BigBite Analysis

Un-Calibrated 5-Pass MWDC Stability

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Outline

5.89 GeV Target Spin =0° Runs

- Our target spin of 0° spans the run sets of
- 1530-1552, With a Shower Threshold of -0.120 mV
- 1702-1719, with a Shower Threshold of -0.133 mV
- The MWDC during the S=0 periods seem to be stable

5.89 GeV t_0 Structure

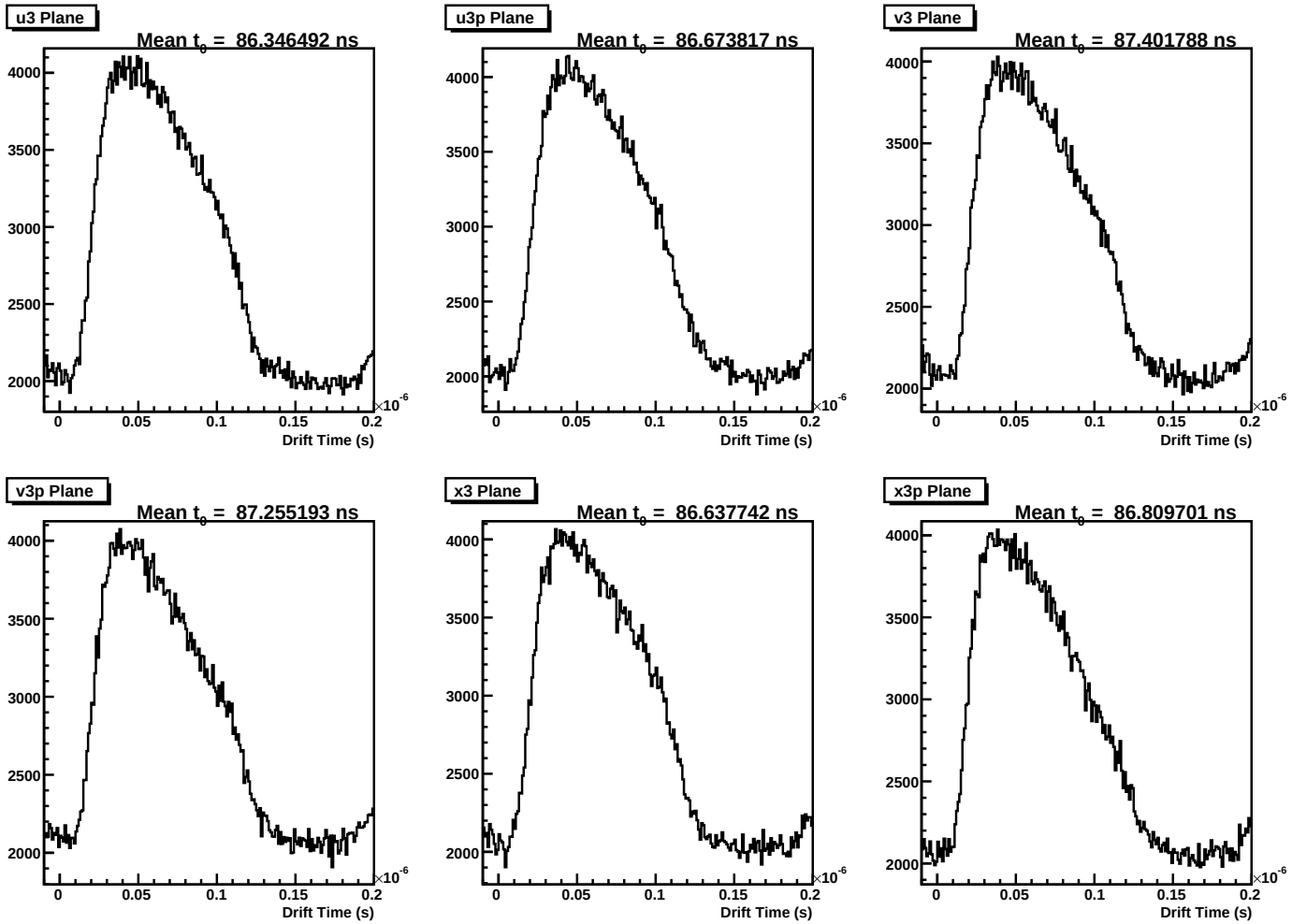

Figure: Characteristic MWDC timing structure for S=0 data. This shows the timing of chamber 3 for run 1539.

5.89 GeV t_0 Stability Chamber 1

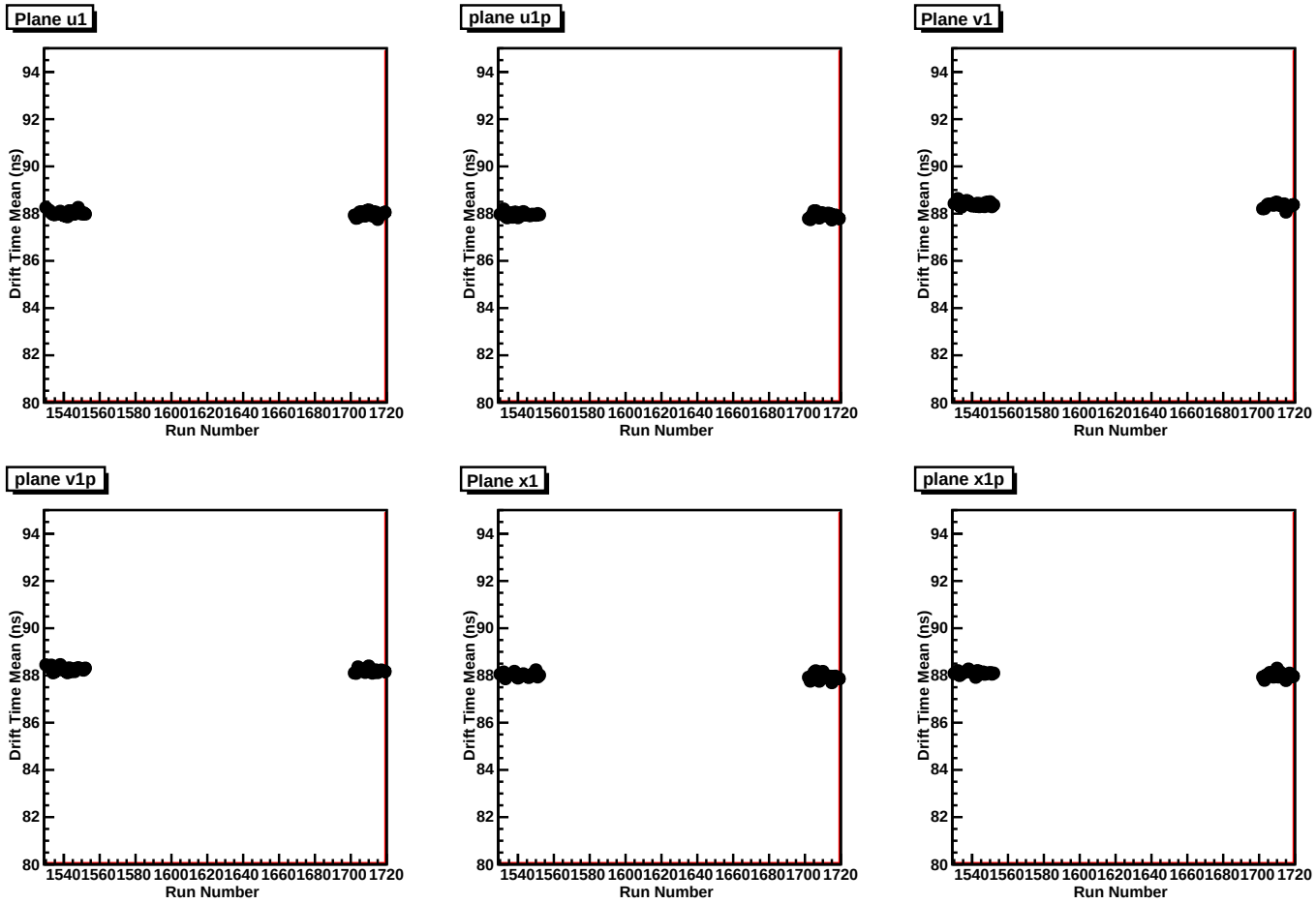

Figure: MWDC timing stability for S=0 chamber 1.

5.89 GeV t_0 Stability Chamber 2

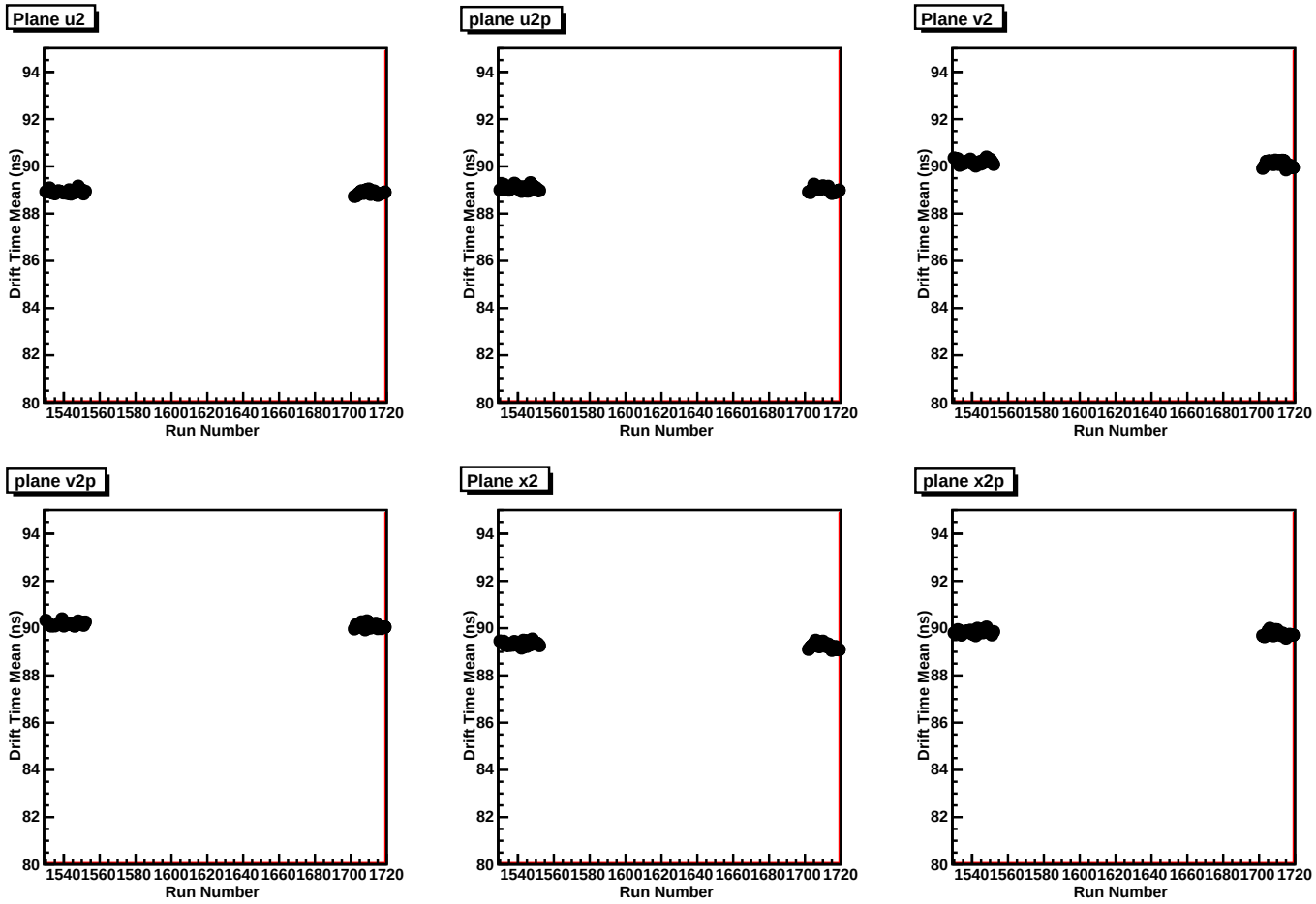

Figure: MWDC timing stability for S=0 chamber 2.

