5.3.1 Tracking Validation

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Tracking Meeting

February 11, 2004

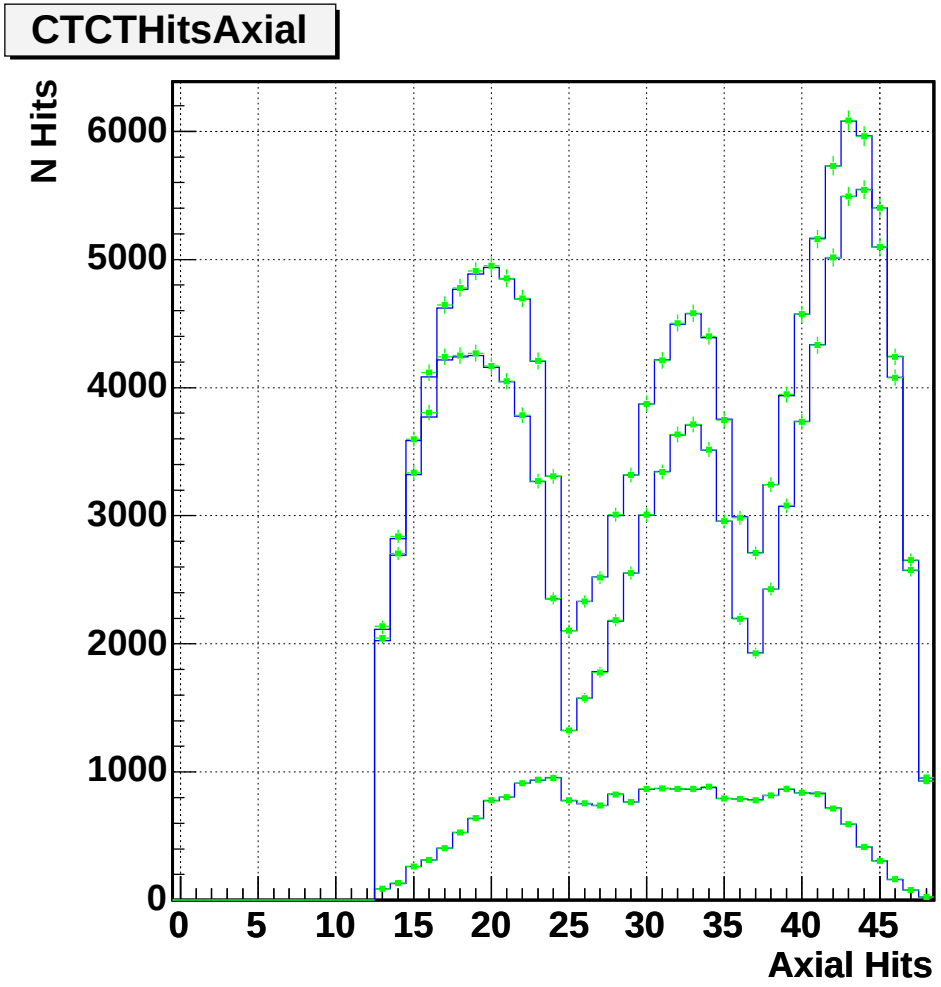
Tracking Validation

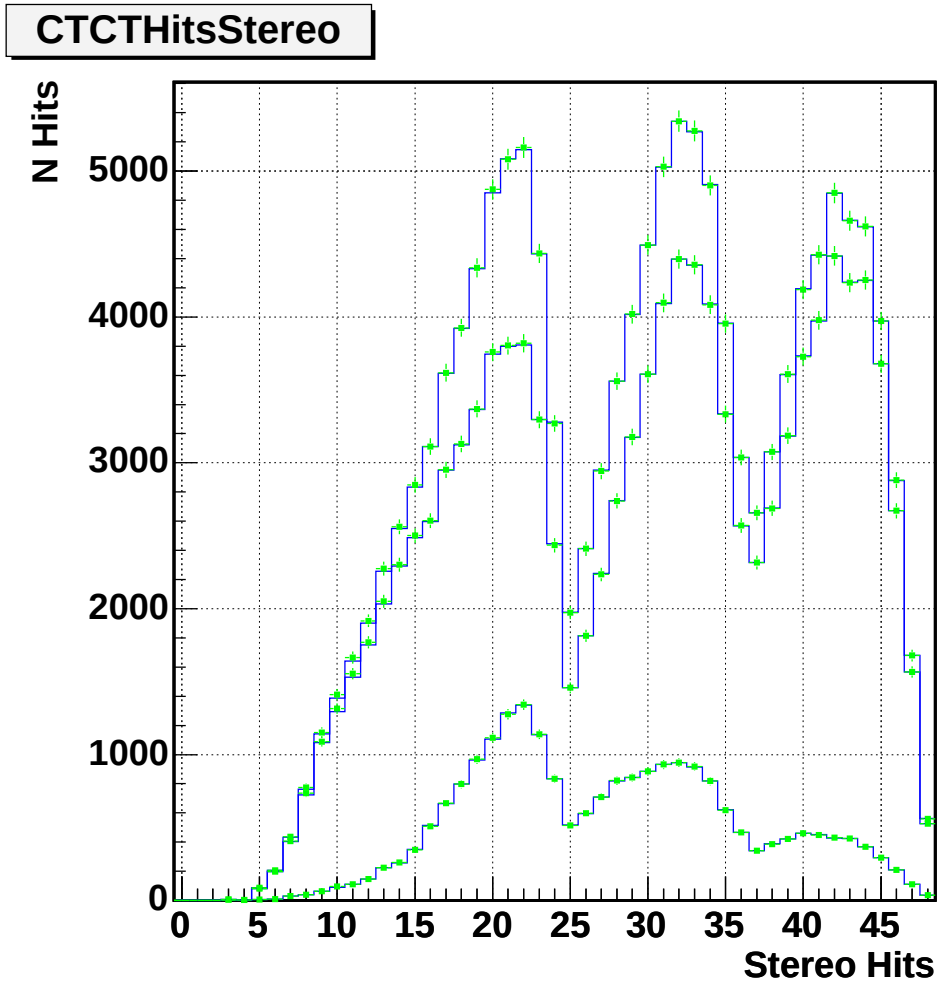
What to validate
Todays talk: Validation using $Z \rightarrow ee$ data
Compare 5.1 vs 5.3: Should be identical except for forward tracking improvements
Use DQM validation module

- Yields and efficiencies
  Detects hardware failures or algorithmic weaknesses
  - COT, silicon standalone, IO tracking yields
  - OI silicon tracking efficiency: Using COT and a denominator
- High level tracking quantities
  Detects beamline problems and monitors track quality
  - Quality of reconstructed parameters: primarily d0 and z0
  - Quality of estimated errors: Pull distributions
- Low level tracking input
  Detects hardware failures
  - Hit usage: COT and silicon

