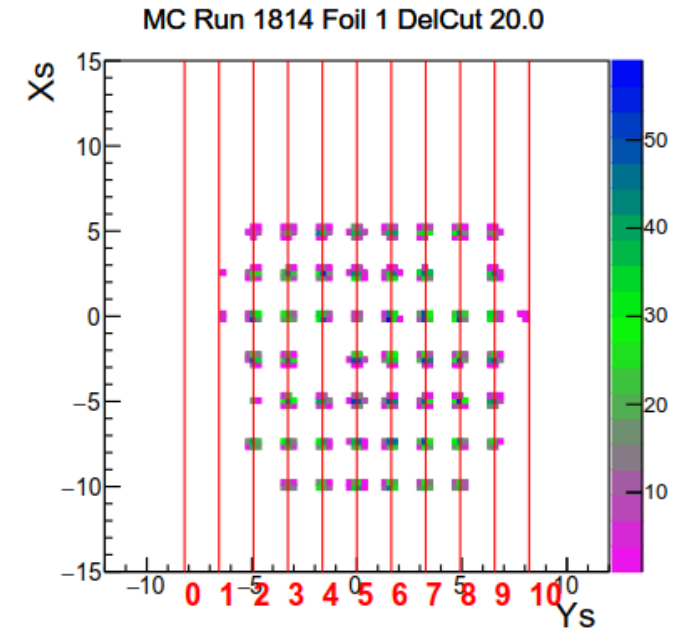
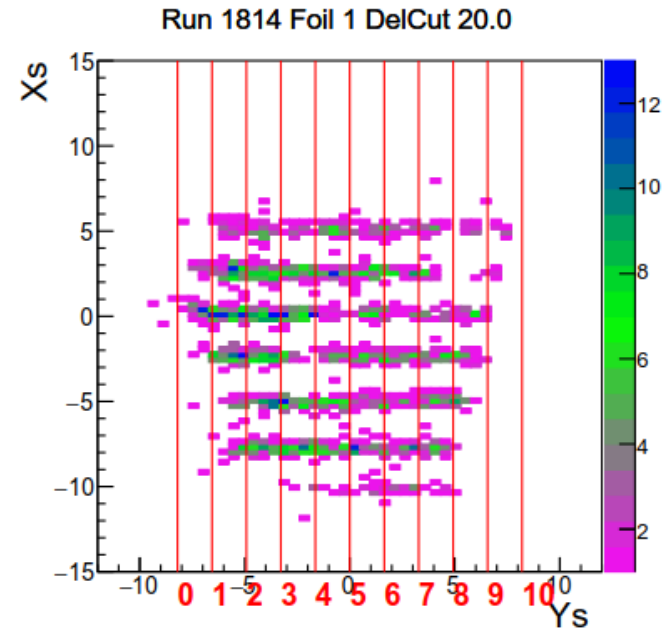
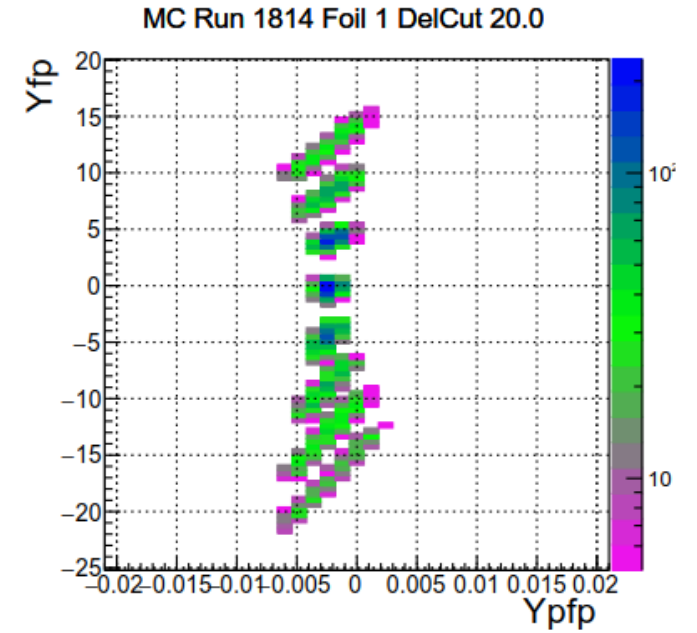
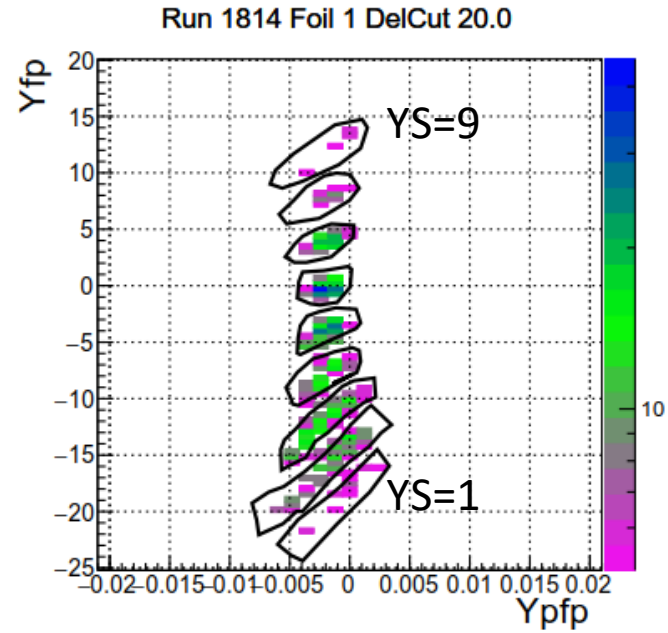


