

BigBite Analysis

5-Pass $S=90^\circ$ MWDC Stability Problems

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Outline

- 1 $S=90^\circ$ Stability Issues (Before Calibrations)
- 2 What's Next

MWDC Issues

Max mean drift time variation \sim
5.5 ns

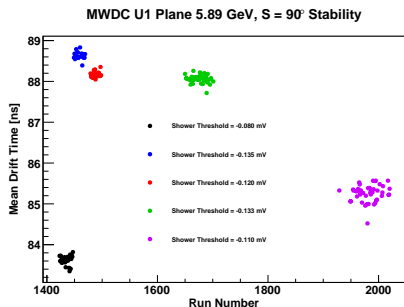


Figure: 5-pass S=90 MWDC mean drift time vs run number for U1 plane.

Max residual resolution
variation \sim 60 μm

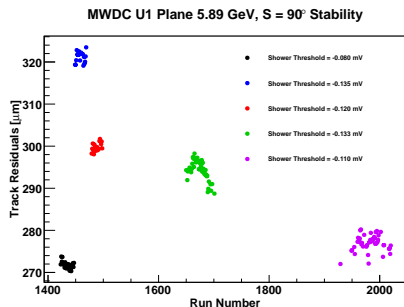


Figure: 5-pass S=90 MWDC tracking residuals vs run number for U1 plane.

- Did 2 iterations of MWDC calibrations to run set 1449-1465
- This included:
 - t_0 timing calibration
 - Drift time to drift distance conversion
 - Wire position calibration
 - Then applied these calibrations to all S=90 run sets

Run 1449 Chamber 1 Drift Time Comparison

Before:

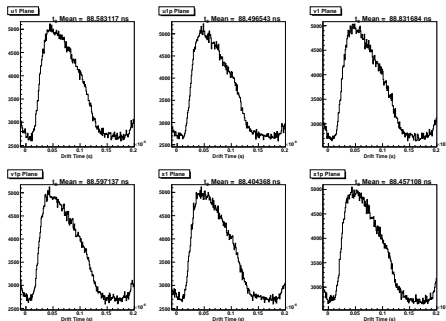


Figure: 5-pass S=90 MWDC drift time for 1st chamber before MWDC calibration.

After:

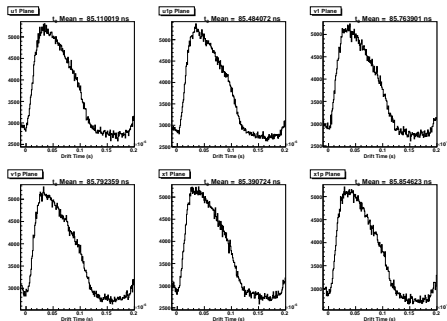


Figure: 5-pass S=90 MWDC drift time for 1st chamber after MWDC calibration.

Run 1449 Chamber 1 Track Residual Comparison

Before:

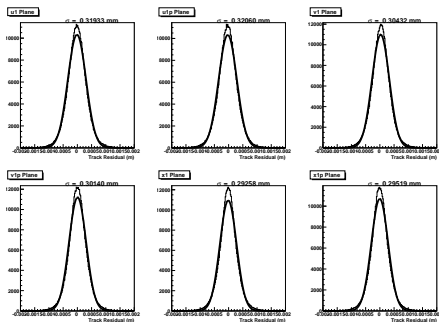


Figure: 5-pass S=90 MWDC track residuals for 1st chamber **before** MWDC calibration.

After:

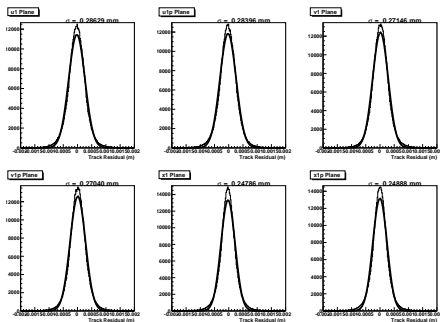


Figure: 5-pass S=90 MWDC track residuals for 1st chamber **after** MWDC calibration.