COT Tracking Histograms

5.1 and 5.3





COT Tracking Histograms

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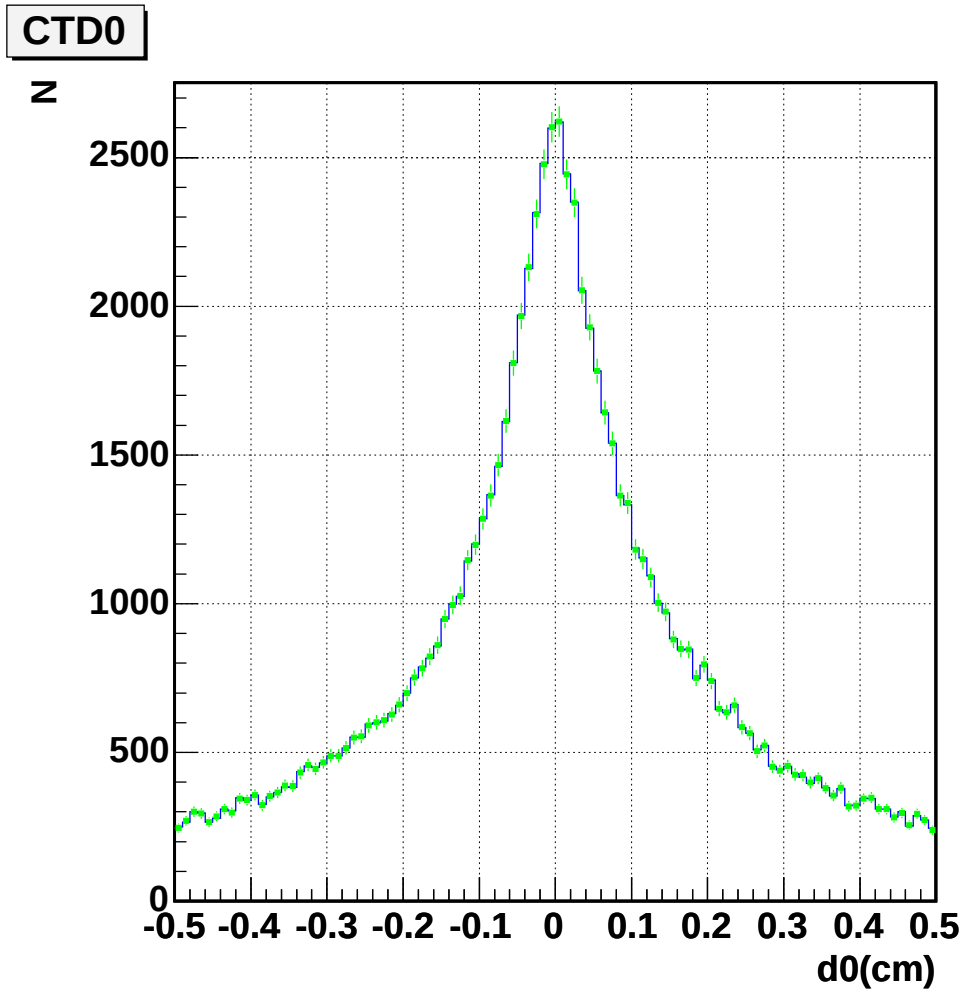