5.89 GeV t_0 Stability Chamber 3

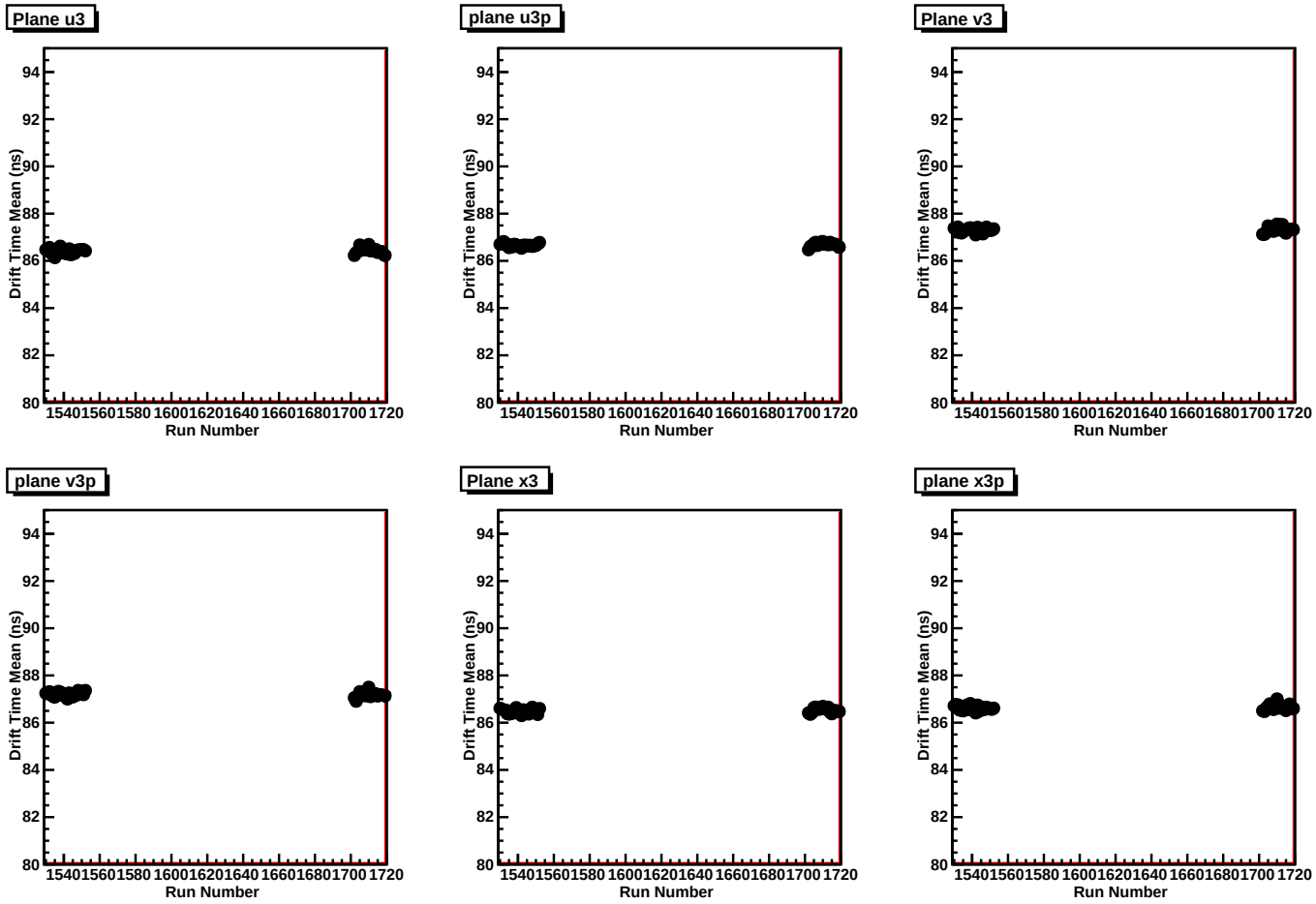

Figure: MWDC timing stability for S=0 chamber 3.

5.89 GeV Track Residuals Structure

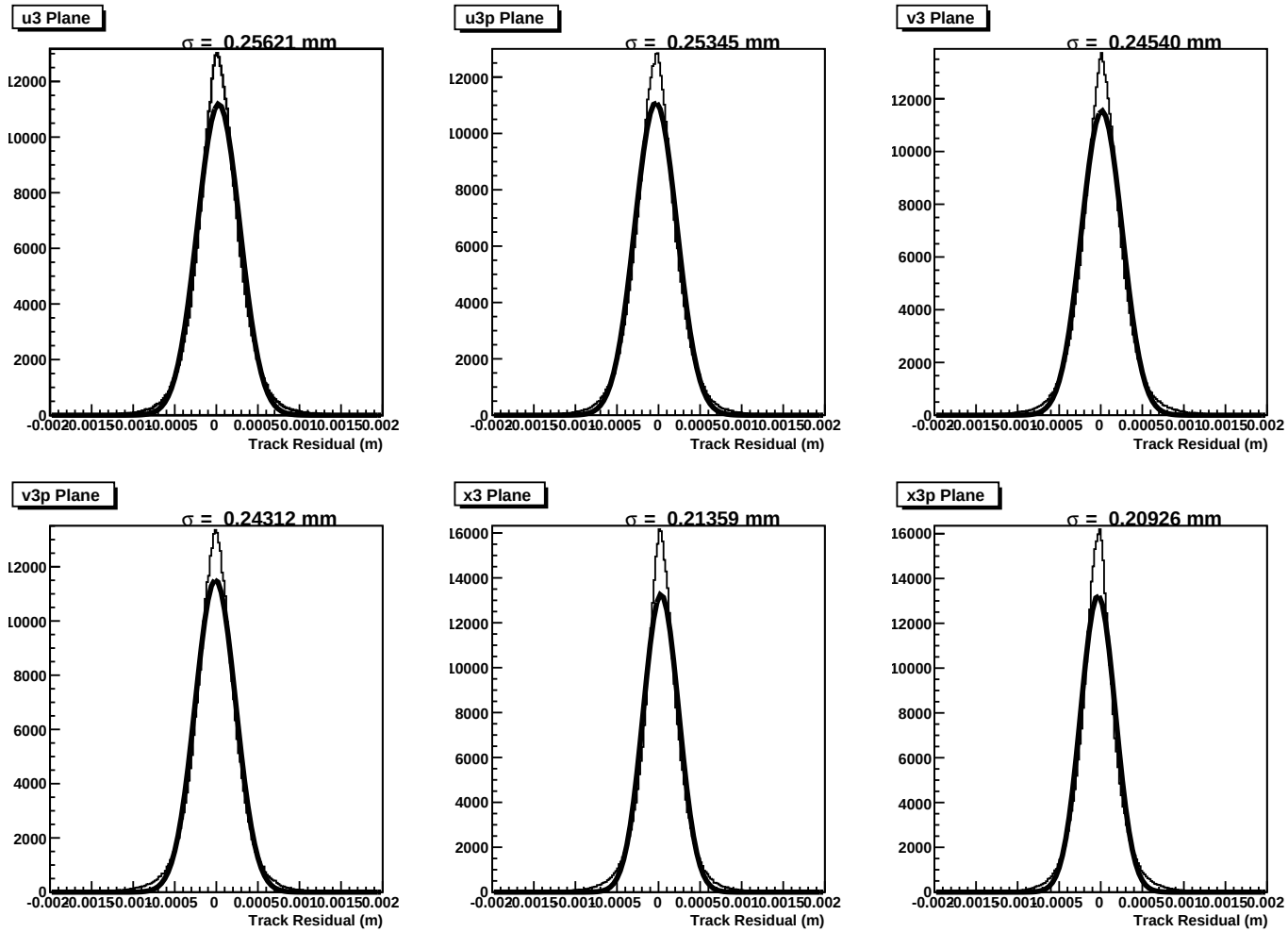

Figure: Characteristic MWDC tracking residual structure for S=0 data. This shows the residuals of chamber 3 for run 1539.