MWDC U1 Stability: After Calibration

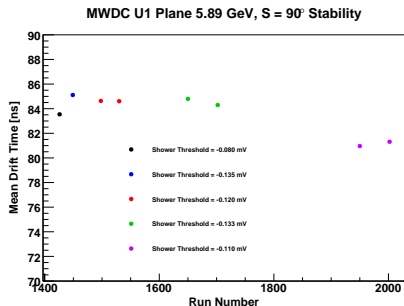


Figure: 5-pass S=90 MWDC mean drift time vs run number for U1 plane.

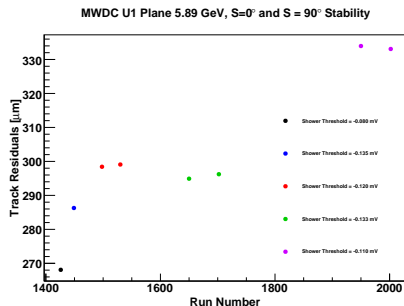


Figure: 5-pass S=90 MWDC tracking residuals vs run number for U1 plane.

Summary

- Most run sets agree with new calibration
- Calibrate last run set?
- First run set (1423-1448) corresponds to when shower mod. was over loaded

What's Next...

- **Data Quality**
 - TDC corrections to Čerenkov and PreShower Sum TDCs are nearly complete
 - Calibrate run set 1311-1361 (will do next)
 - Need to figure out what to do with MWDC drift-times and residuals
 - Calibrate E/p, but need to decide on above MWDC stuff first
- **Revisit BigBite e+/e- ratios during 4-pass with ps and LT Corrections**
 - Have all pre-scales
 - 2/3 of the way done, just need live times for S=270 data

MWDC Drift Time Chamber 1 Stability:After Calibration

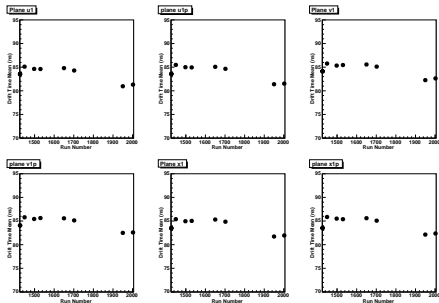


Figure: 5-pass S=0,90 MWDC mean drift time vs run number for chamber 1.

MWDC Drift Time Chamber 2 Stability: After Calibration

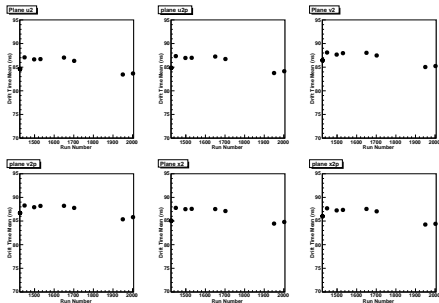


Figure: 5-pass $S=0,90$ MWDC mean drift time vs run number for chamber 2.

MWDC Drift Time Chamber 3 Stability: After Calibration

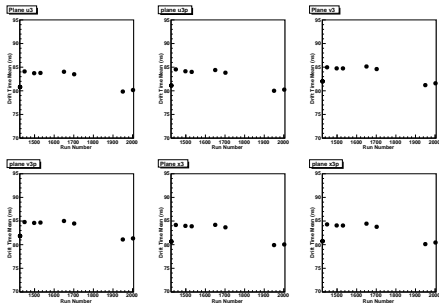


Figure: 5-pass $S=0,90$ MWDC mean drift time vs run number for chamber 3.

