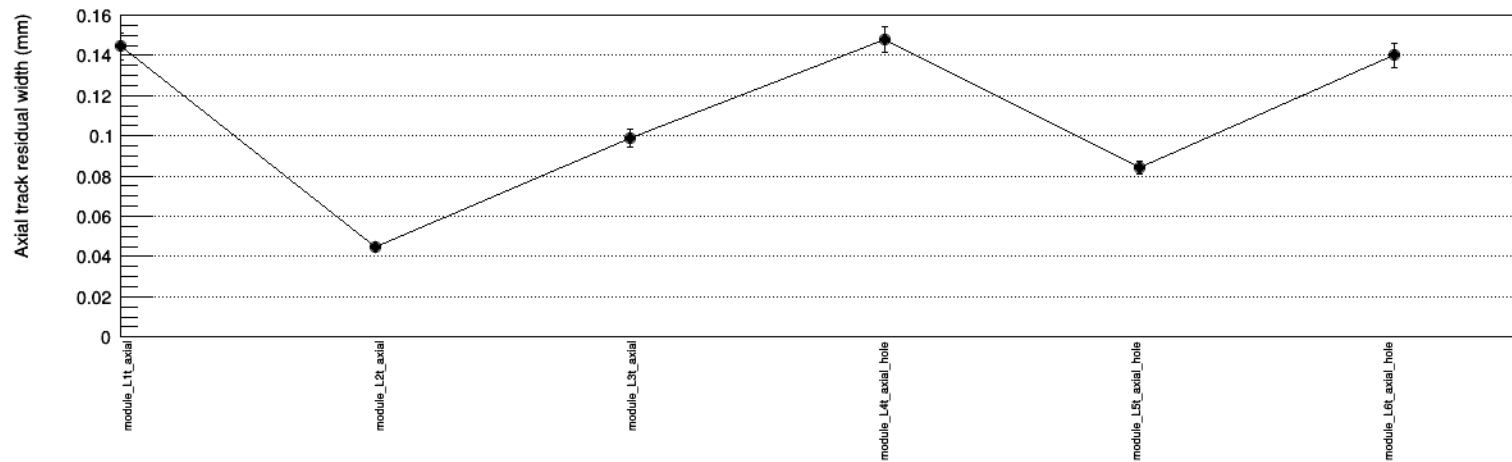
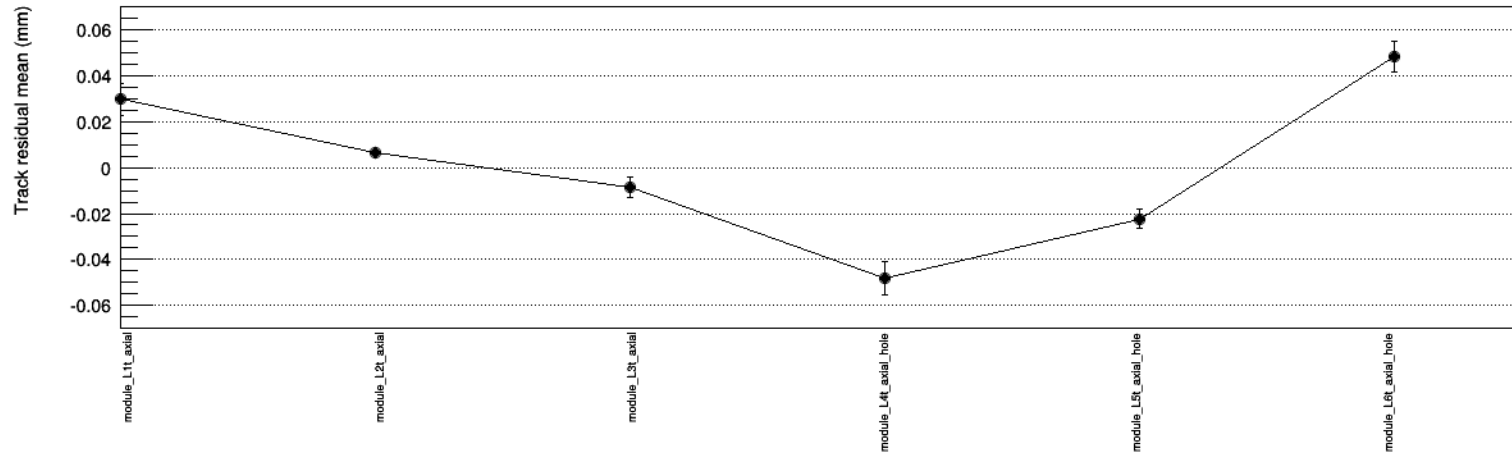