5.89 GeV Residual Stability Chamber 1

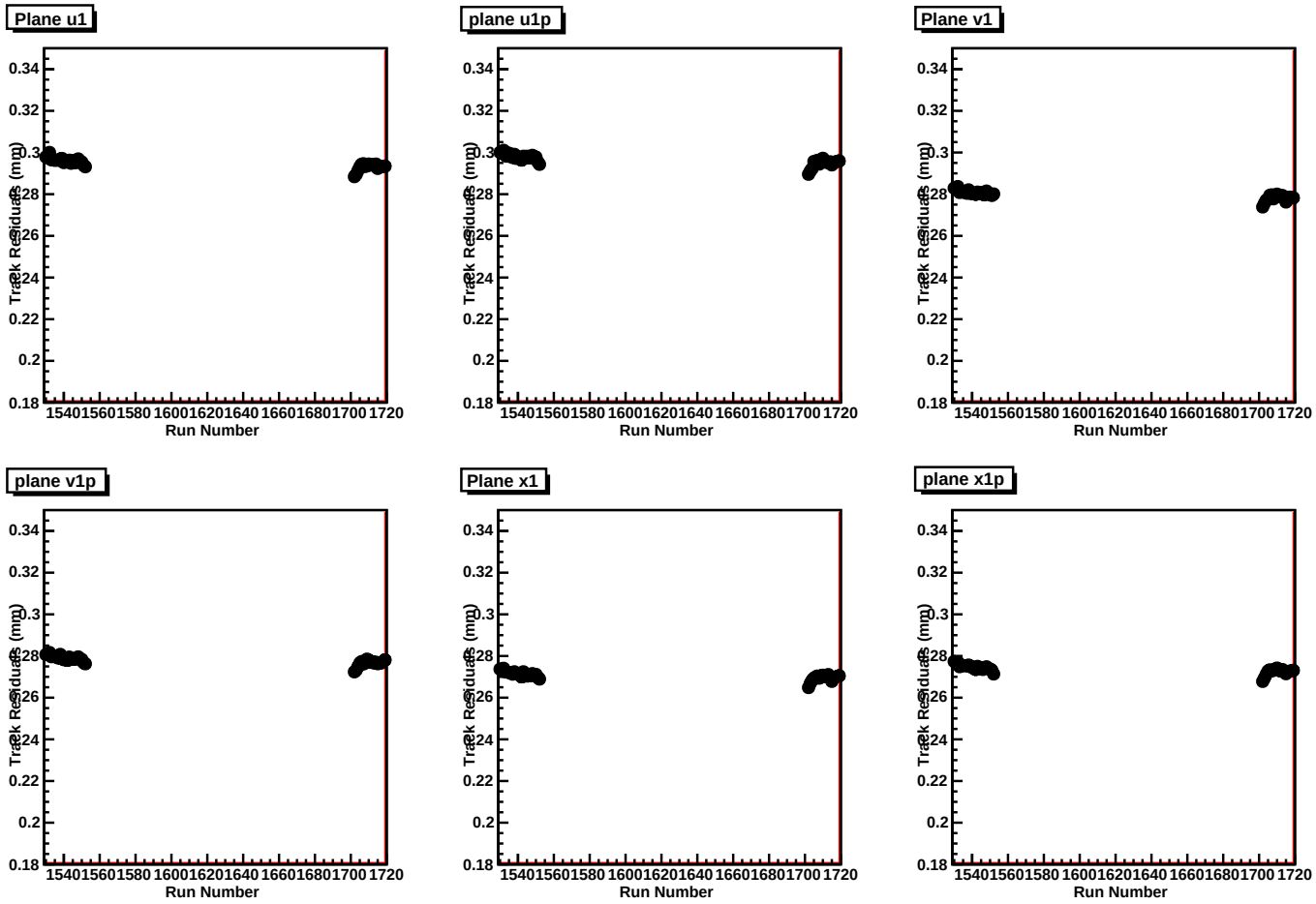

Figure: MWDC residual stability for S=0 chamber 1.

5.89 GeV Residual Stability Chamber 2

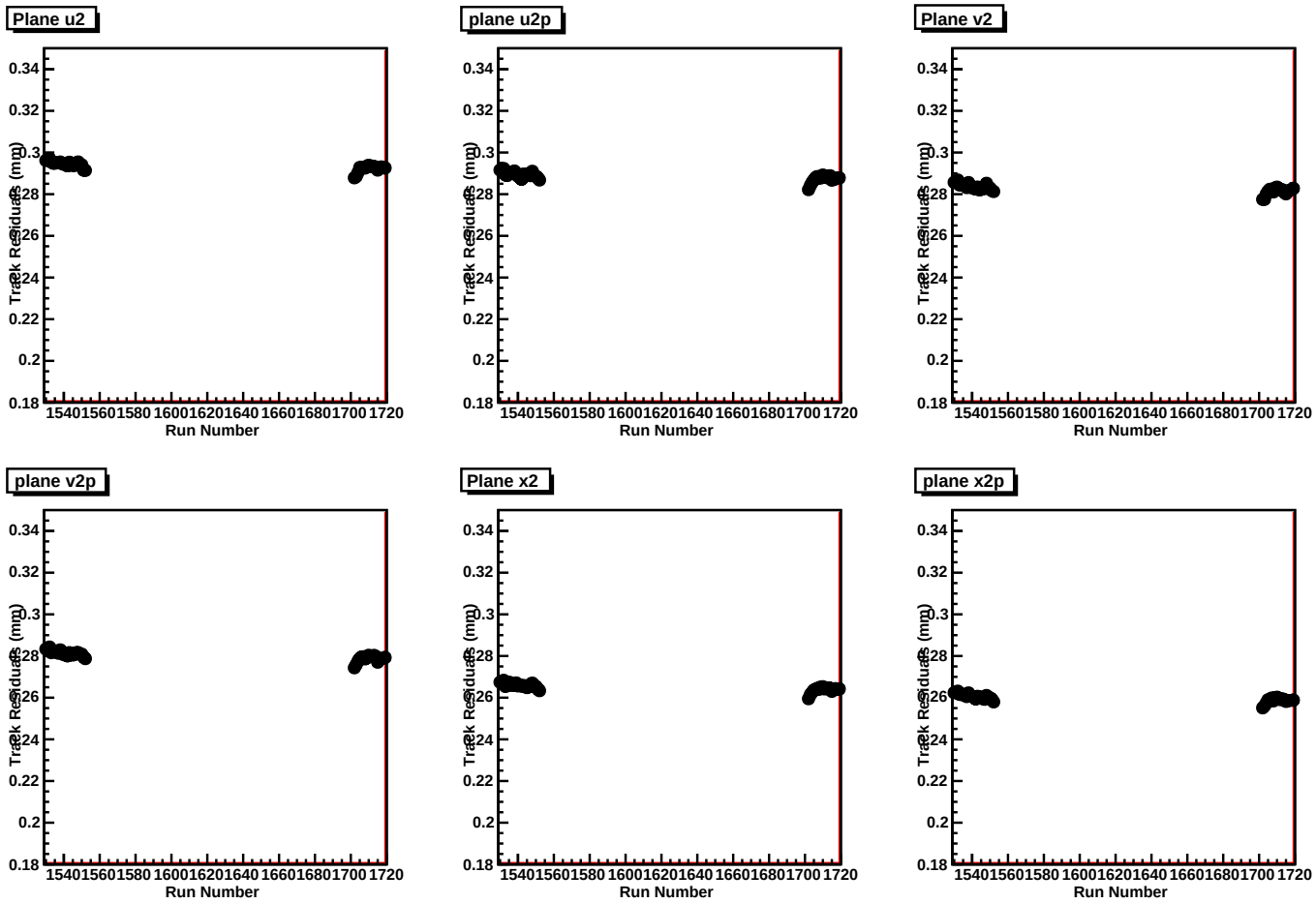

Figure: MWDC residual stability for S=0 chamber 2.

5.89 GeV Residual Stability Chamber 3

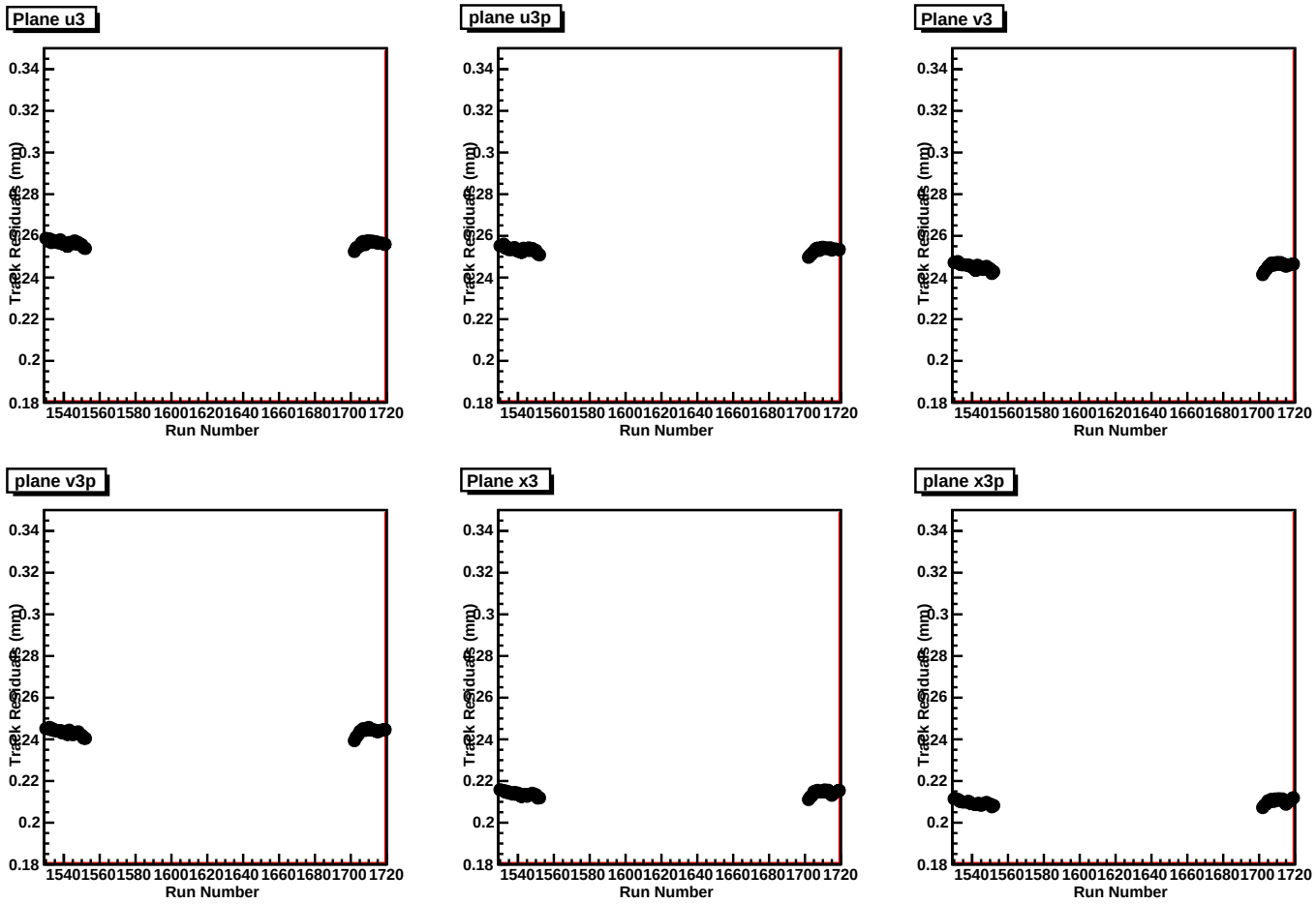

Figure: MWDC residual stability for S=0 chamber 3.

5.89 GeV Target Spin =90° Runs

- Our target spin of 90° spans the run sets of:
- 1423-1448, With a Shower Threshold of -0.080 mV
- 1449-1470, with a Shower Threshold of -0.135 mV
- 1479-1498, with a Shower Threshold of -0.120 mV
- 1650-1701, with a Shower Threshold of -0.133 mV
- 1949-1998, with a Shower Threshold of -0.110 mV
- The MWDC during the S=90 there are periods which jump in mean timing and residual values
- The mean timing varies by 4-5.5 ns across the S=90 running
- The resolution of the residuals varies by about $50\mu m$ across the S=90 running

5.89 GeV t_0 Structure

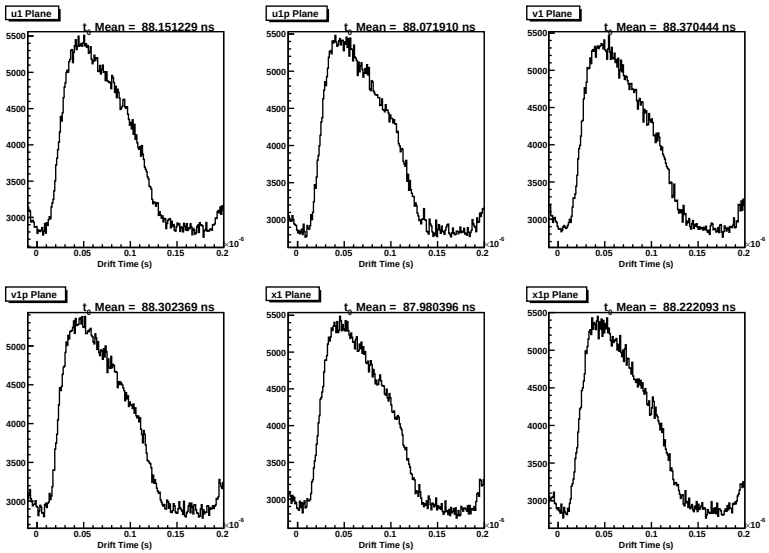

Figure: Characteristic MWDC timing of chamber 1 for run 1498.

