Different Playlists

- DATA:
  - Playlists 1+7+9 : 1.008 E^{20} POT
  - Playlist 13 : 1.944 E^{20} POT

- MC:
  - Playlists 1+7+9 : 8.495 E^{20} POT
  - Playlist 13 : 11.481 E^{20} POT

Analyzing & Cross-checking with different Playlists

- Processed and extracted cross-sections with two different playlists. "Playlist 1" and "Playlist 13".
- "Playlist 1" is actually a combination of 3 playlists i.e. minerva1 + minerva7 + minerva9.
    - minerva1 is the largest one, 7 and 9 are small.
- "Playlist 13" combines 13B, 13C, 13D &13E for DATA.

Why cross-check ?

- Statistically independent playlists.
  - Results should be consistent.
- Cross-checks might bring out some bizarre dependency.
- Unfold with different smearing matrices to check for consistency.
  - Unfold DATA from “Playlist 1” with smearing matrix from “Playlist 13” and vice versa.
-

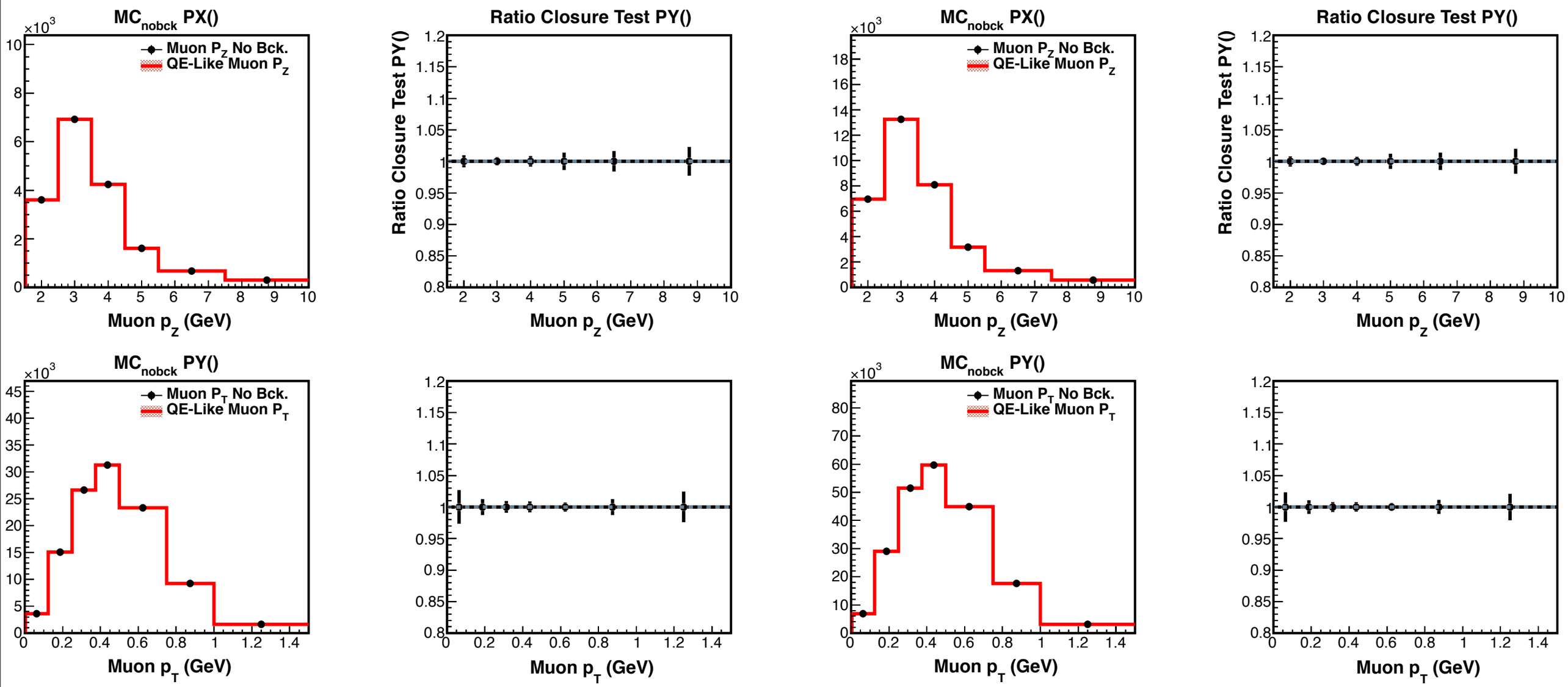
Closure: MC Playlists
"1" and "13"