# 2D Fits: stereo hit positions



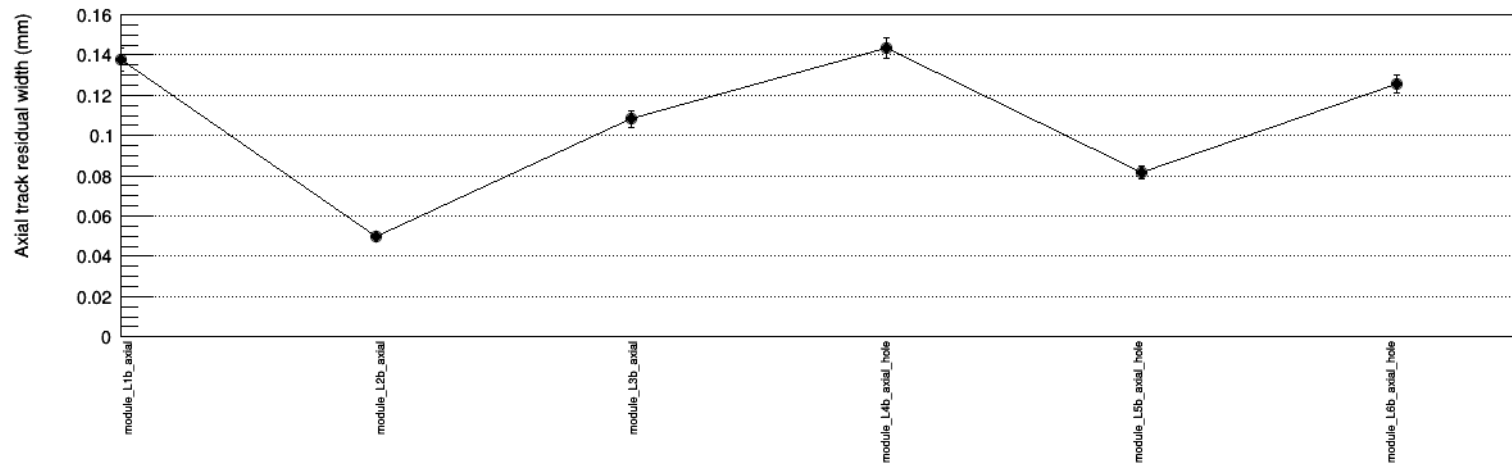
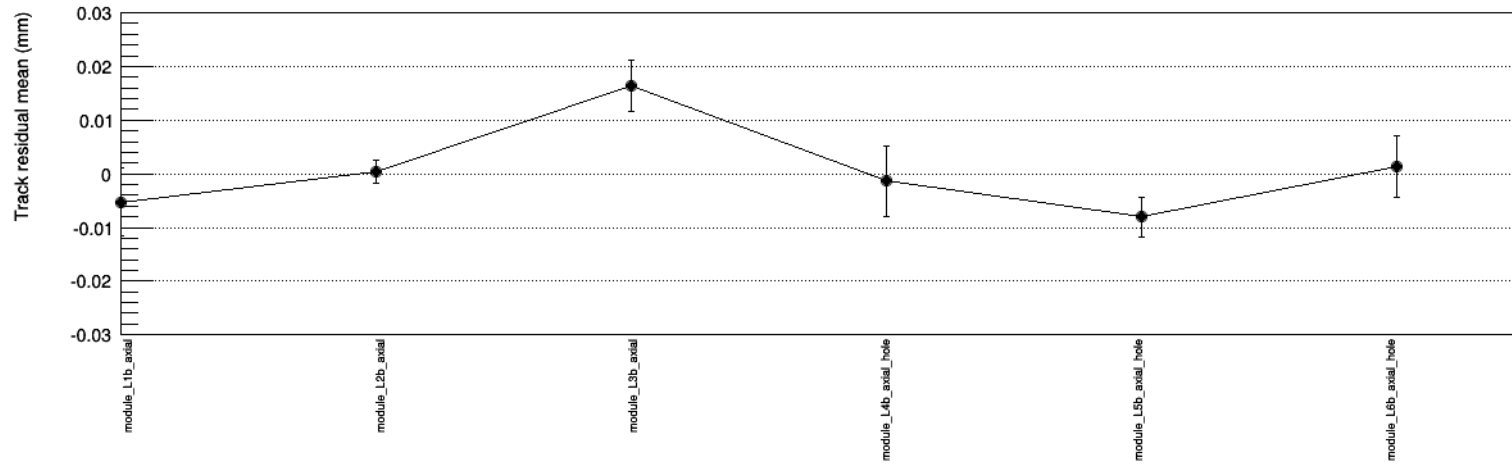
# 2D Fits: top YZ