Update to SHMS optics April 16,2020

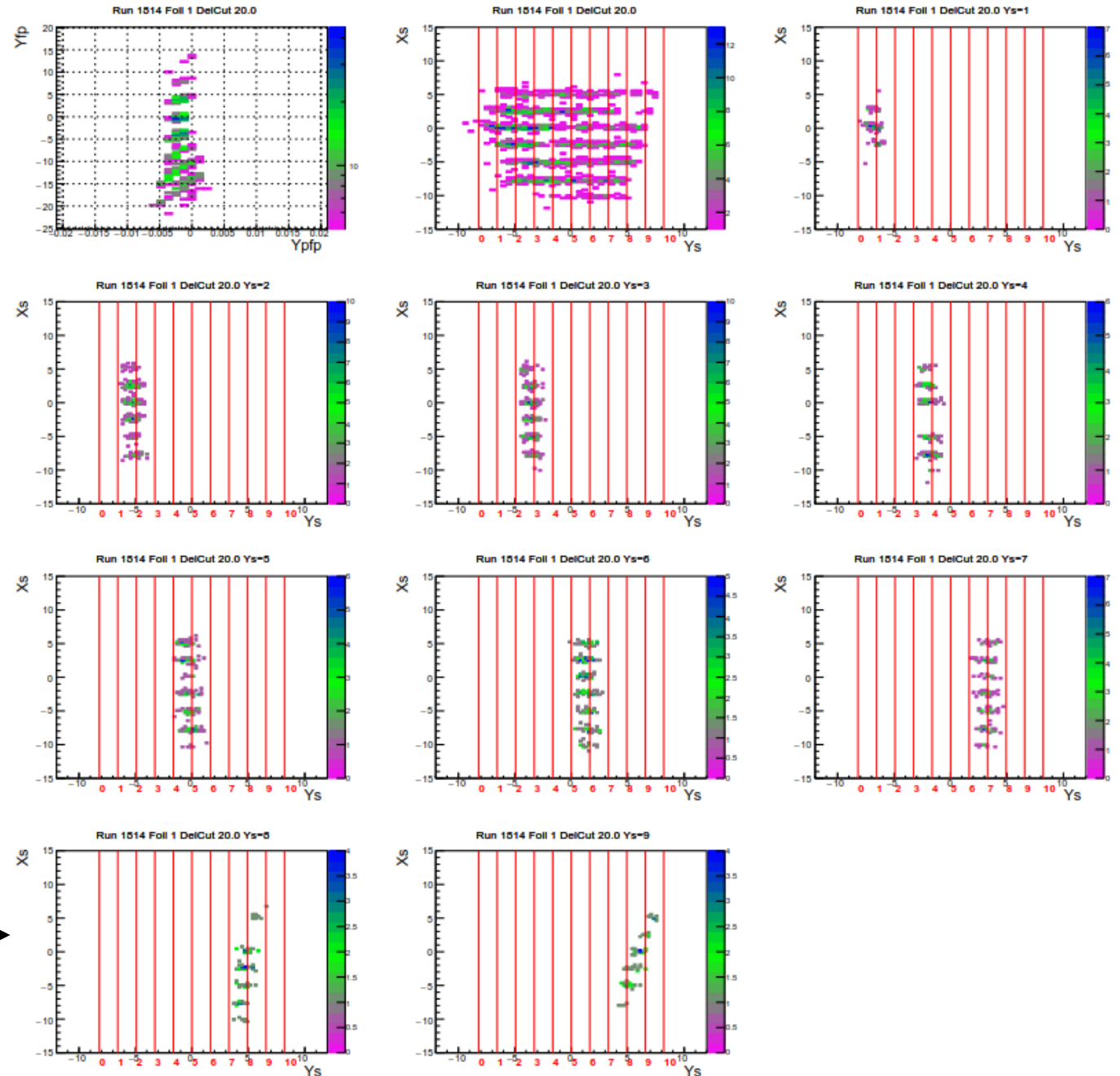
- First look at SHMS Run 1814 with centered sieve and 3 foil optics target
 - Central momentum = 3.2 GeV
 - Central Angle = 22 deg
 - Beam energy 6.430 GeV
 - Foils at $z = 10, 0$ and -10cm . $Y_{\text{tar}} = -3.74, 0, +3.74\text{cm}$.
- Also use run 1919
 - Central momentum = 3.2 GeV
 - Central Angle = 22 deg
 - Beam energy 6.430 GeV
 - Foils at $z = 5$ and -5cm .
- Initial optics matrix optimization
 - Start with the COSY recon matrix for all quads=1.018 tune.
 - Use the cuts on ysieve and xsieve integrated over $-10 < \delta < 25$ to do fitting
- Fit data by applying cuts in different delta bins
 - 10 delta bins: -12,-10,-8,-6,-5,-2,2,6,10,15,25
 - Put cuts on Y_{fp} versus Y_{pfp} to select vertical columns of sieve (y_{ptar}).
 - Comparisons between data and mc-single-arm