MWDC Residuals Chamber 1 Stability: After Calibration

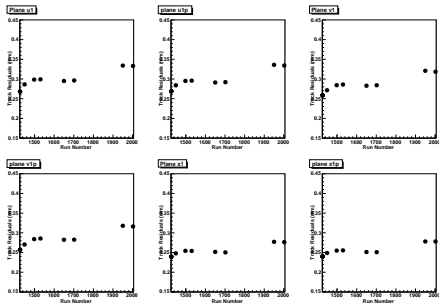


Figure: 5-pass S=0,90 MWDC track residuals vs run number for chamber 1.

MWDC Residuals Chamber 2 Stability: After Calibration

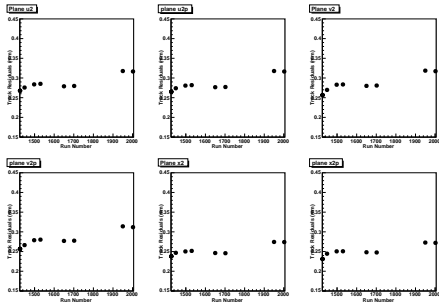


Figure: 5-pass $S=0,90$ MWDC track residuals vs run number for chamber 2.

MWDC Residuals Chamber 3 Stability: After Calibration

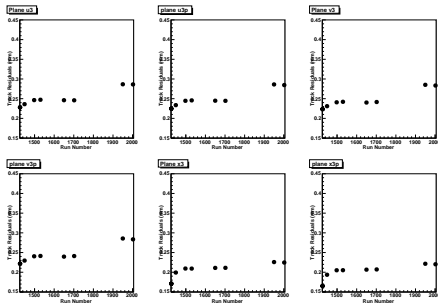


Figure: 5-pass S=0,90 MWDC track residuals vs run number for chamber 3.

Run 1449 Chamber 2 Drift Time Comparison

Before:

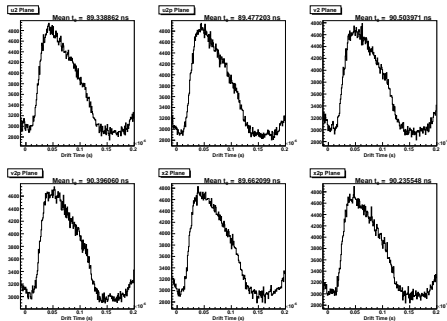


Figure: 5-pass S=90 MWDC drift time for 2nd chamber before MWDC calibration.

After:

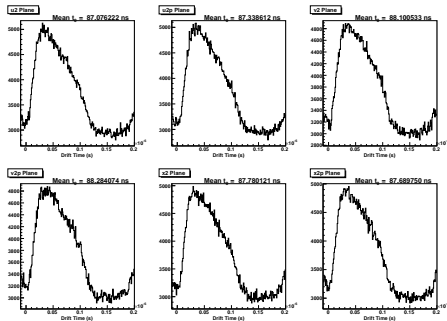


Figure: 5-pass S=90 MWDC drift time for 2nd chamber after MWDC calibration.

Run 1449 Chamber 3 Drift Time Comparison

Before:

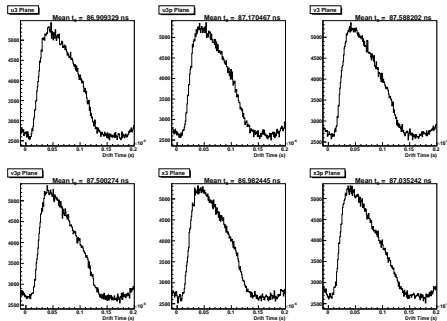


Figure: 5-pass S=90 MWDC drift time for 3rd chamber before MWDC calibration.

After:

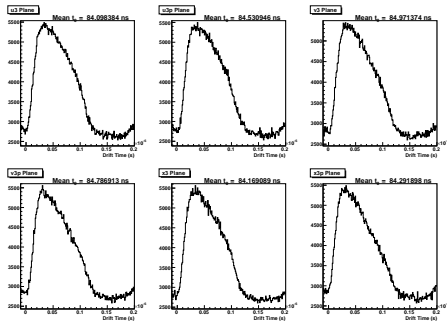


Figure: 5-pass S=90 MWDC drift time for 3rd chamber after MWDC calibration.