stereohityzresglobal

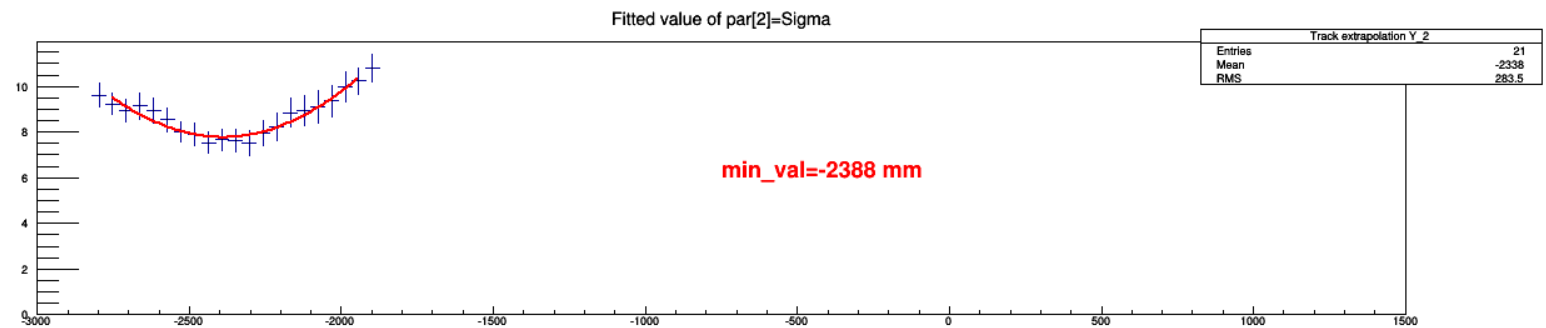
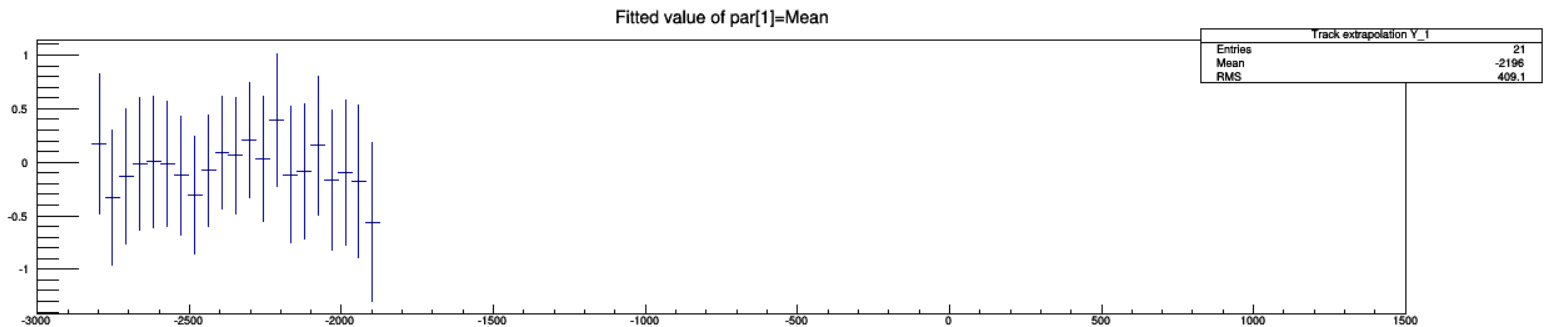
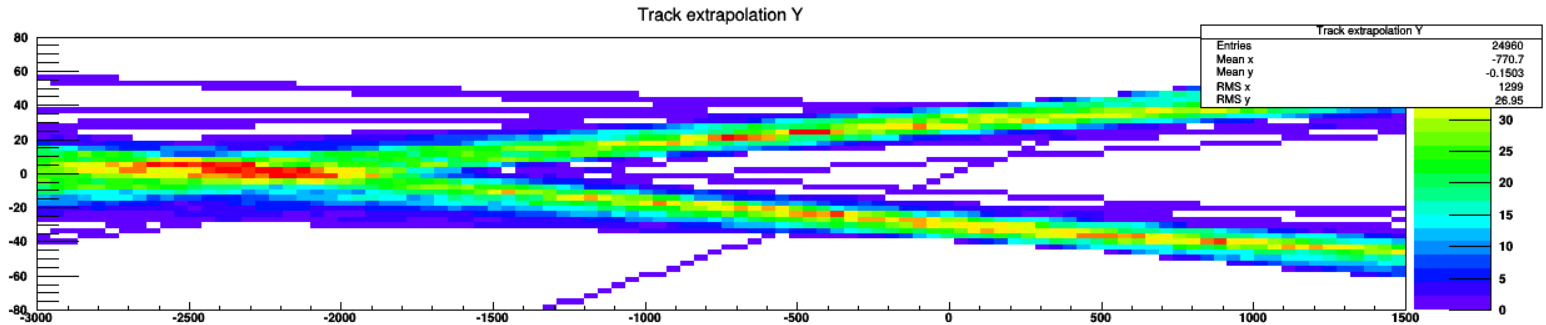