- Z= 0cm foil
- $15 < \delta < 25$
- Reasonable match between data and MC



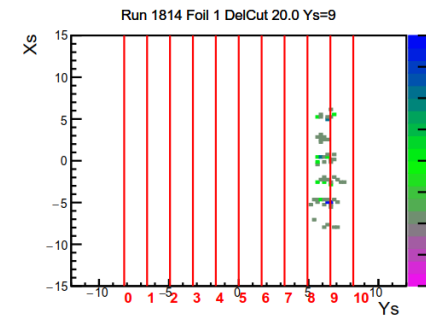
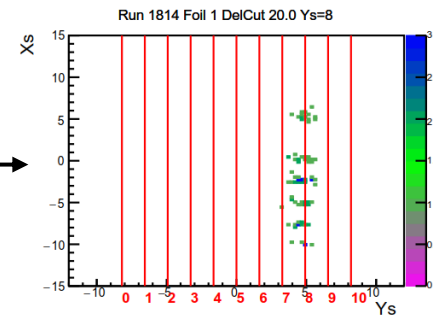
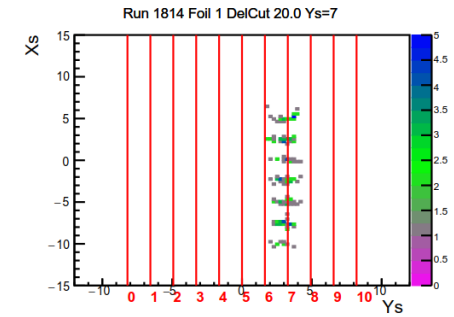
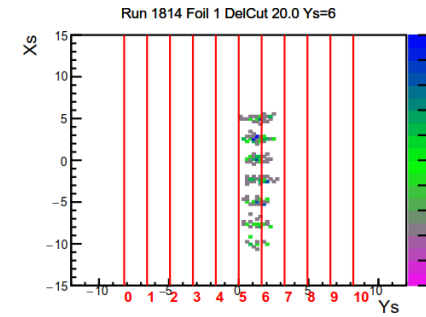
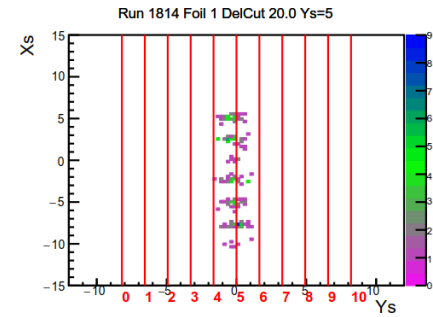
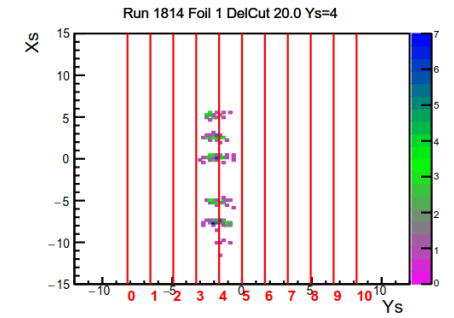
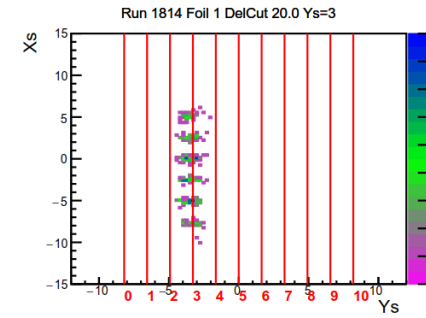
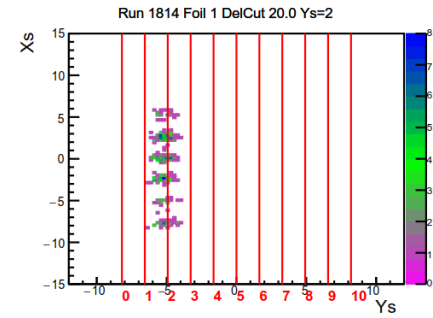
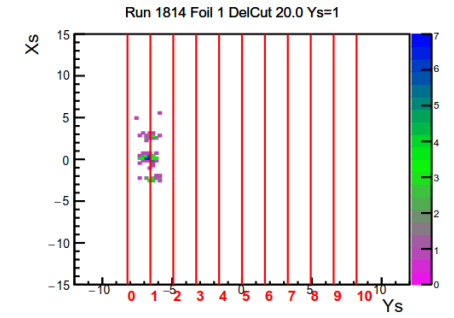