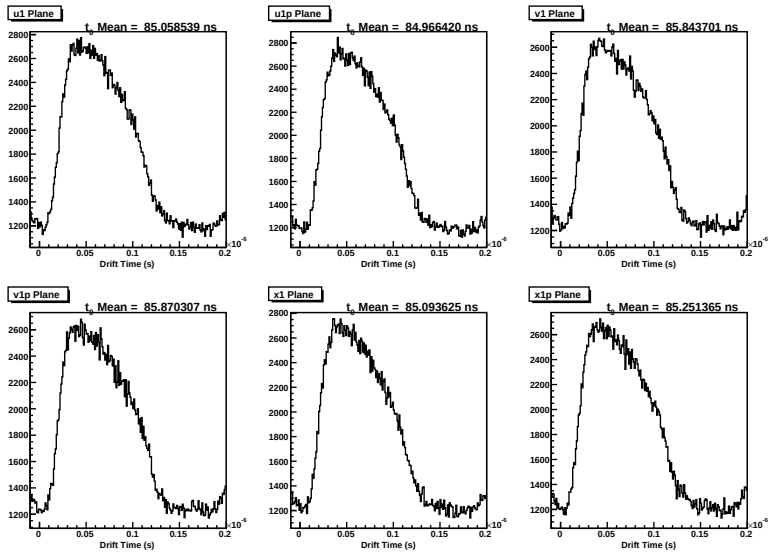

Figure: Characteristic MWDC timing of chamber 1 for run 1949.

5.89 GeV t_0 Stability Chamber 1

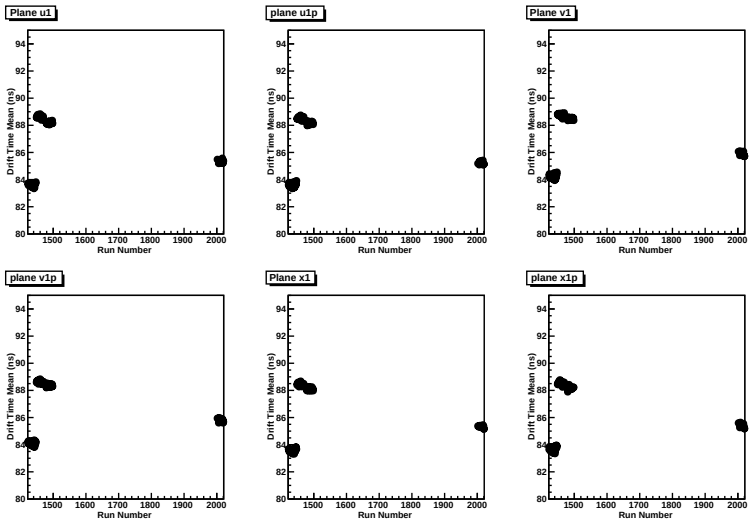

Figure: MWDC timing stability for S=90, wave-plate OUT, chamber 1.

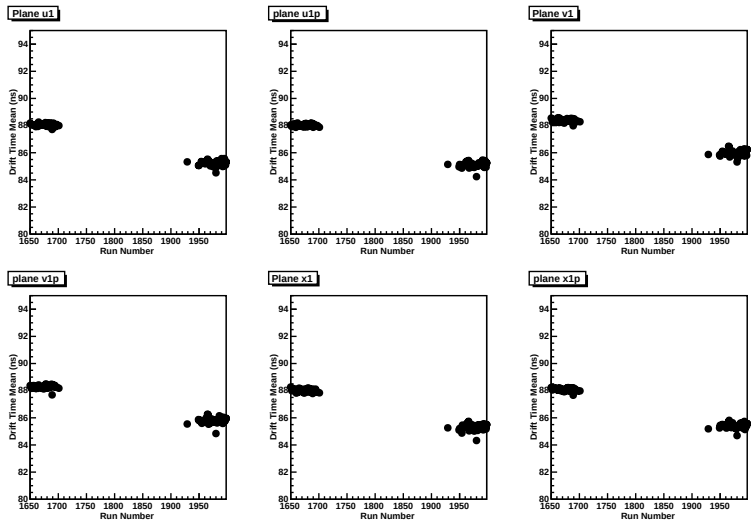

Figure: MWDC timing stability for S=90, wave-plate IN, chamber 1.

5.89 GeV t_0 Stability Chamber 2

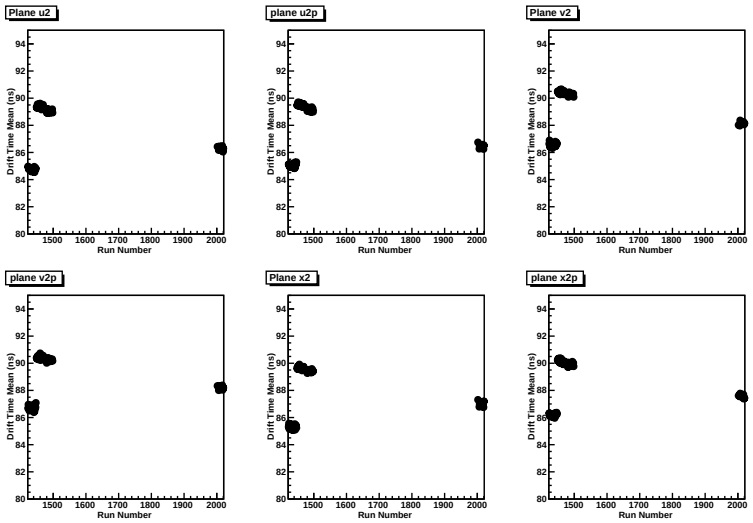

Figure: MWDC timing stability for S=90, wave-plate OUT, chamber 2.

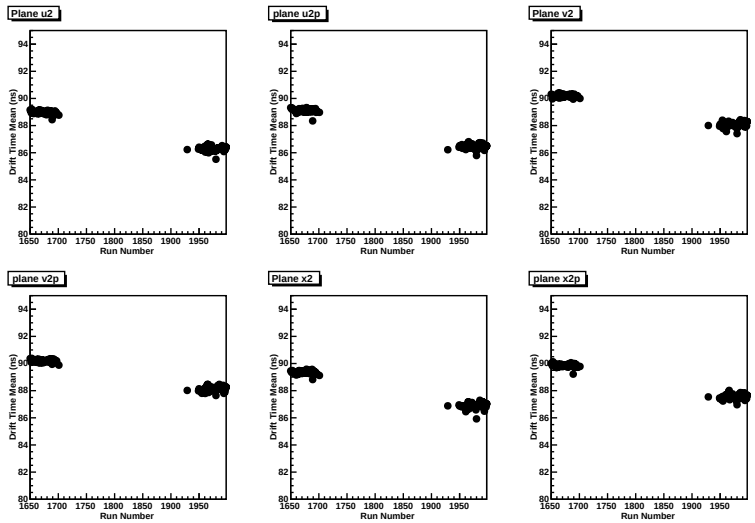

Figure: MWDC timing stability for S=90, wave-plate IN, chamber 2.

5.89 GeV t_0 Stability Chamber 3

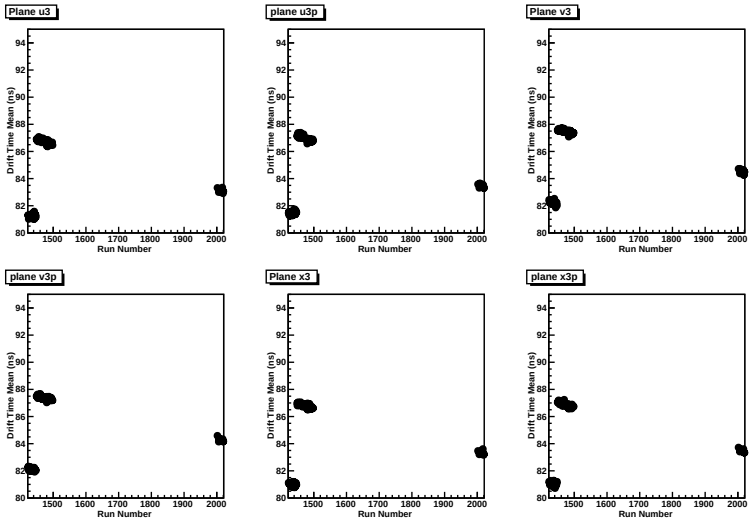

Figure: MWDC timing stability for S=90, wave-plate OUT, chamber 3.

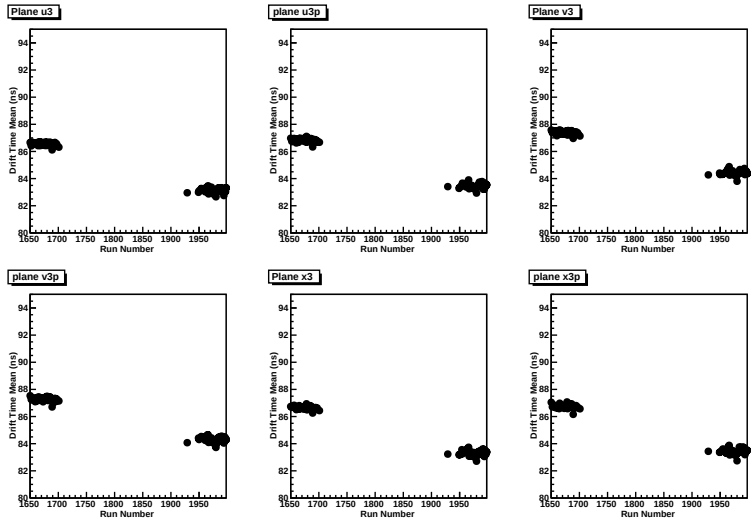

Figure: MWDC timing stability for S=90, wave-plate IN, chamber 3.