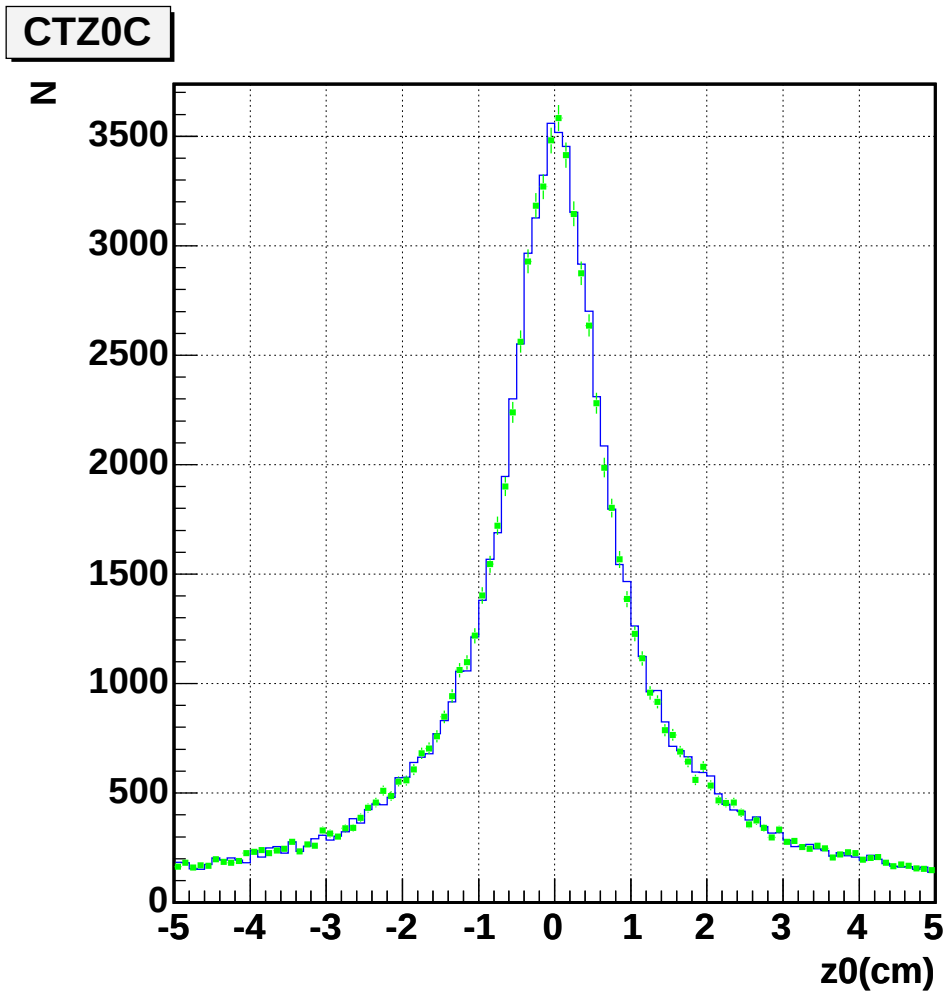

COT Tracking Histograms

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