# 2D Fits: bottom YZ

stereohityzresglobal

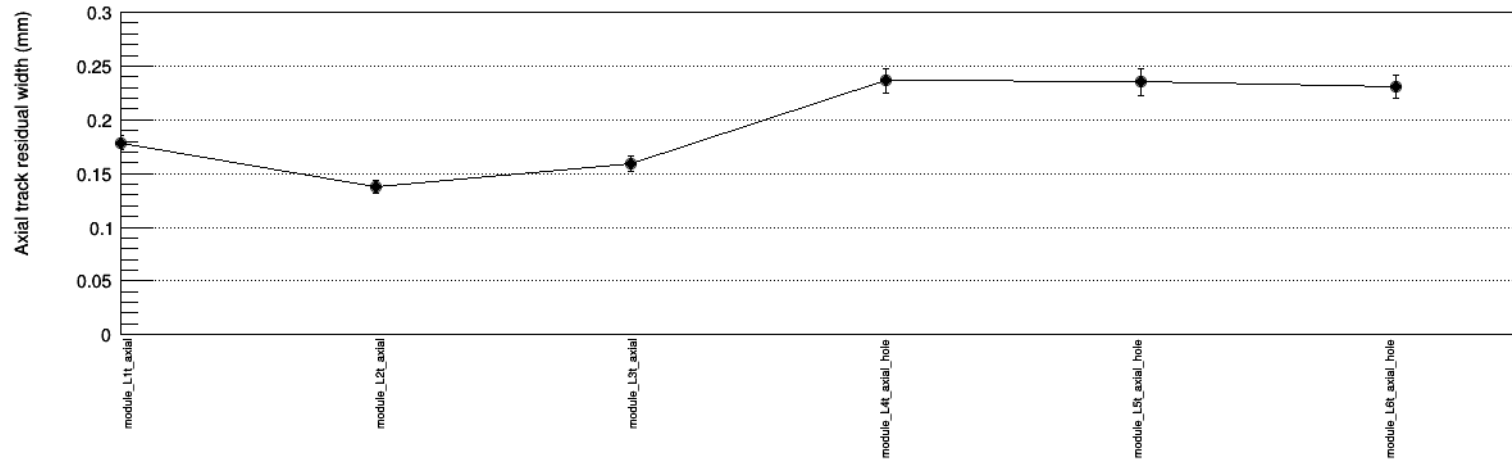
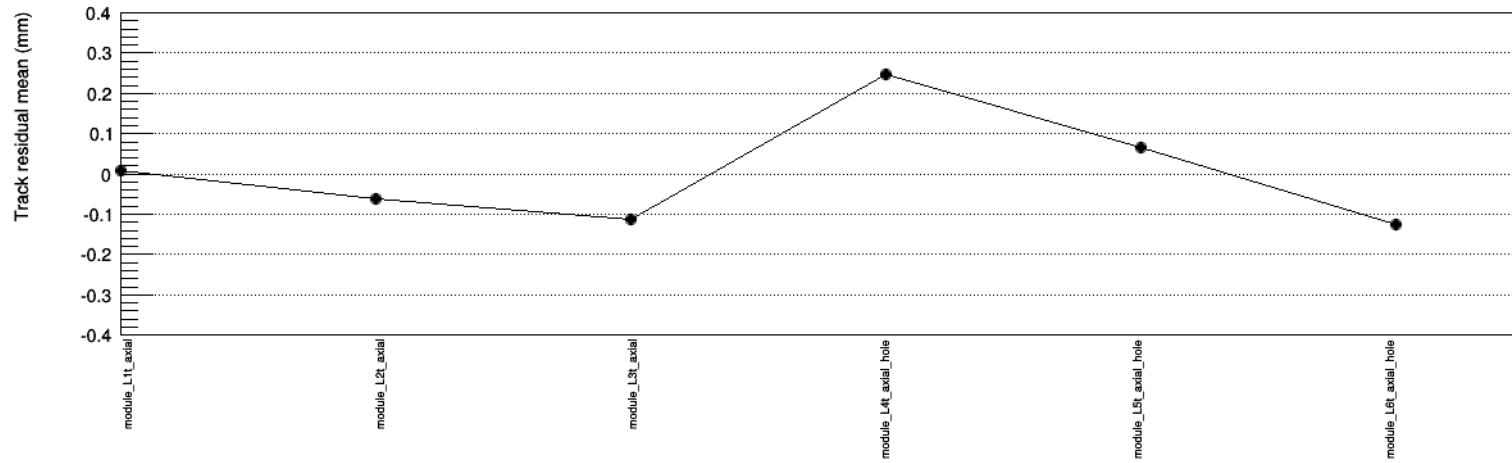