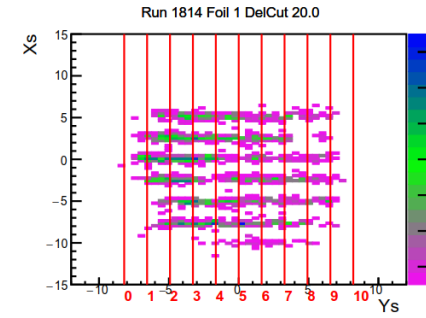
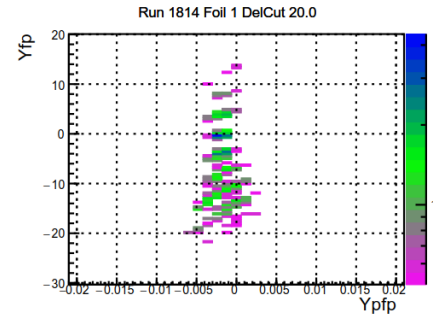
Original matrix

- Z= 0cm foil
- $15 < \Delta < 25$ bin
- Look at X_s versus Y_s for each Y_{fp} versus Y_{fp} cut which is a vertical row of sieve holes.
- + Y_s corresponds to + y_{ptar} .
- Each Y_s column is roughly 6mr.
- At $Y_s=8$ and 9 (24 and 30mr) one sees some problem with the Y_{ptar} reconstruction to smaller angles.