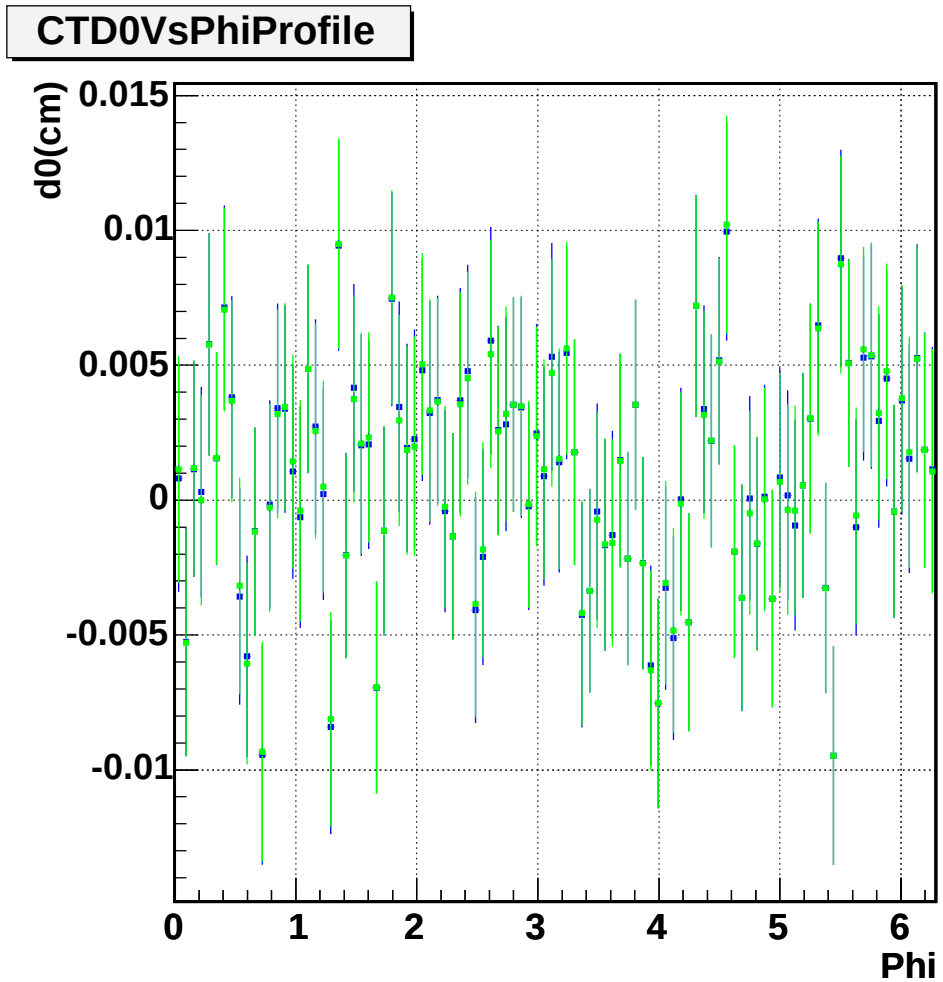
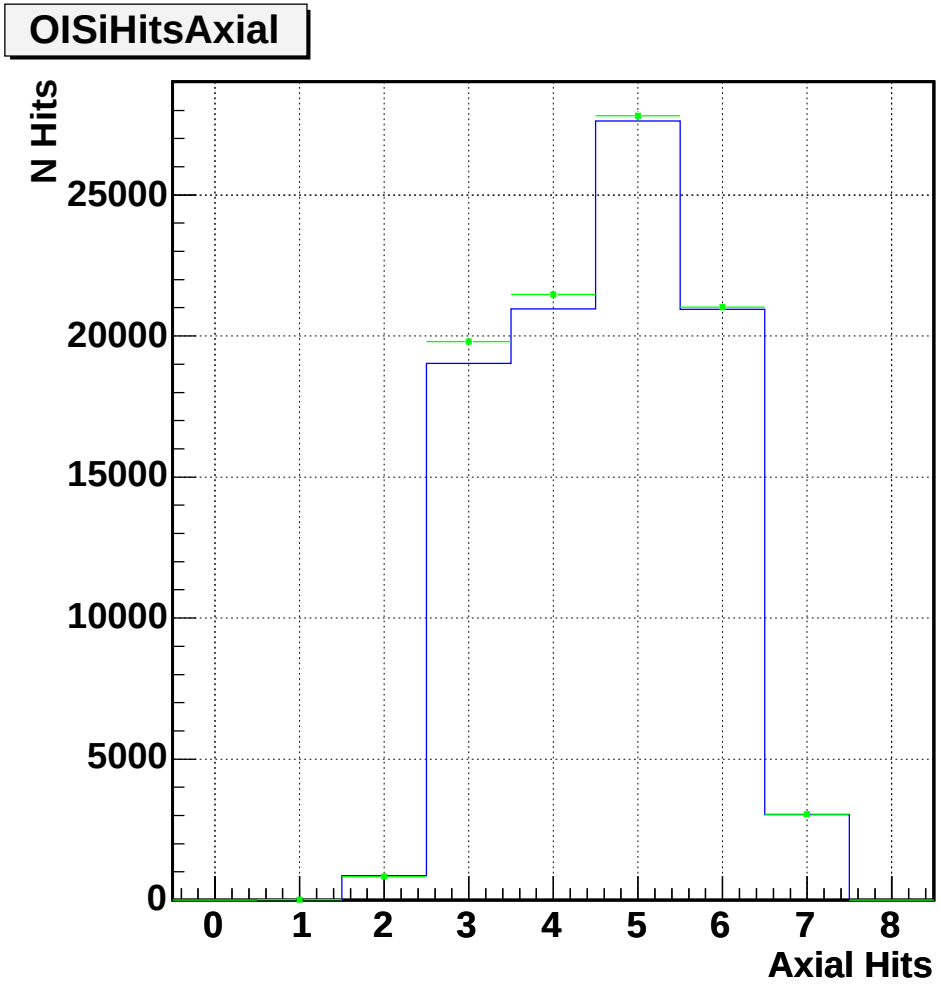
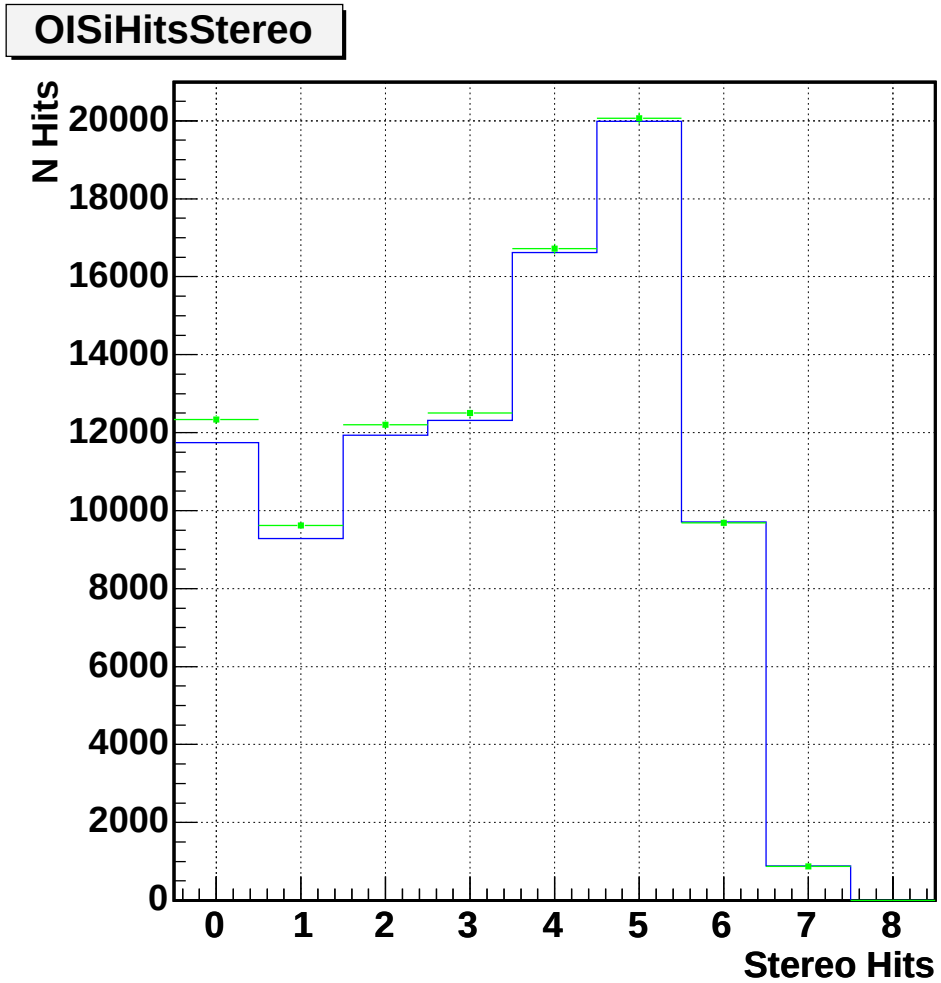