# 2D Fits: Y Extrapolation (wire @ {-67.23, 0.0, -2337.1})



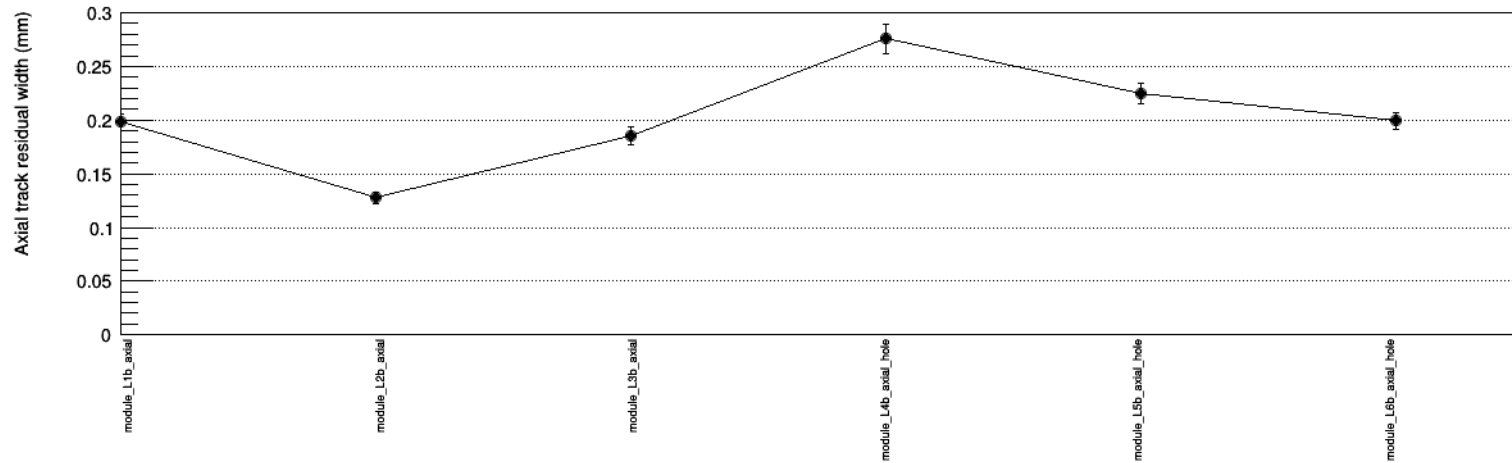
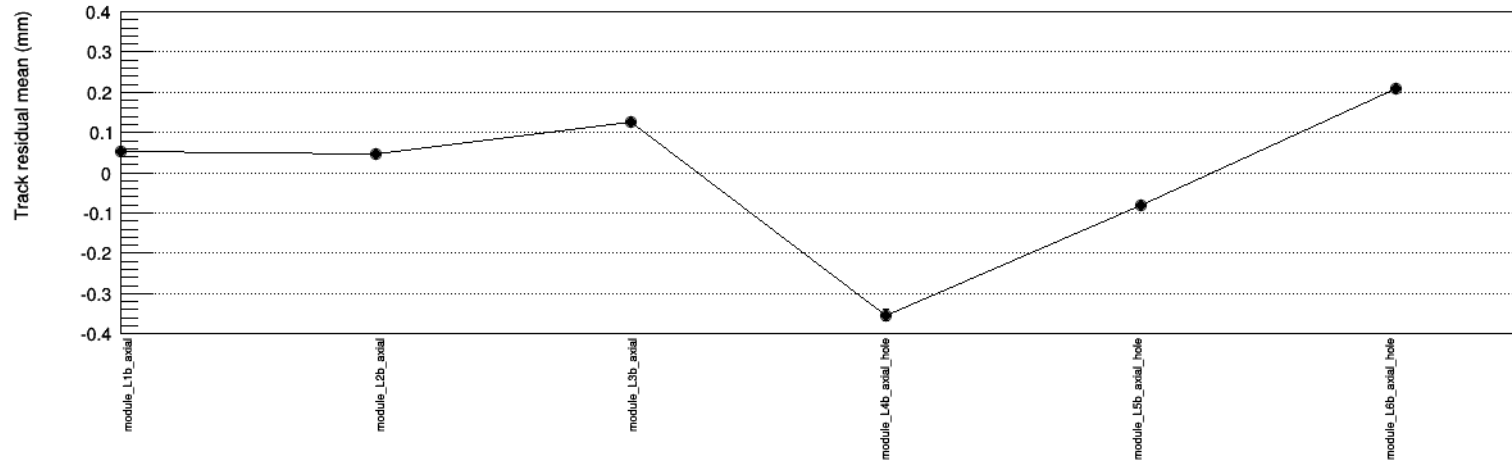
# 2D Fits: top XZ