5.89 GeV Track Residual Structure

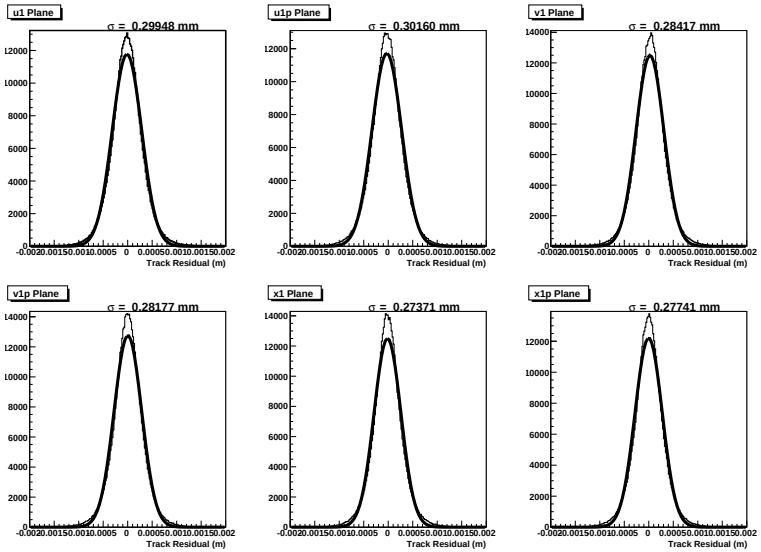

Figure: Characteristic MWDC residuals of chamber 1 for run 1498.

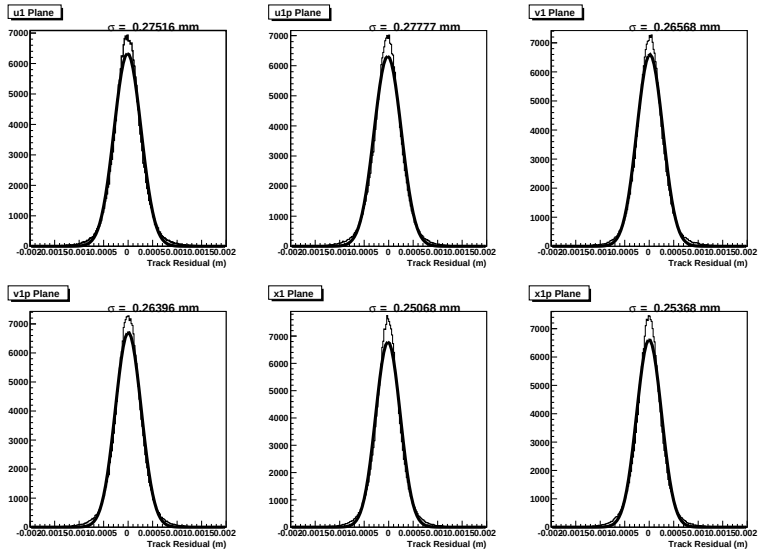

Figure: Characteristic MWDC residual of chamber 1 for run 1949.

5.89 GeV Track Residual Stability Chamber 1

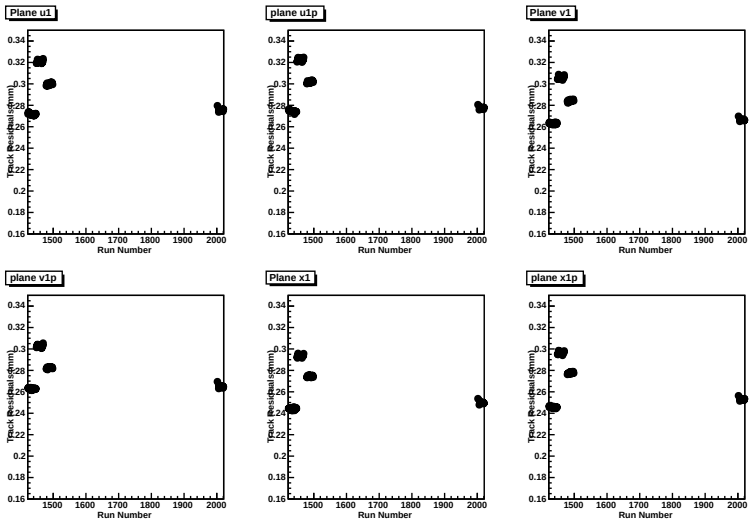

Figure: MWDC residuals stability for S=90, wave-plate OUT, chamber 1.

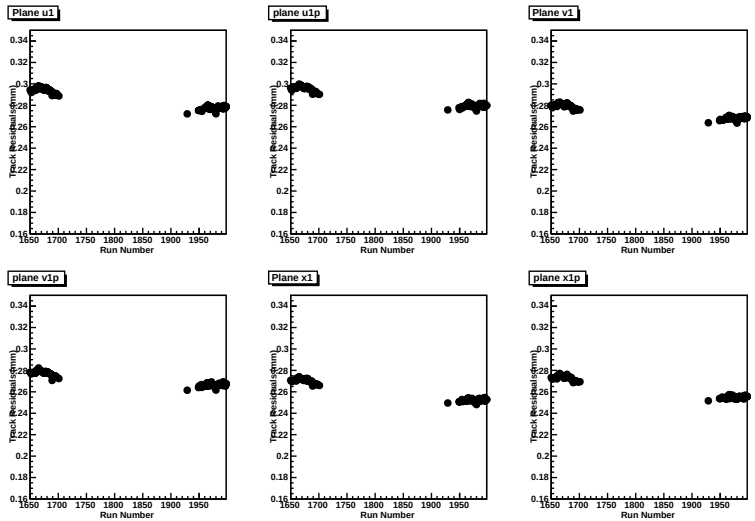

Figure: MWDC residuals stability for S=90, wave-plate IN, chamber 1.

5.89 GeV Track Residual Stability Chamber 2

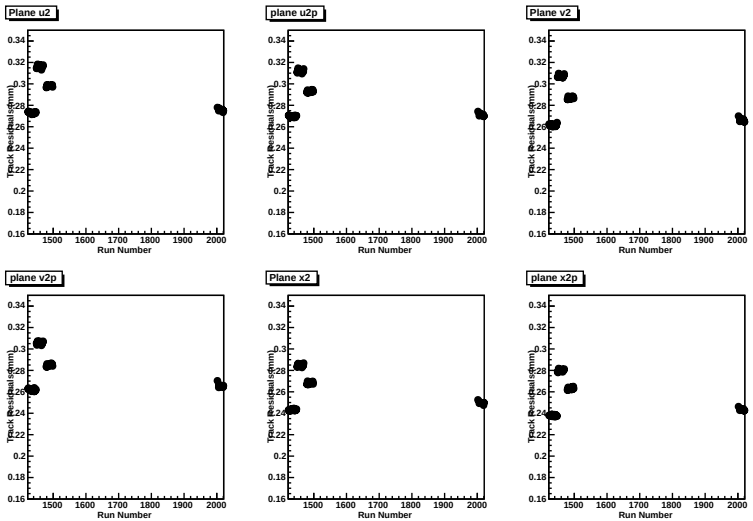

Figure: MWDC residuals stability for S=90, wave-plate OUT, chamber 2.

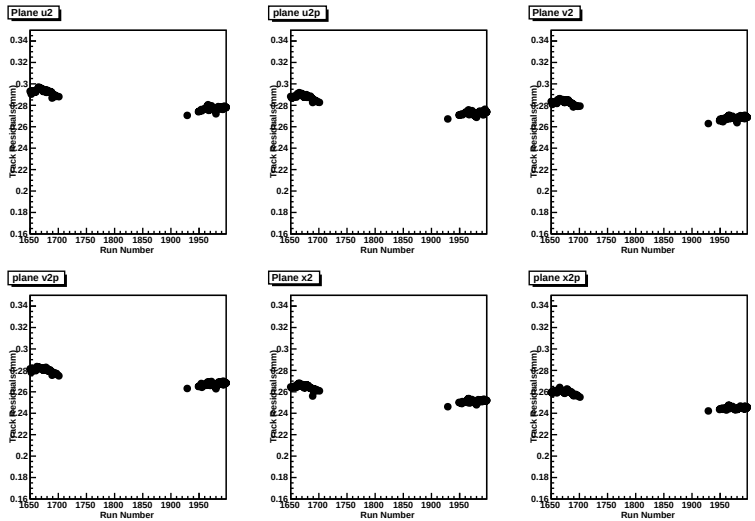

Figure: MWDC residuals stability for S=90, wave-plate IN, chamber 2.

5.89 GeV Track Residual Stability Chamber 3

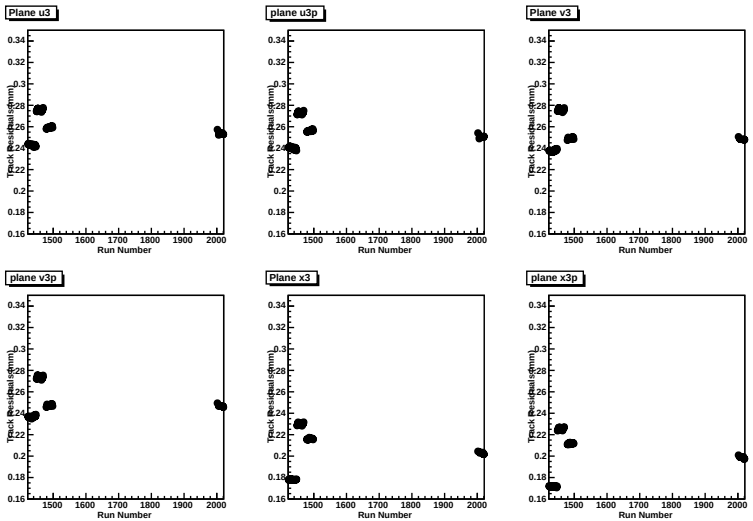

Figure: MWDC residuals stability for S=90, wave-plate OUT, chamber 3.

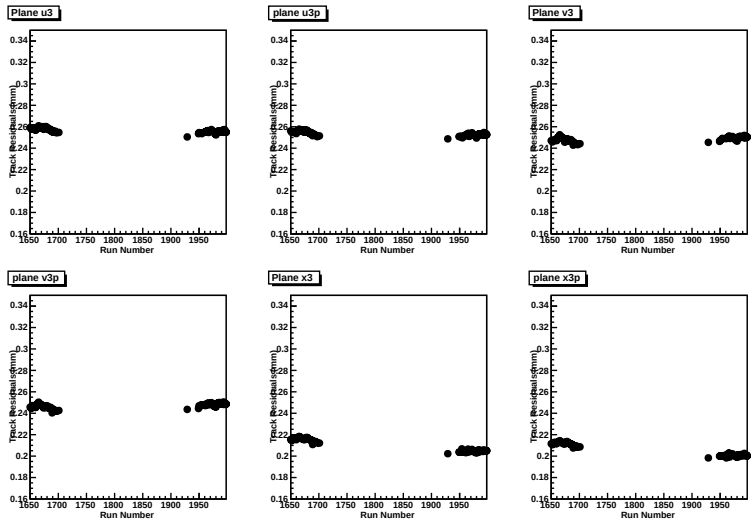

Figure: MWDC residuals stability for S=90, wave-plate IN, chamber 3.