COT identical as expected

OI Tracking Histograms

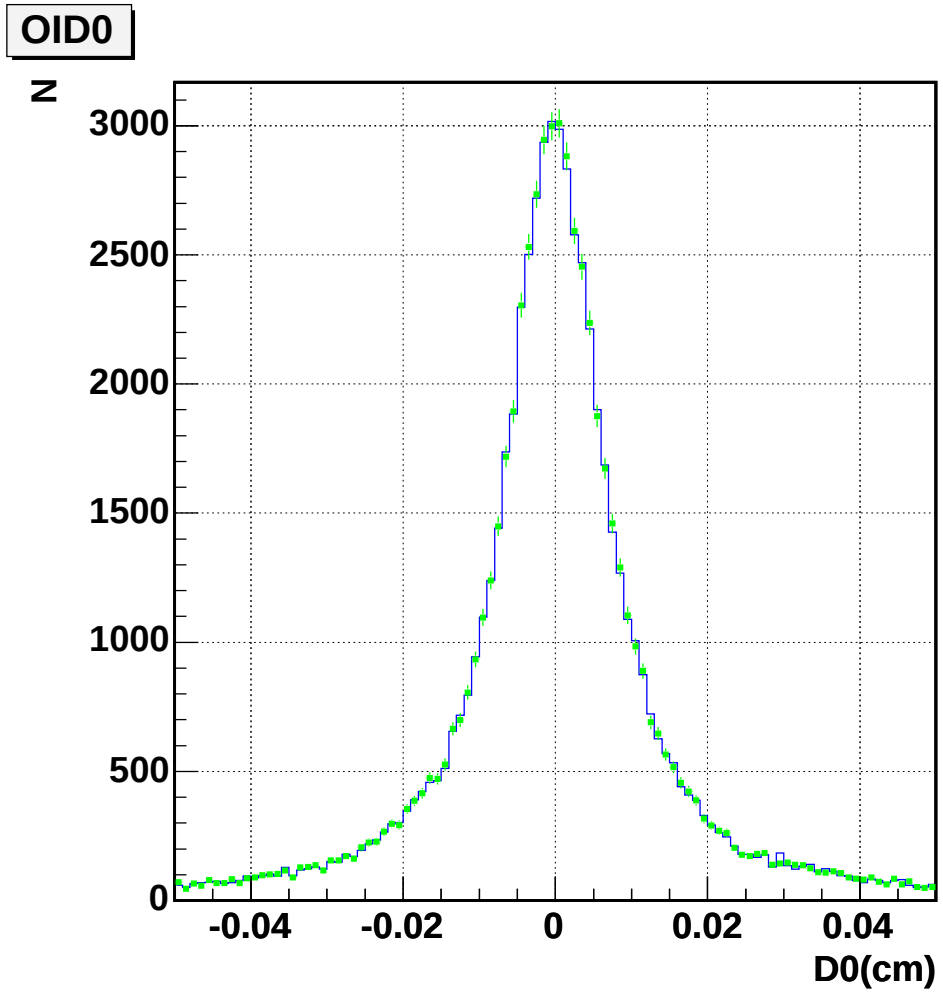
5.1 and 5.3

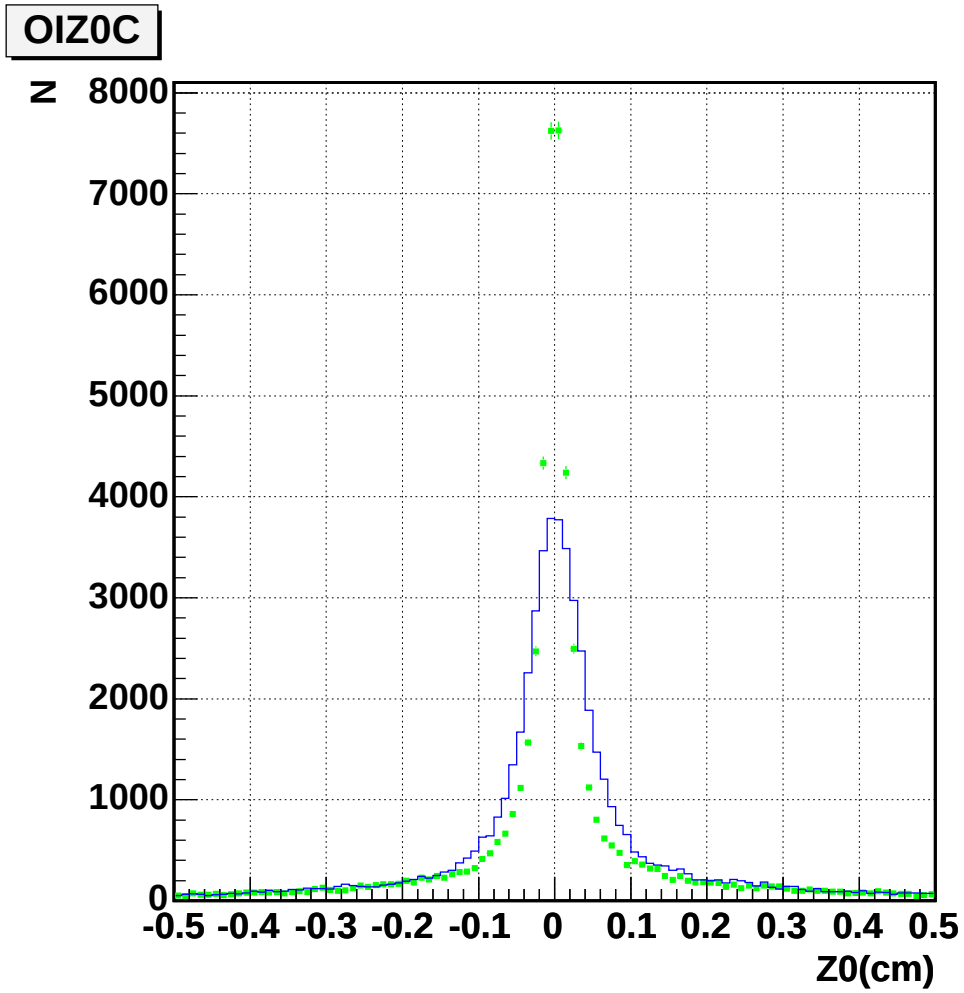




OI Tracking Histograms

5.1 and 5.3

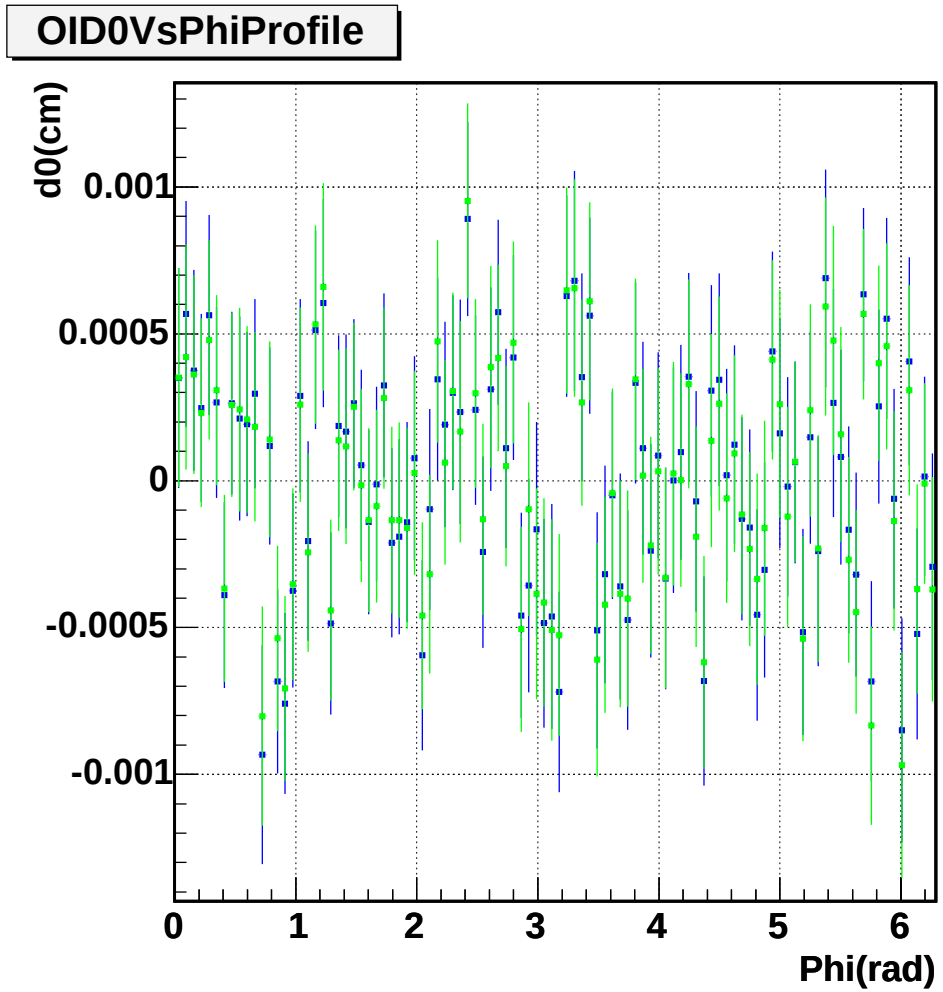