Run 1426 Chamber 1 Drift Time Comparison

Before:

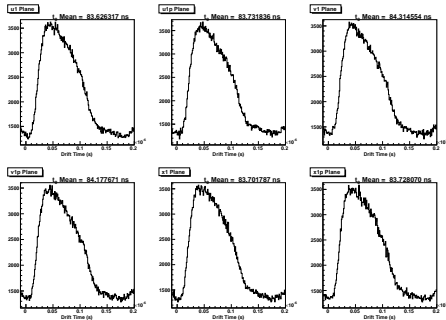


Figure: 5-pass S=90 MWDC drift time for chamber 1 before MWDC calibration.

After:

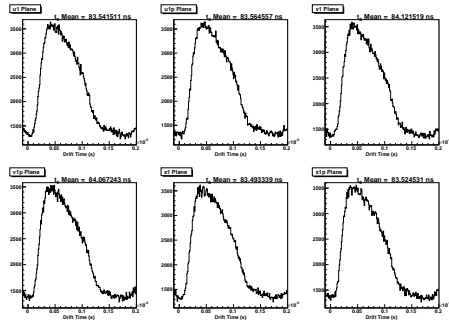


Figure: 5-pass S=90 MWDC drift time for chamber 1 after MWDC calibration.

Run 1426 Chamber 2 Drift Time Comparison

Before:

After:

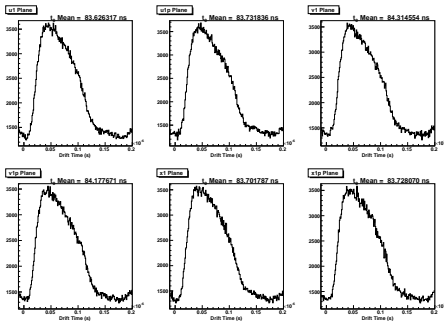


Figure: 5-pass S=90 MWDC drift time for chamber 2 before MWDC calibration.

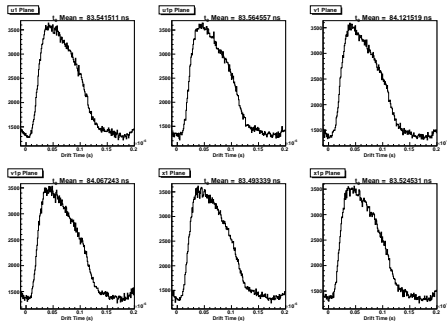


Figure: 5-pass S=90 MWDC drift time for chamber 2 after MWDC calibration.

Run 1426 Chamber 3 Drift Time Comparison

Before:

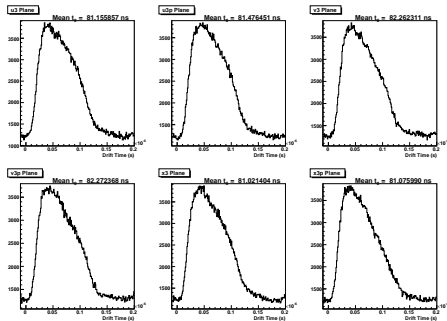


Figure: 5-pass S=90 MWDC drift time for chamber 3 before MWDC calibration.

After:

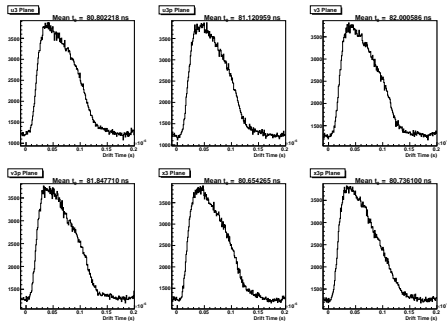


Figure: 5-pass S=90 MWDC drift time for chamber 3 after MWDC calibration.