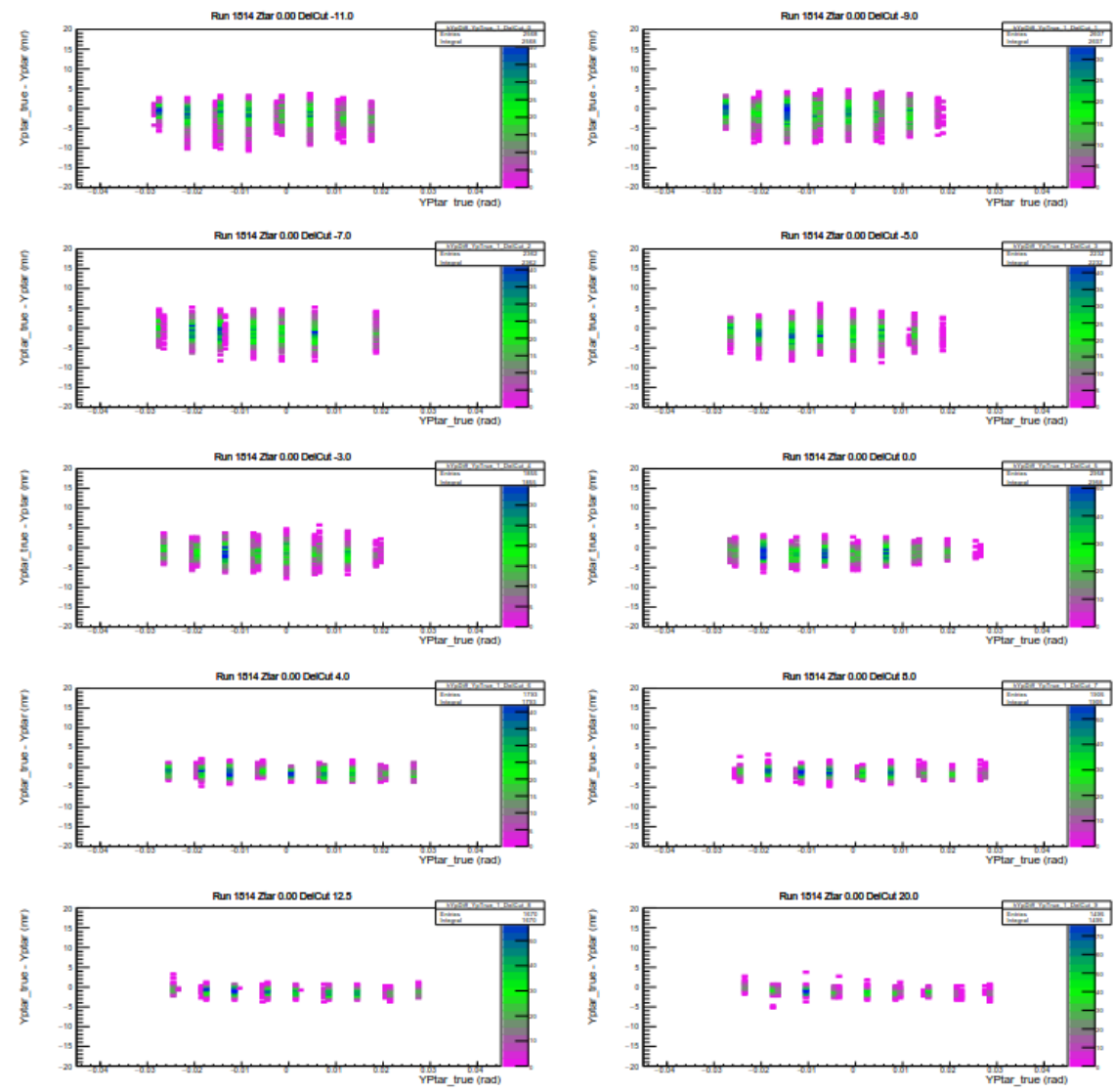
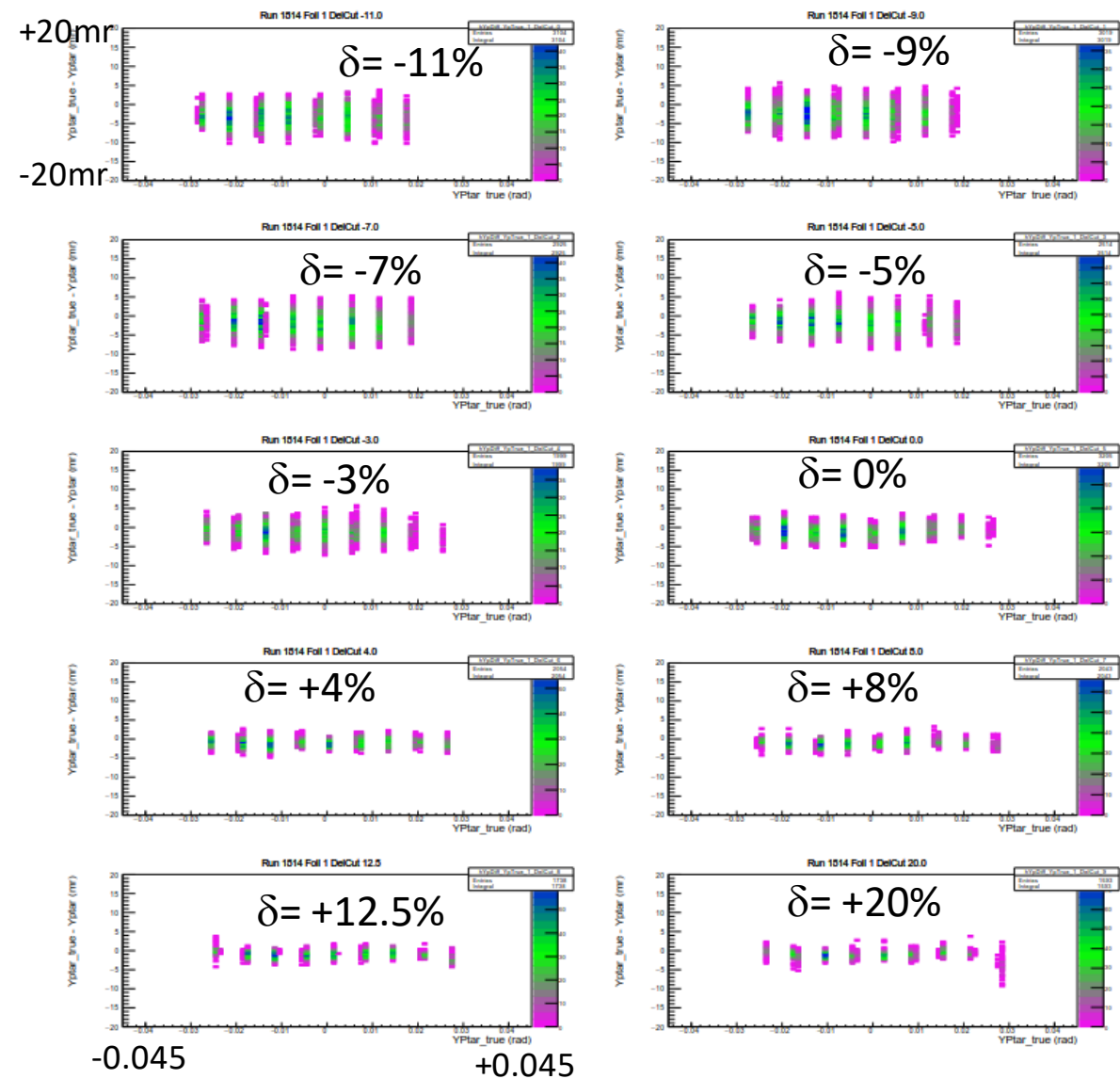
Updated matrix

- $Z = 0\text{cm}$ foil
- $15 < \Delta < 25$ bin
- Look at X_s versus Y_s for each Y_{fp} versus Y_{pfp} cut which is a vertical row of sieve holes.
- $+Y_s$ corresponds to $+y_{ptar}$.
- Each Y_s column is roughly 6mr .
- At $Y_s = 8$ and 9 (24 and 30mr) fixes problem.



Original matrix. Z=0cm. YpTrue-Yptar versus Yptrue

New matrix. Z=0cm. YpTrue-Yptar versus Yptrue



Original matrix. Z=10cm. YpTrue-Yptar versus Yptrue

New matrix. Z=10cm. YpTrue-Yptar versus Yptrue

