Layer 00 Studies Update

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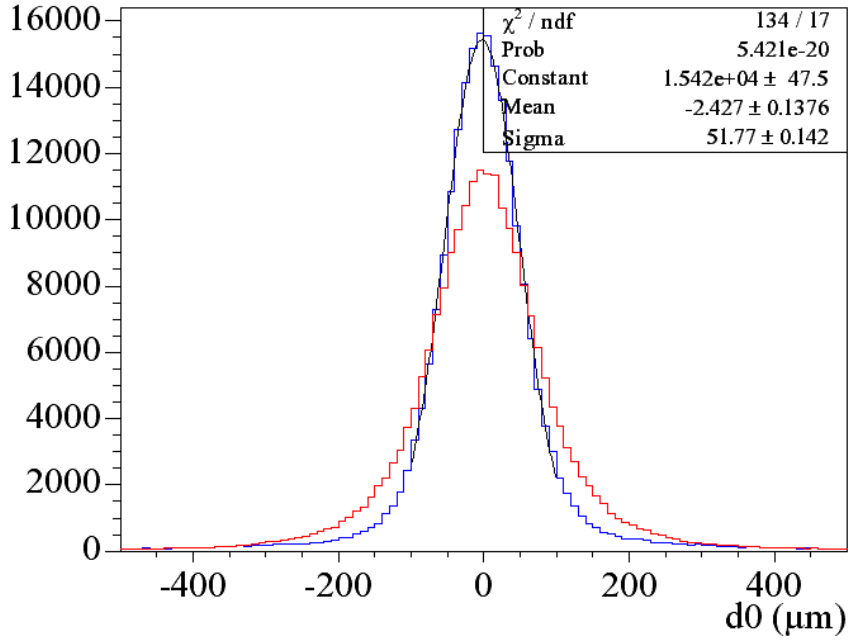
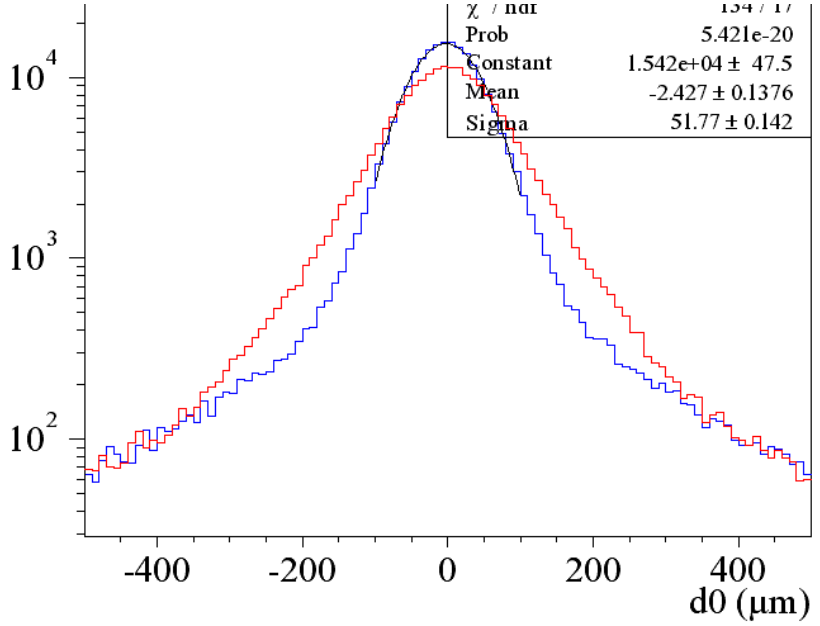
New ntuples