stereohitzresglobal



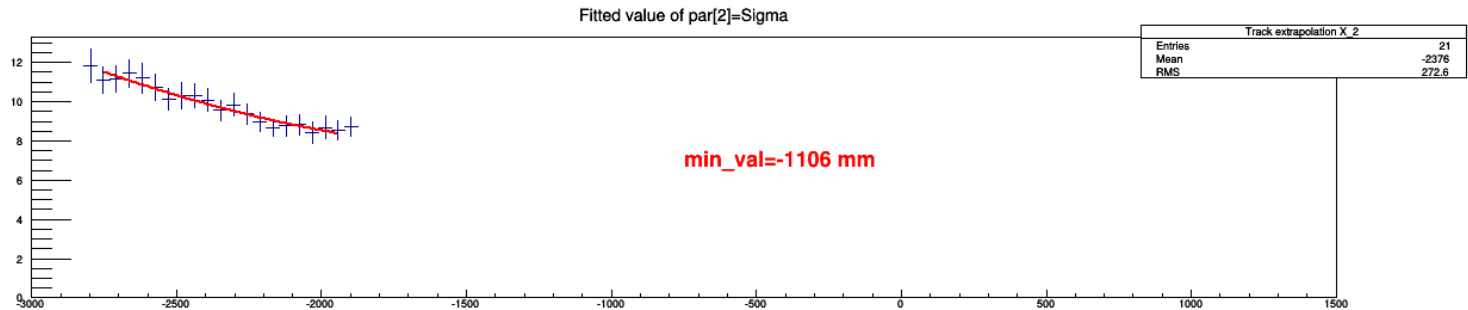
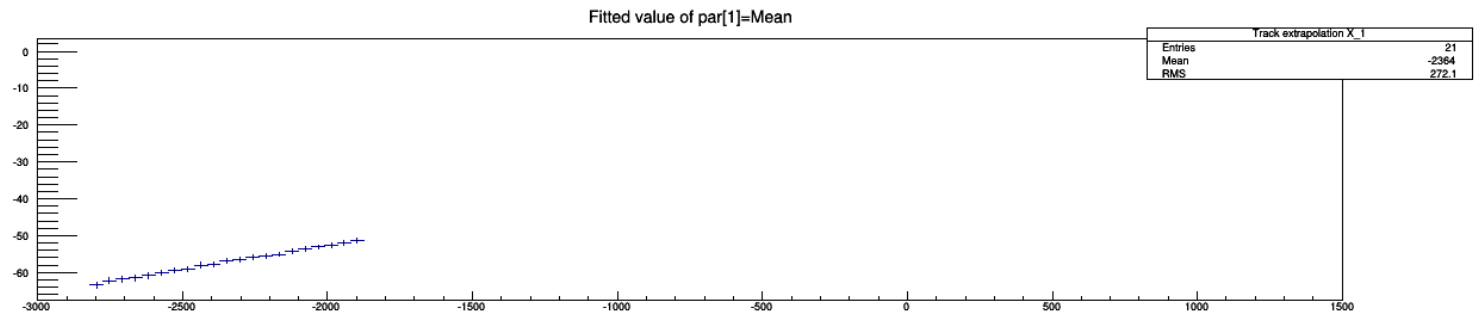
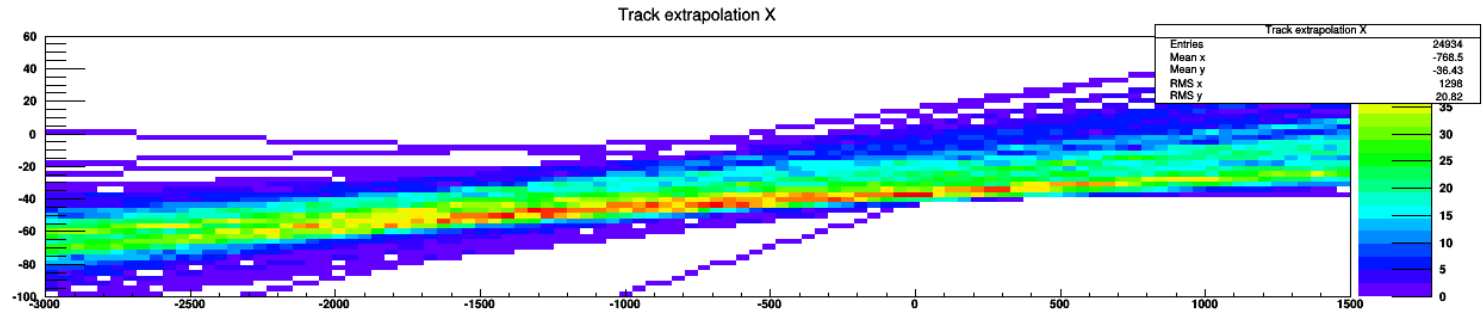
# 2D Fits: bottom XZ

stereohitzresglobal





# 2D Fits: X Extrapolation (wire @ {-67.23, 0.0, -2337.1})



Interface to GBL started (1 day more for infrastructure, 2 days debugging...)

### Thoughts

- Add simple hit quality check
- Loosen 6 hit requirement (lots of hits in hole L4-6 sensors)
- Check other runs
- Merge w/ B-field track samples in MP
- Slot side...?