5.89 GeV Target Spin =270° Runs

- Our target spin of 270° spans the run sets of:
- 1311-1403, With a Shower Threshold of -0.133 mV
- 1411-1420, with a Shower Threshold of -0.080 mV
- 1499-1599, with a Shower Threshold of -0.120 mV
- 1600-1647, with a Shower Threshold of -0.133 mV
- 1848-1927, with a Shower Threshold of -0.110 mV
- 1311-1361,1402 have a bad $t_0$calibration.
- With the exception of runs 1311-1361,1402:
  - Mean timing varies by about 2-5 ns
  - Residual widths vary by about 60 μm

5.89 GeV Bad t_0 Calibration

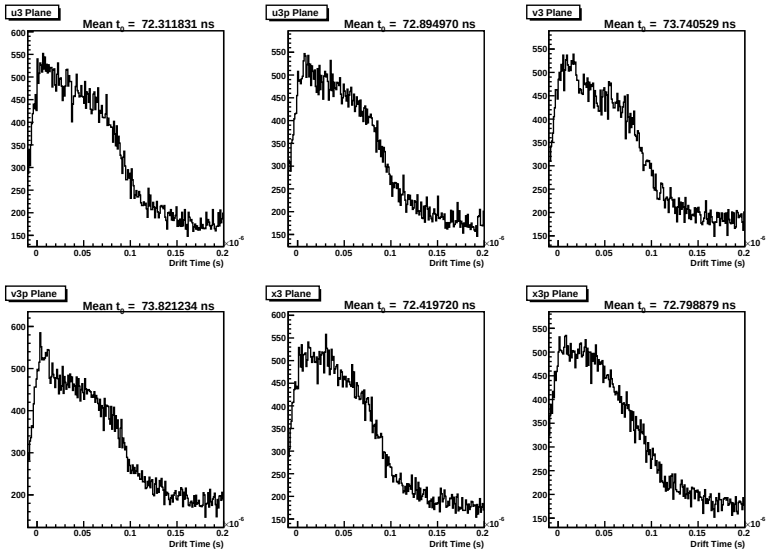

Figure: Result of a bad MWDC timing calibration for S=270. Timing of MWDC chamber 3 for run 1311 is shown.

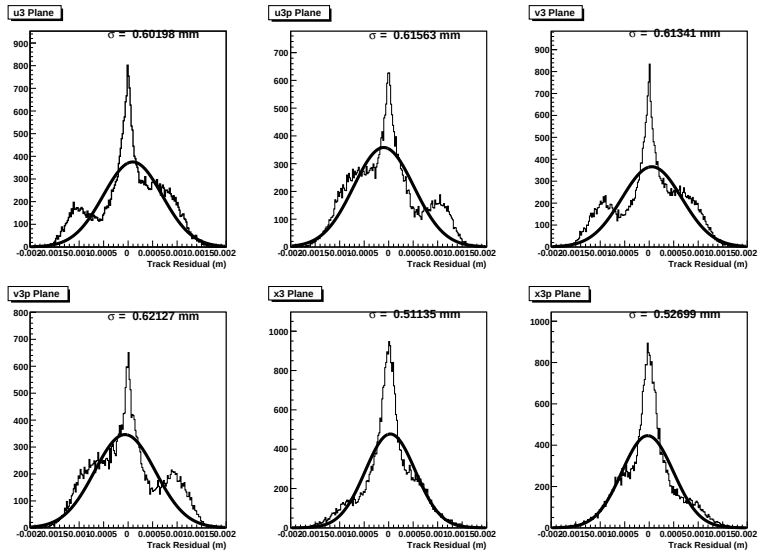

Figure: Result of a bad MWDC timing calibration for S=270. Residuals of MWDC chamber 3 for run 1311 is shown.

5.89 GeV t_0 Structure

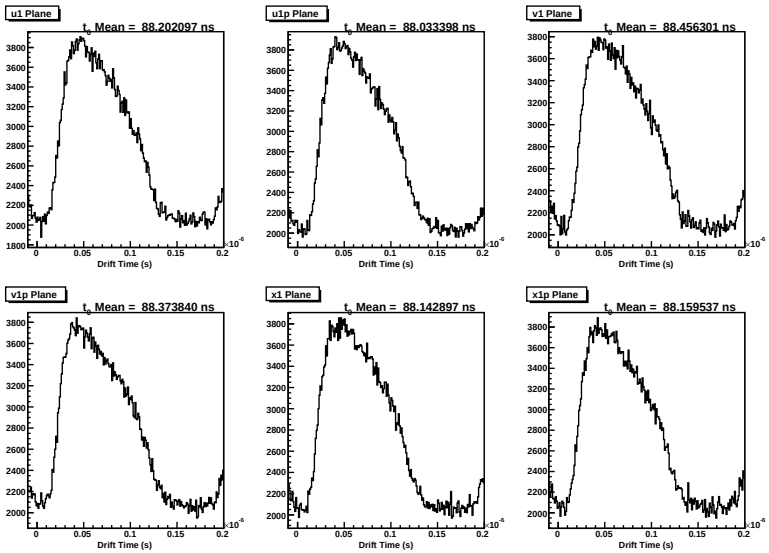

Figure: Characteristic MWDC timing of chamber 1 for run 1580.

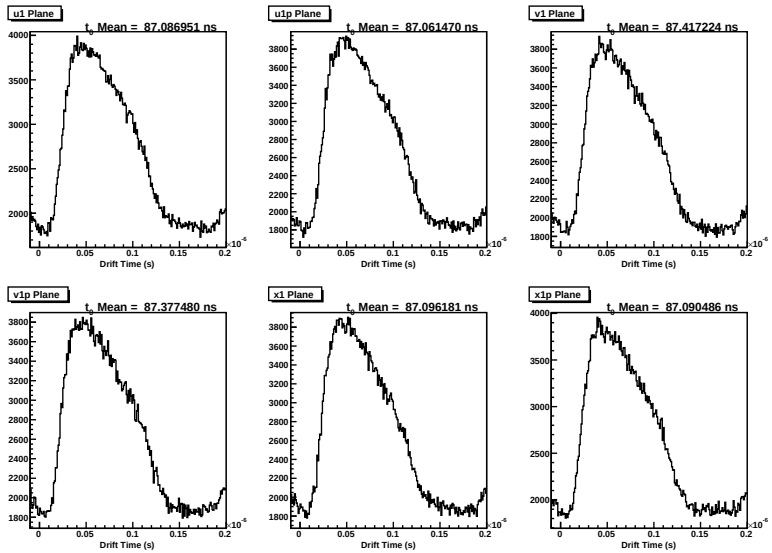

Figure: Characteristic MWDC timing of chamber 1 for run 1848.

5.89 GeV t_0 Stability Chamber 1

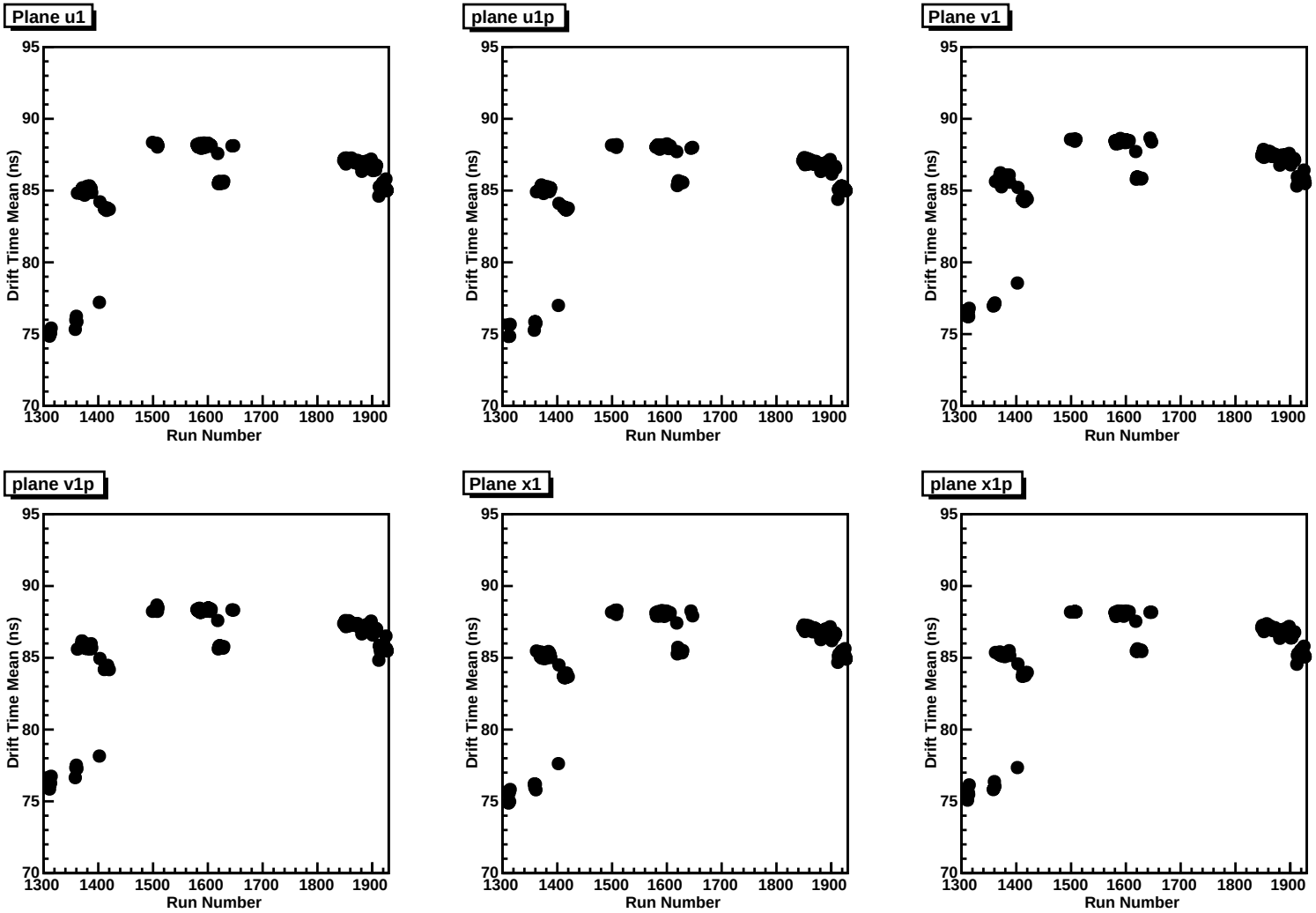

Figure: MWDC timing stability for S=270, chamber 1.