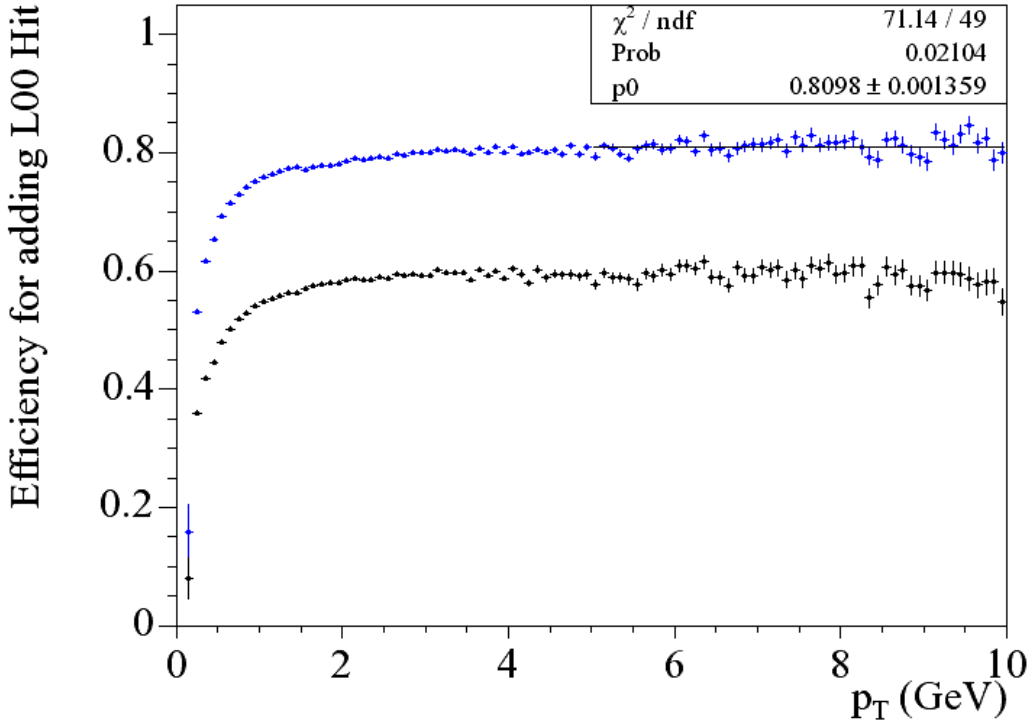
- Single ntuple now contains d0 before and after adding L00 hit
  - Guaranteed same sample
- ntuple also contains cluster information – can be used to study effect of clustering cuts
- Old ntuples discrepancy tracked to a 'feature'
  - Pseudo-randomly discarded tracks in 'with L00' sample
- Resolution results unchanged.





How efficient are we at adding L00 hits as a function of p_T?

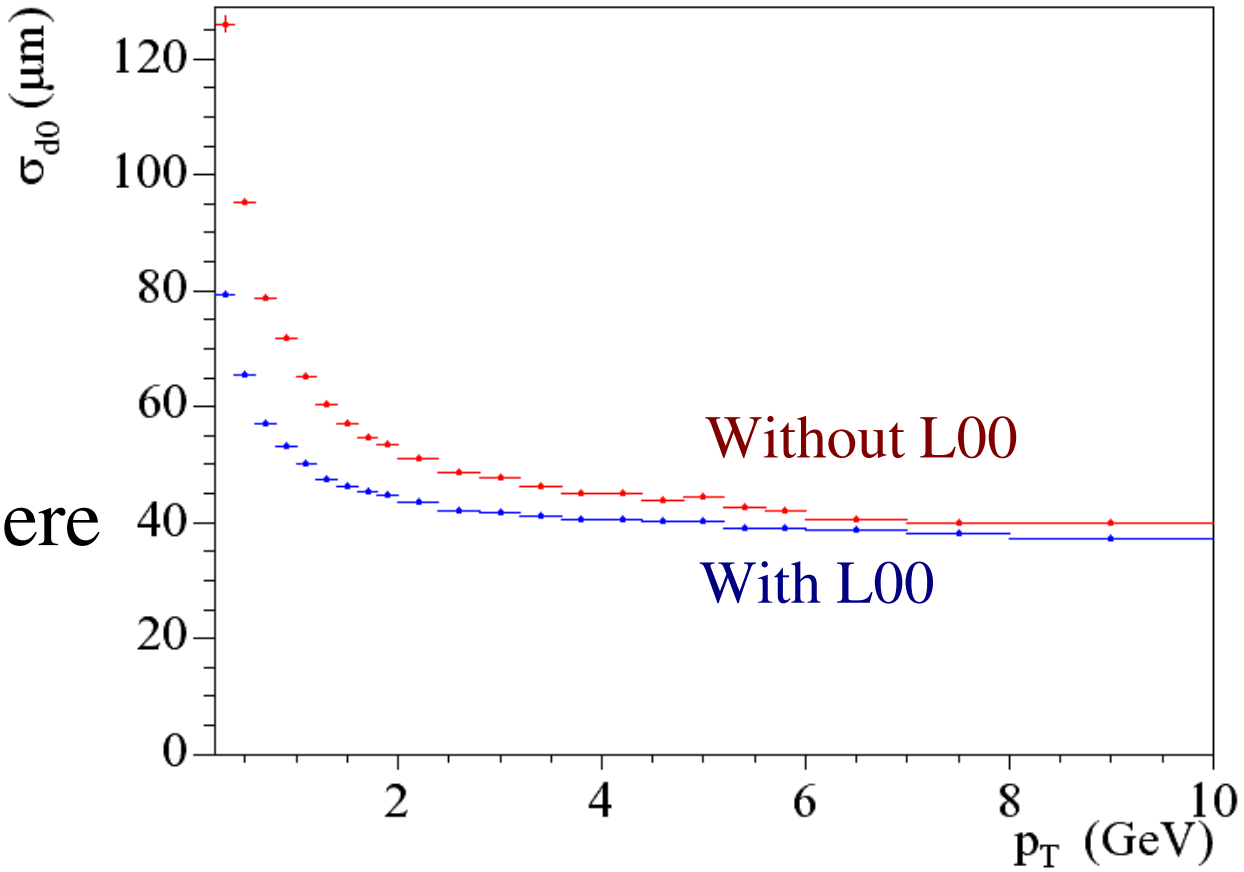
- Two measures: conservative and best-case, both use SiExpected
- Conservative: include all cluster requirements
  - No dead/noisy strips
  - nStrips < 6
  - qTot < 101 ADC counts
  - qPeak < 50 ADC counts
  - nPeak < 3.5 (noise, from calibration)
- Best Case: relax all cluster reqirements