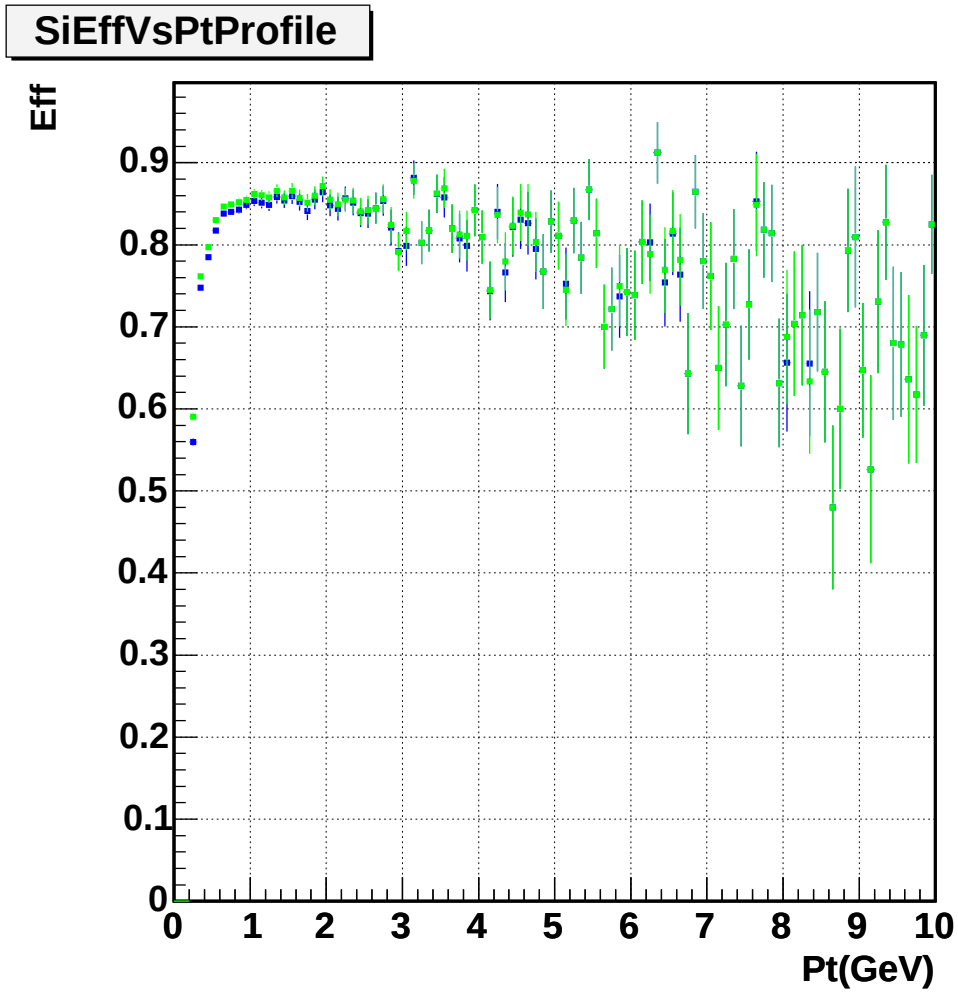


ZVertexMaker fix works

OI Tracking Histograms

5.1 and 5.3

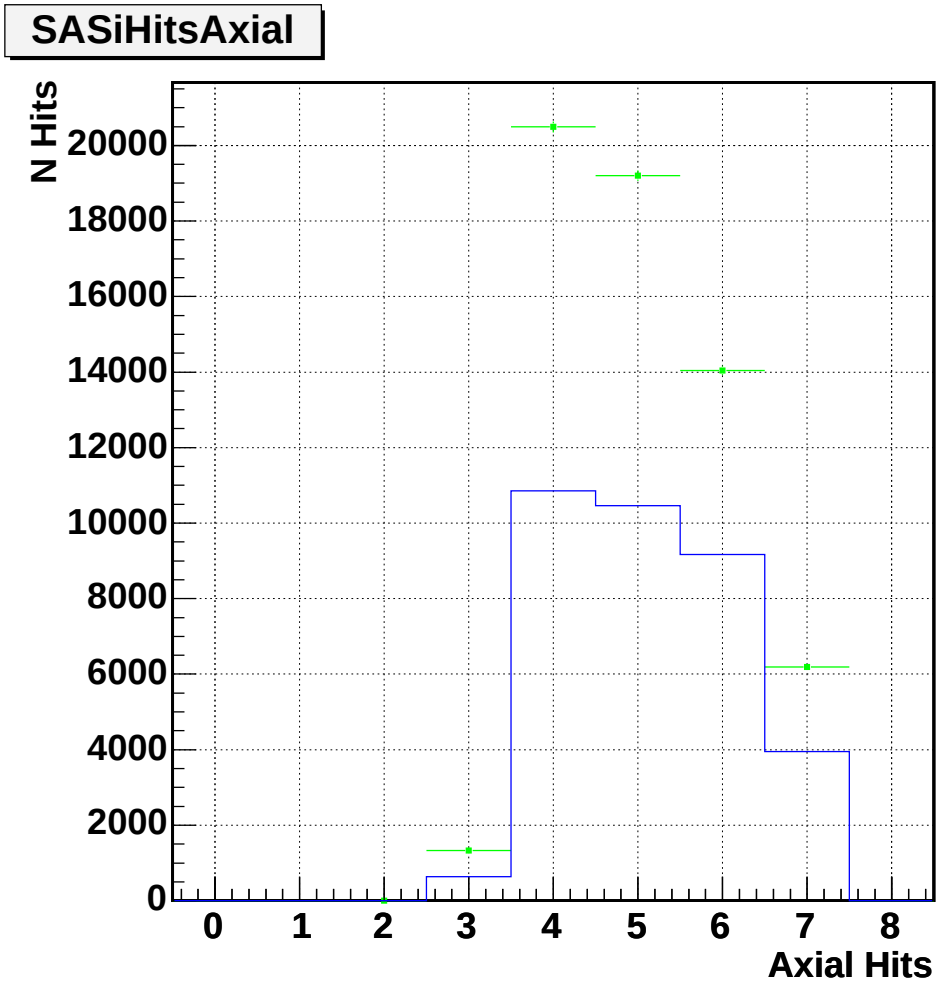


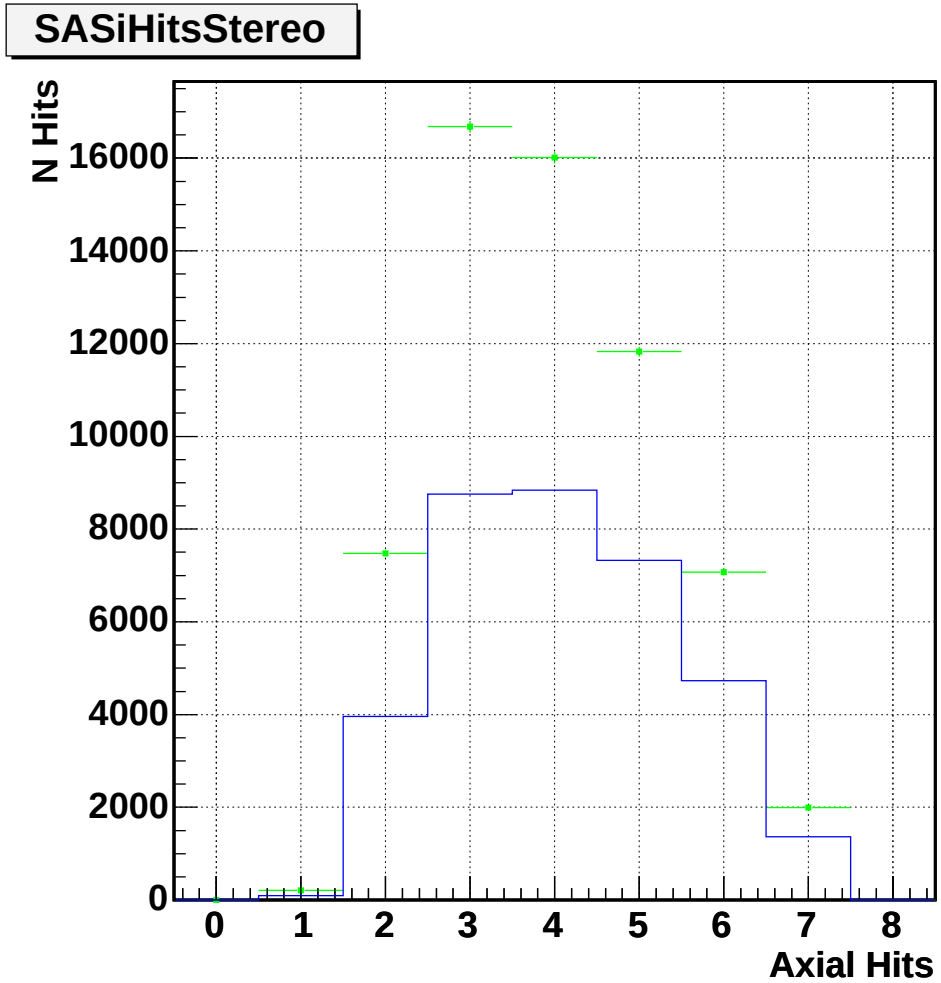


Silicon efficiency up!