5.89 GeV t_0 Stability Chamber 2

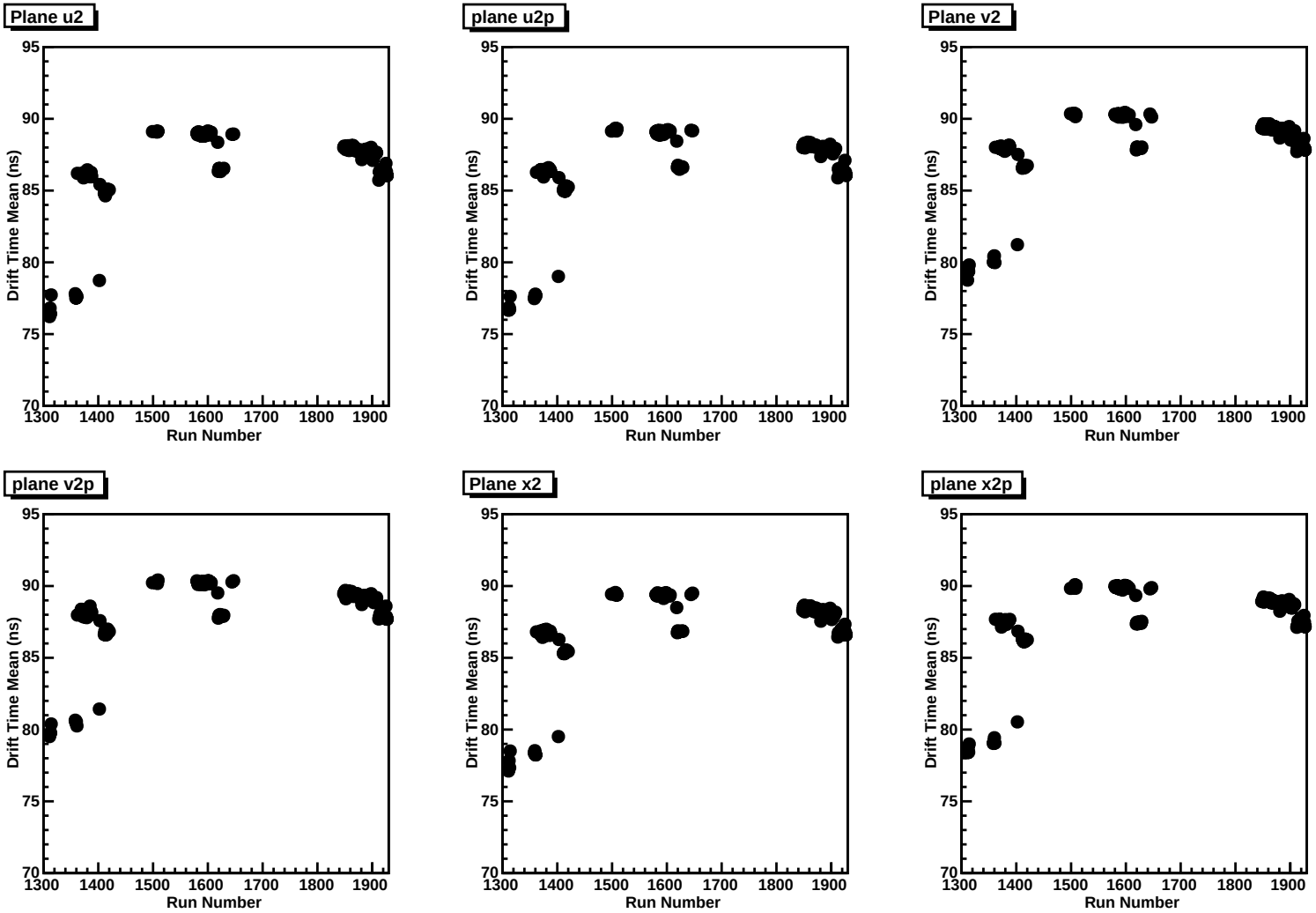

Figure: MWDC timing stability for S=270, chamber 2.

5.89 GeV t_0 Stability Chamber 3

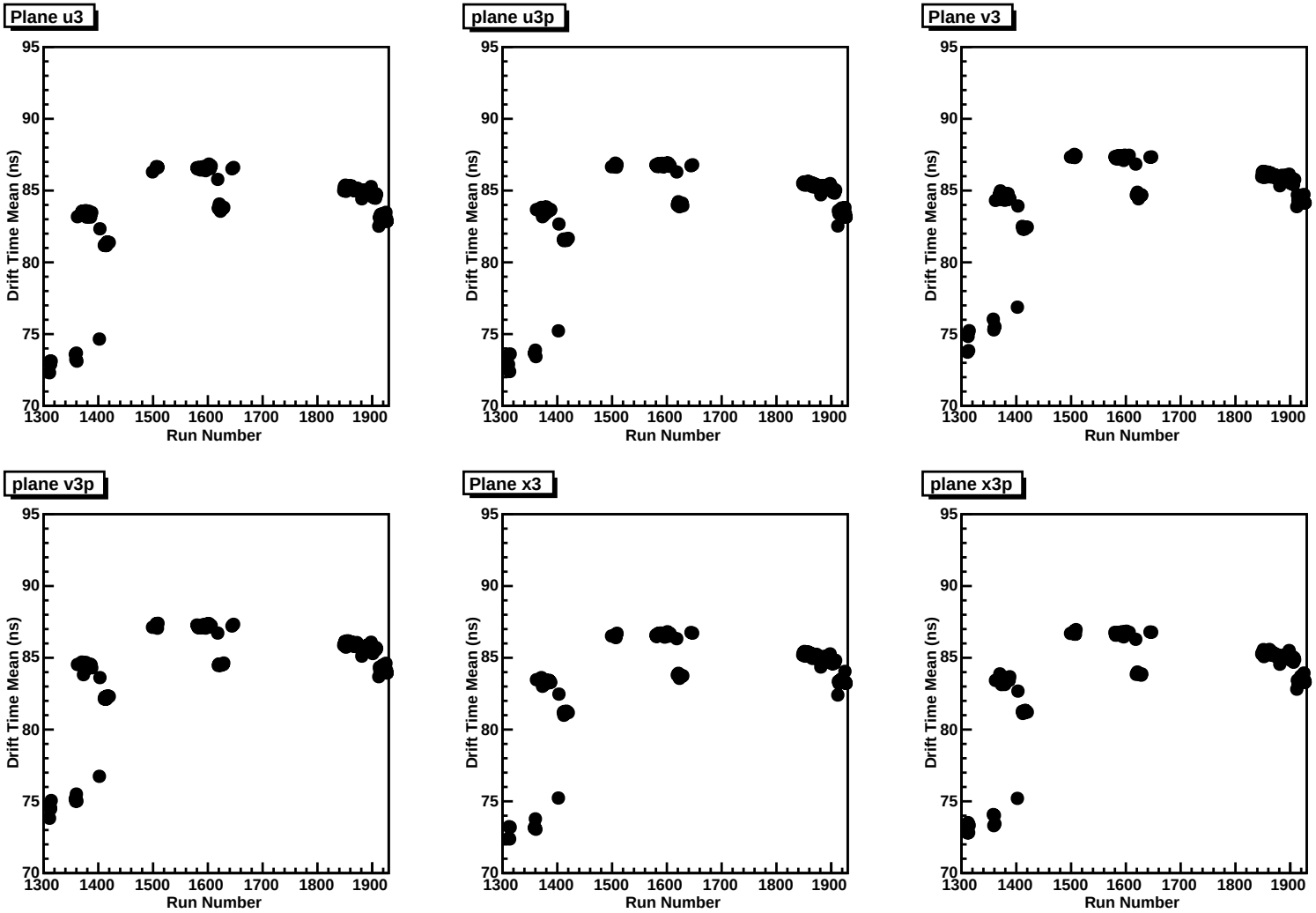

Figure: MWDC timing stability for S=270, chamber 3.

5.89 GeV Track Residual Structure

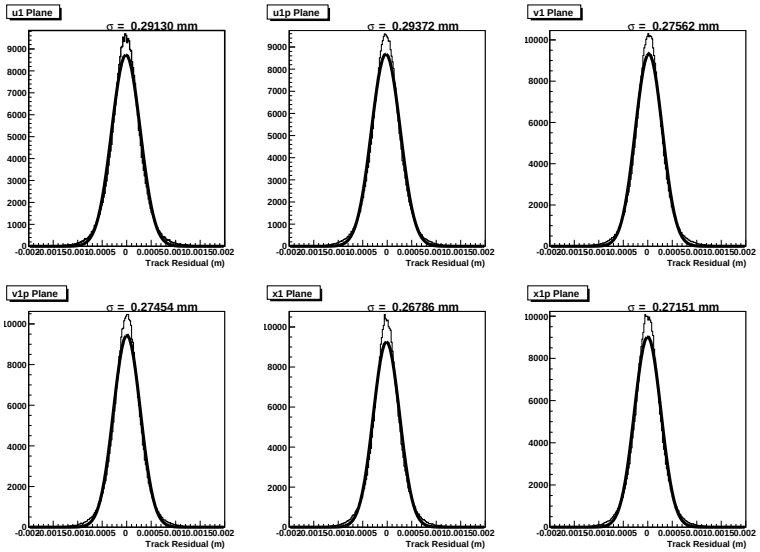

Figure: Characteristic MWDC residuals of chamber 1 for run 1580.

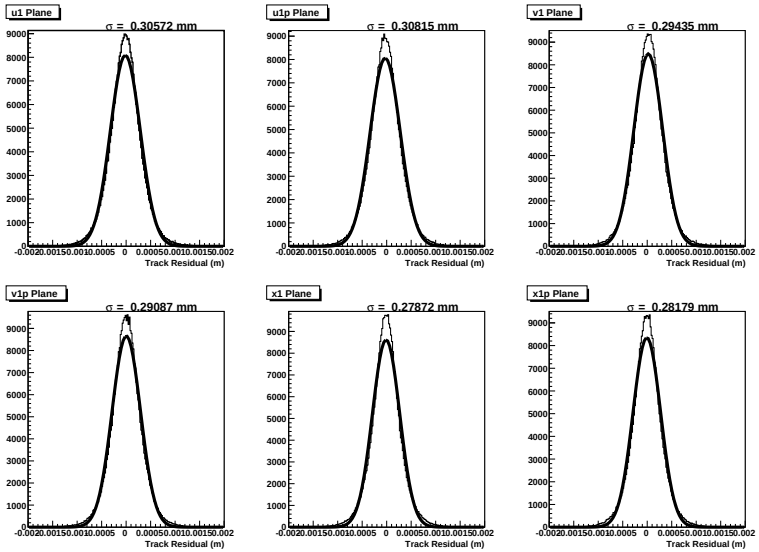

Figure: Characteristic MWDC residual of chamber 1 for run 1848.