Efficiency:
Best Case: 80.8 ± 0.1%
Conservative: 59.2 ± 0.2%

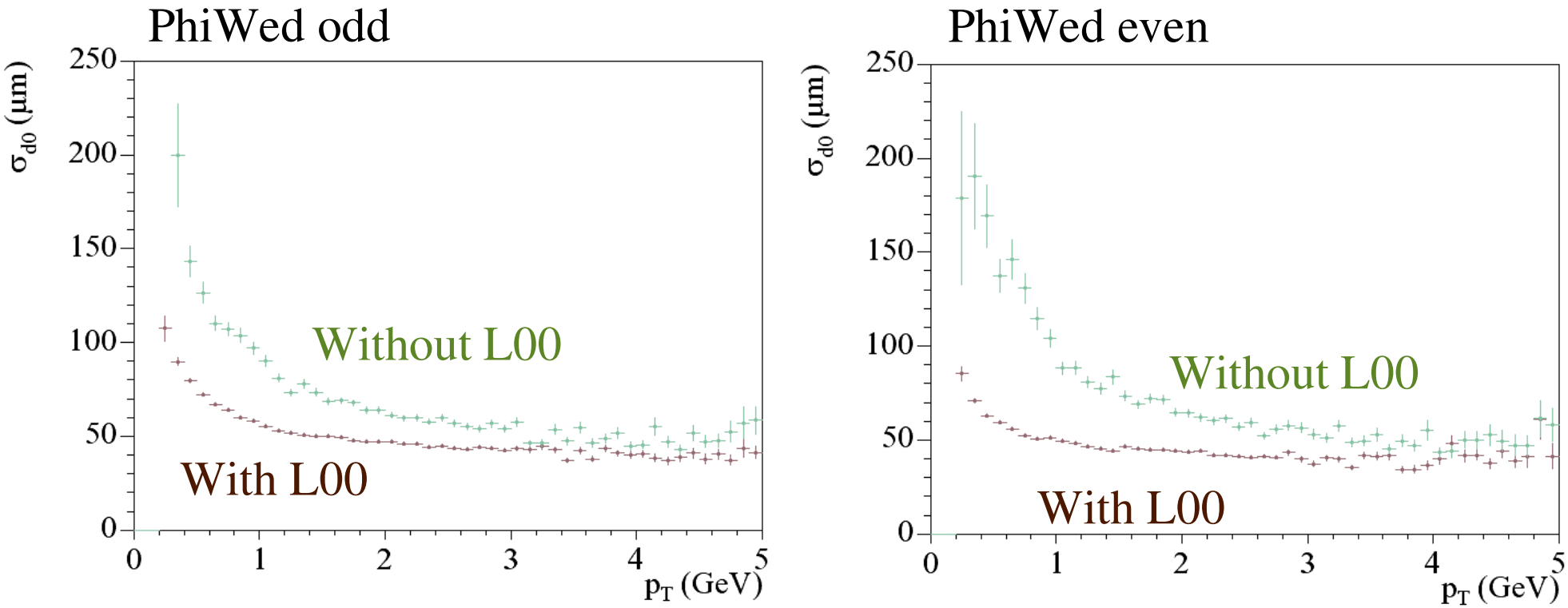
Impact Parameter Resolution with L00

- New alignment improves resolution by a few microns.
- No significant change from old ntuples
- Original results were unaffected by 'feature' which discarded tracks.



How does L00 improve things as a function of ϕ?

11cm < abs(z0) < 19cm



- Significant improvement at low p_T
- Resolution is more uniform with L00

Conclusions

- New ntuple confirms resolution results from old ntuples were sound
- New alignment shows improvement in L00 resolution
- L00 makes resolution more uniform as a function of ϕ
- CDF note documenting this study is almost complete