Run 2002 Chamber 1 Drift Time Comparison

Before:

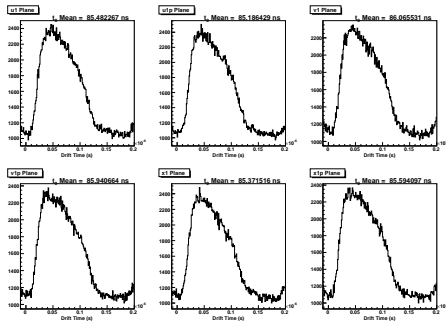


Figure: 5-pass S=90 MWDC drift time for chamber 1 before MWDC calibration.

After:

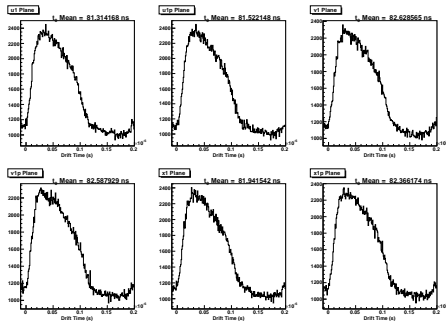


Figure: 5-pass S=90 MWDC drift time for chamber 1 after MWDC calibration.

Run 2002 Chamber 2 Drift Time Comparison

Before:

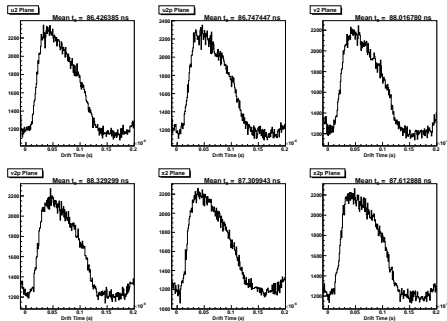


Figure: 5-pass S=90 MWDC drift time for chamber 2 before MWDC calibration.

After:

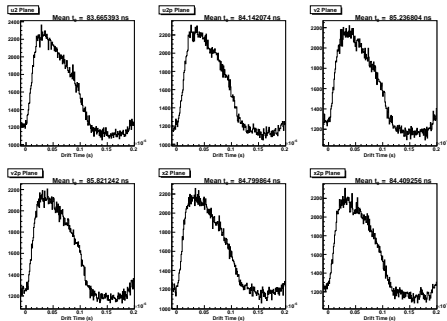


Figure: 5-pass S=90 MWDC drift time for chamber 2 after MWDC calibration.

Run 2002 Chamber 3 Drift Time Comparison

Before:

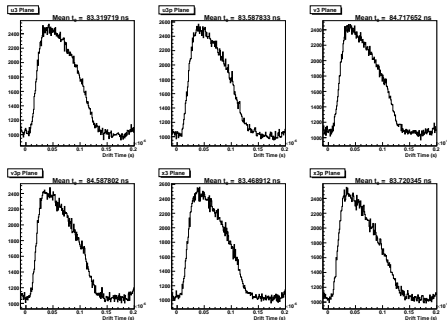


Figure: 5-pass S=90 MWDC drift time for chamber 3 before MWDC calibration.

After:

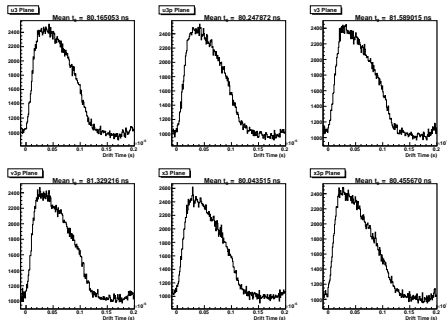


Figure: 5-pass S=90 MWDC drift time for chamber 3 after MWDC calibration.