SA and IO Tracking Histograms

5.1 and 5.3

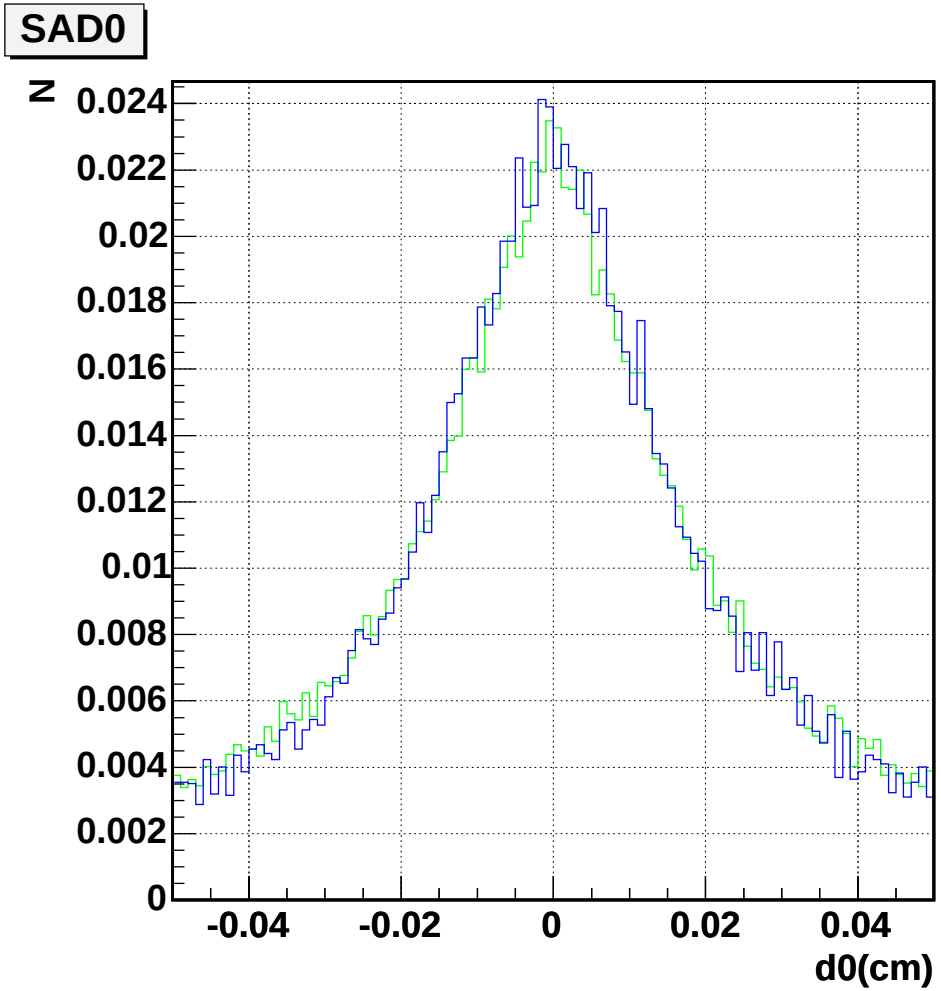


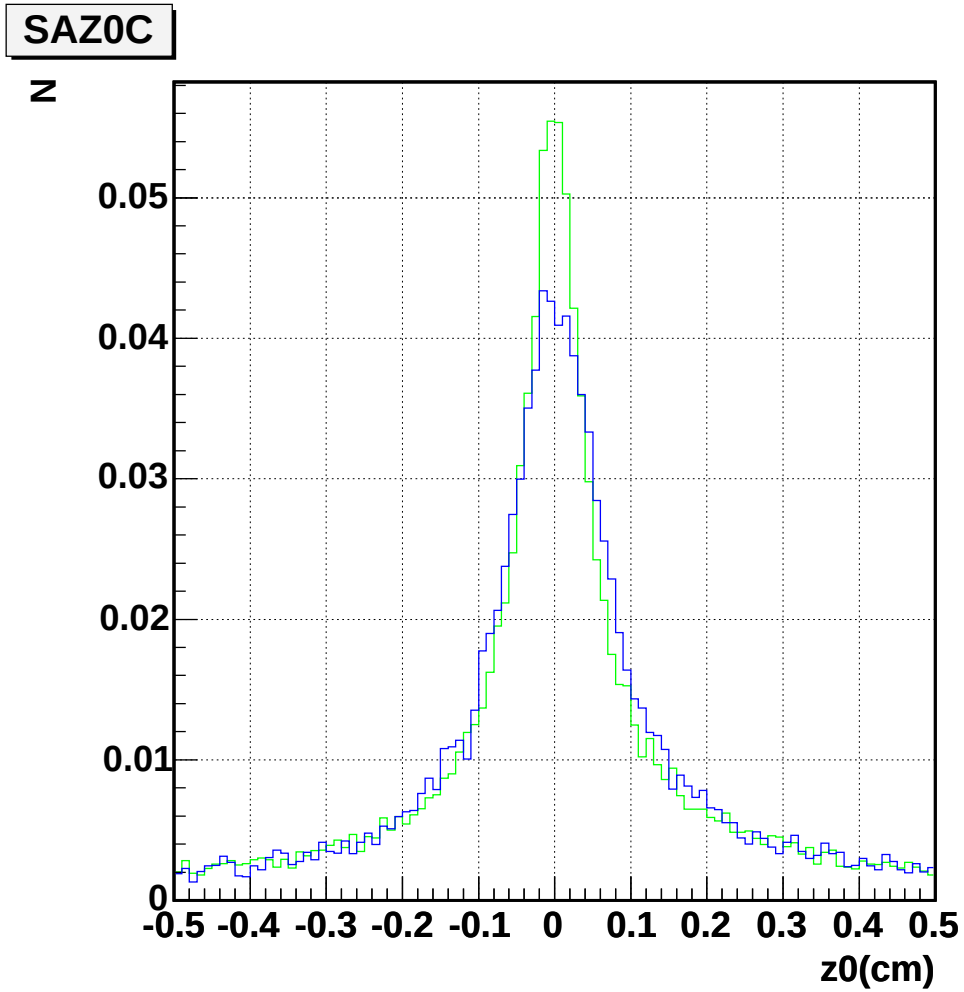


New standalone code almost doubles the number of tracks

SA and IO Tracking Histograms

5.1 and 5.3

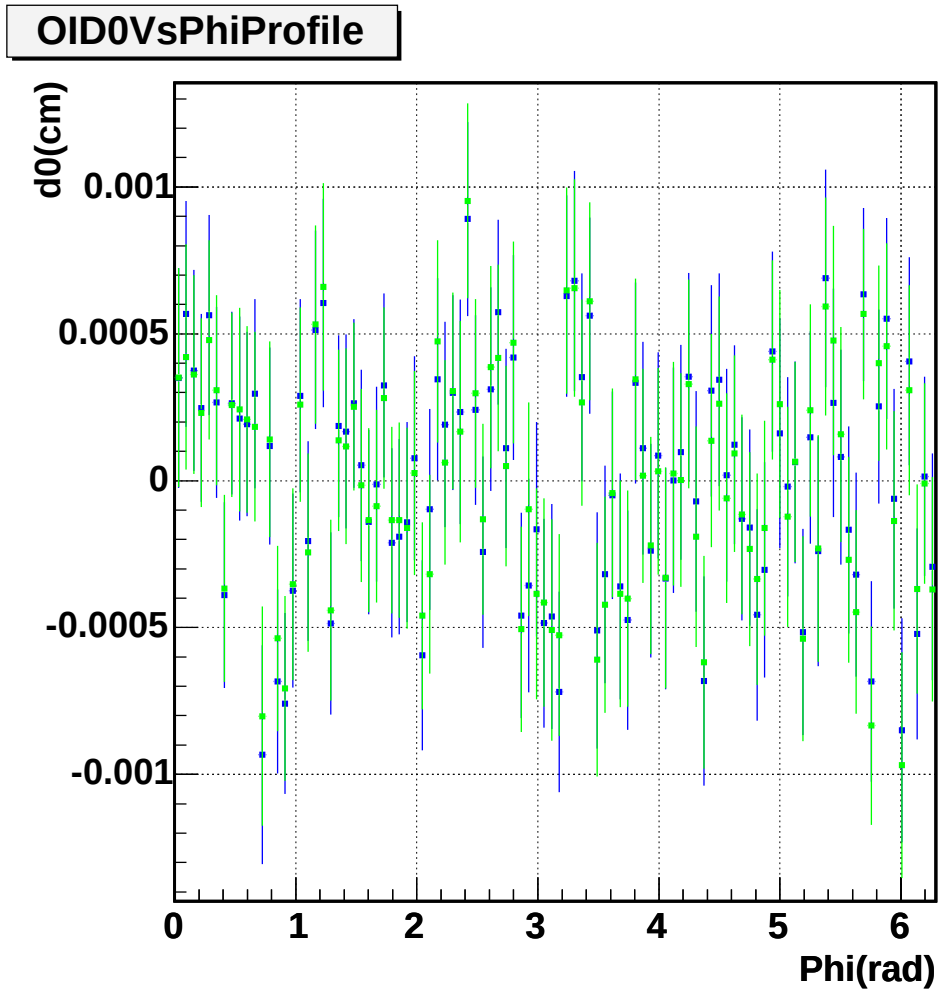


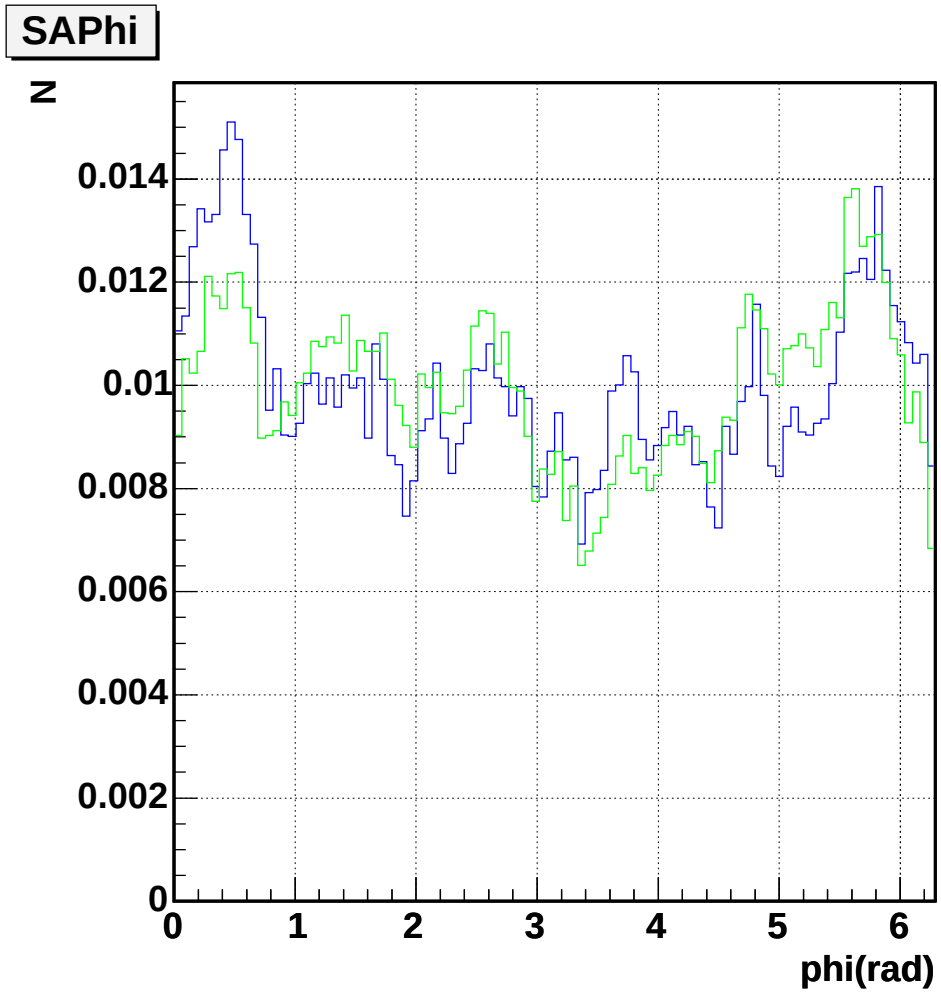


New tracks have good d0 and z0: note tails look fine as well

SA and IO Tracking Histograms

5.1 and 5.3





Phi distribution improved

Conclusions

Tracking validated on $\mathrm{Z} \rightarrow \mathrm{ee}$ data

- Central tracking identical or improved
- OI Efficiency up and z vertices improved
- Forward tracking improved by almost a factor of 2
- d0 and z0 and phi distribution look good