5.89 GeV Residual Stability Chamber 1

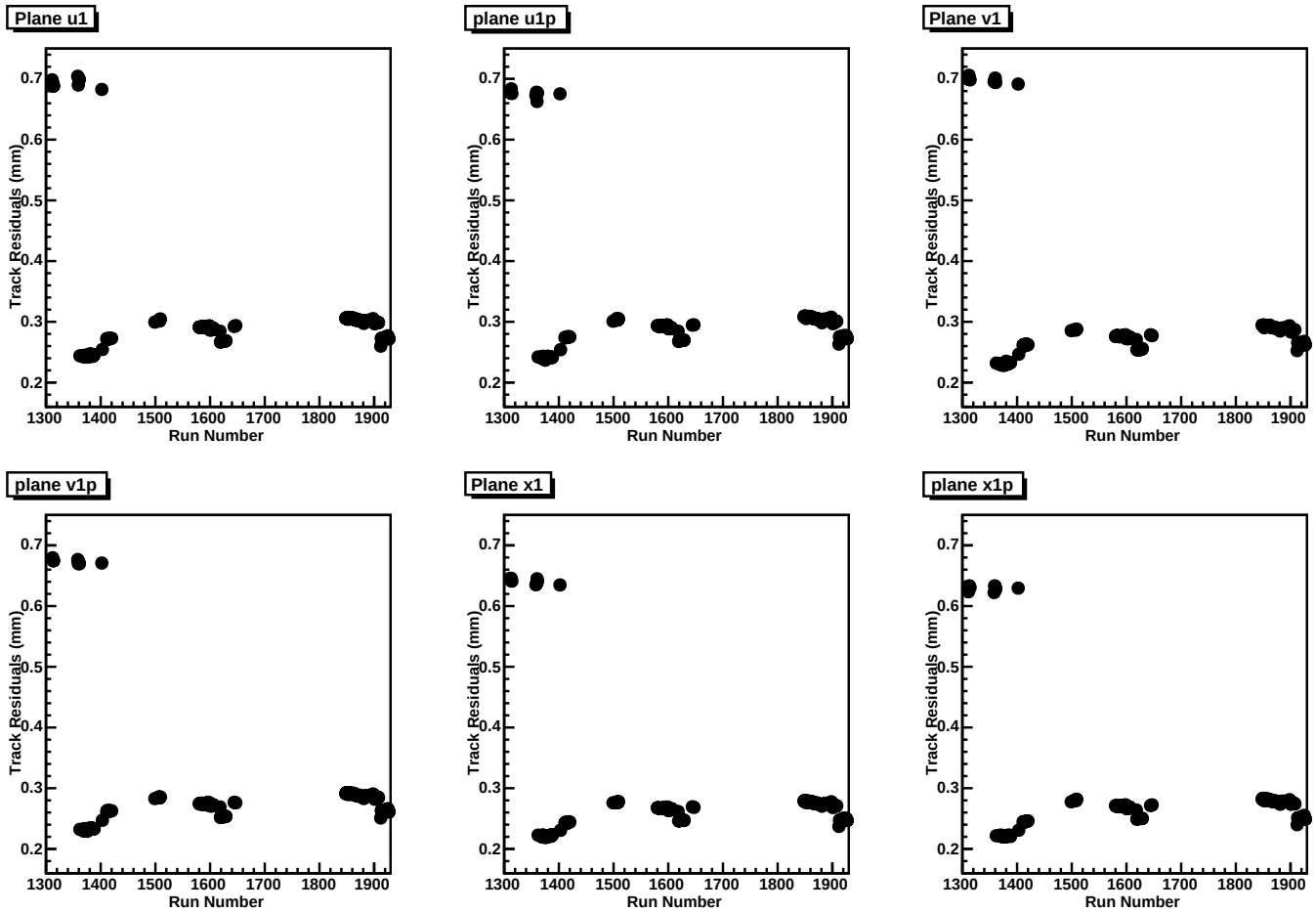

Figure: MWDC residual stability for S=270 chamber 1.

5.89 GeV Residual Stability Chamber 2

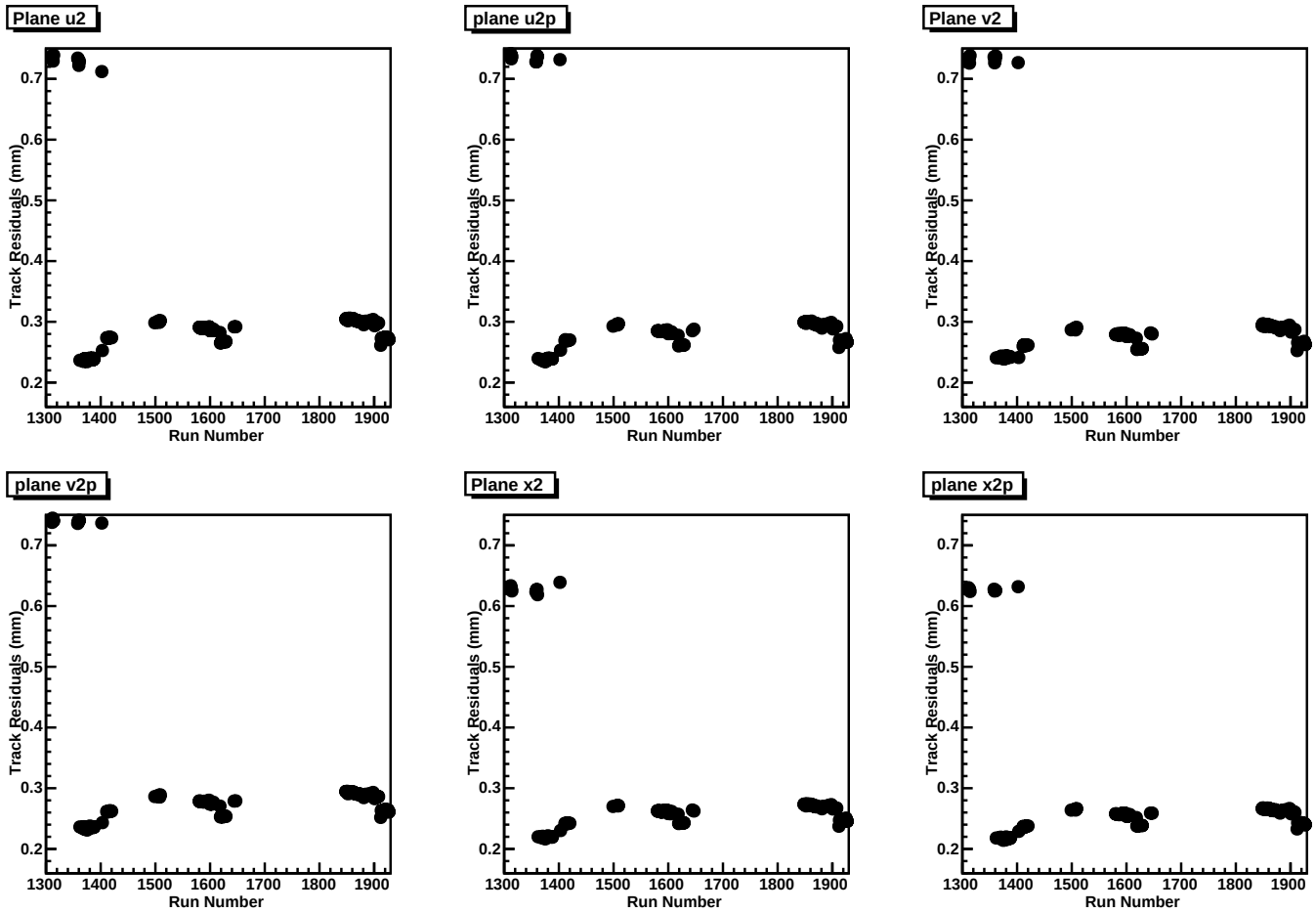

Figure: MWDC residual stability for S=270 chamber 2.

5.89 GeV Residual Stability Chamber 3

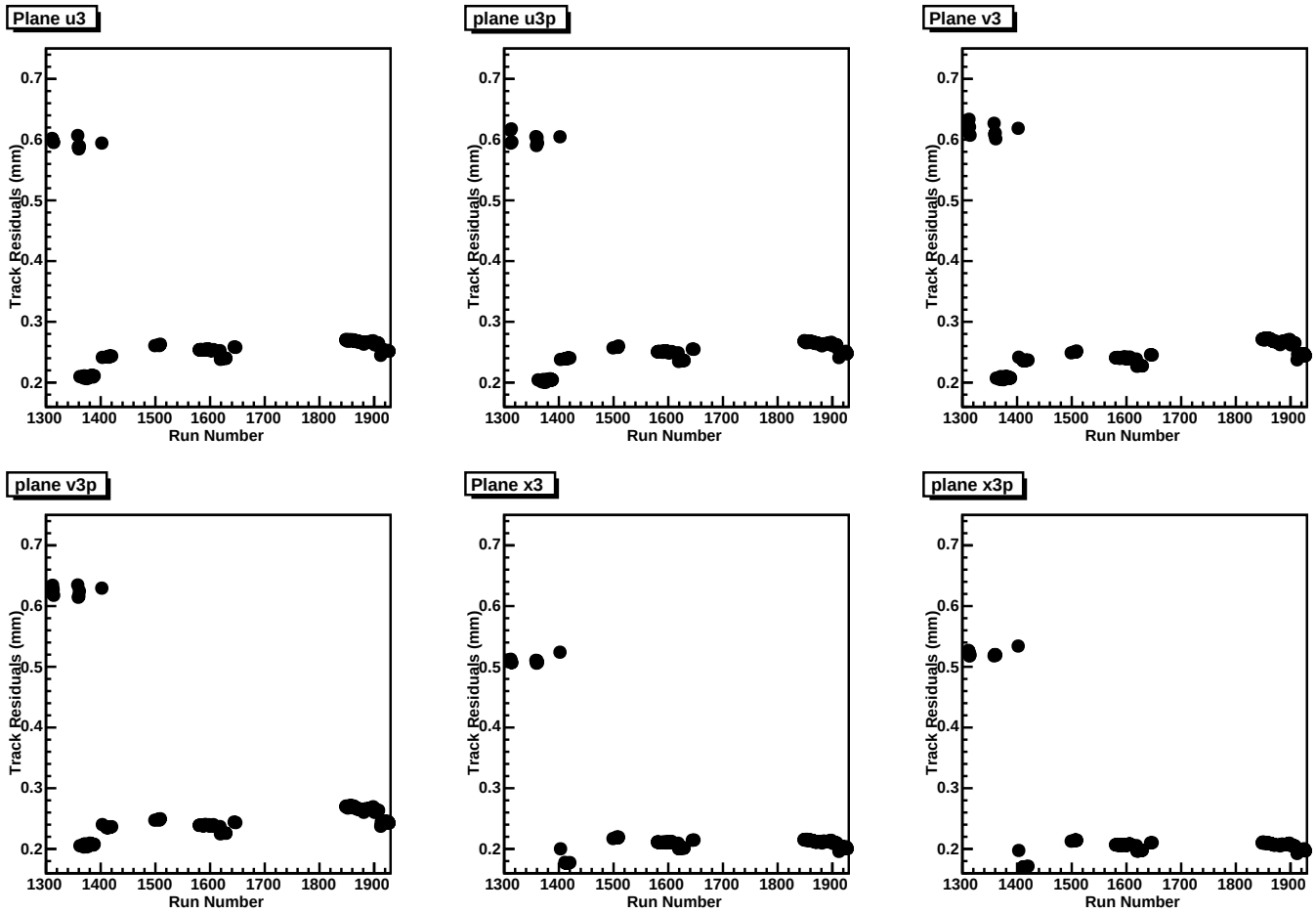

Figure: MWDC residual stability for S=270 chamber 3.