No cross-unfolding here i.e.
Unfold MC "1" with smearing matrix "1"
Unfold MC "13" with smearing matrix "13"

MC Closure: Background Subtracted

Playlist: 1+7+9

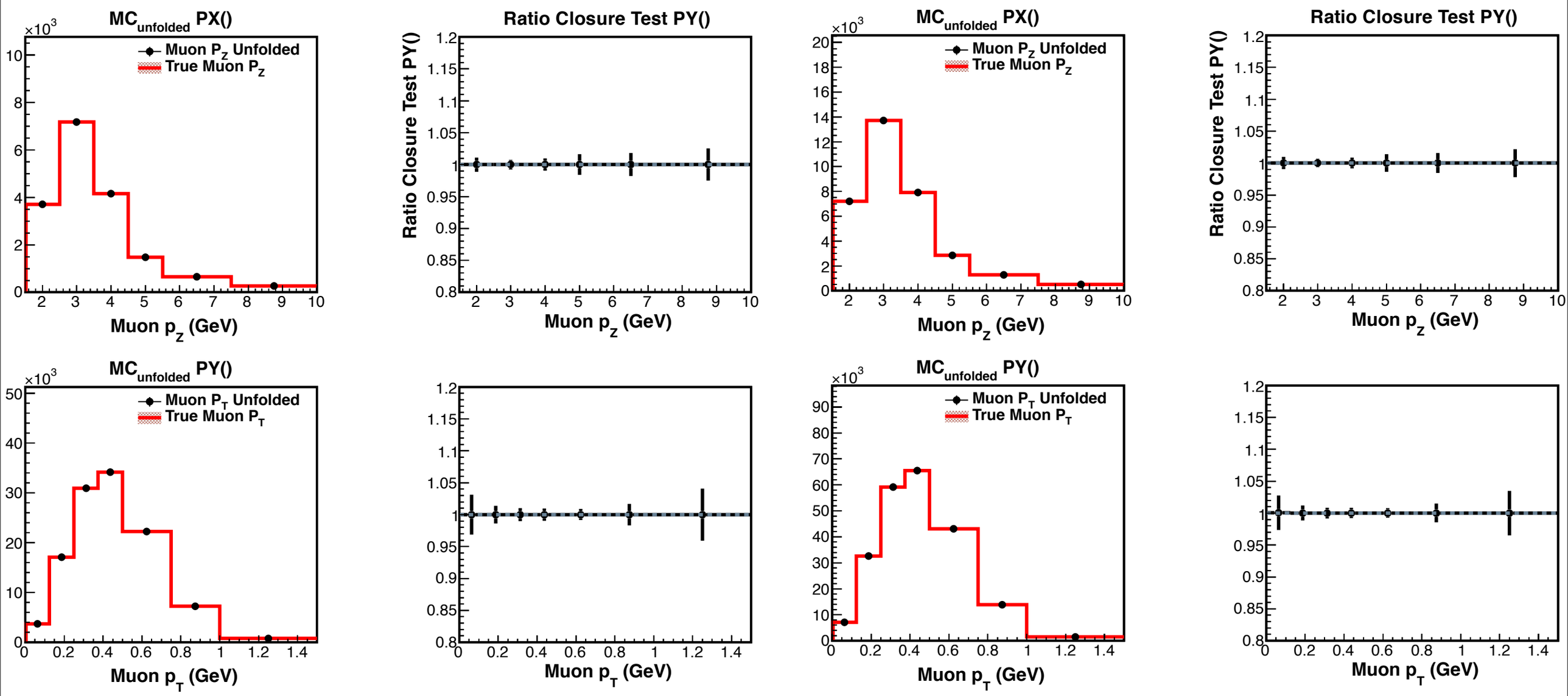
Playlist: 13



MC Closure: Unfolded

Playlist: 1+7+9

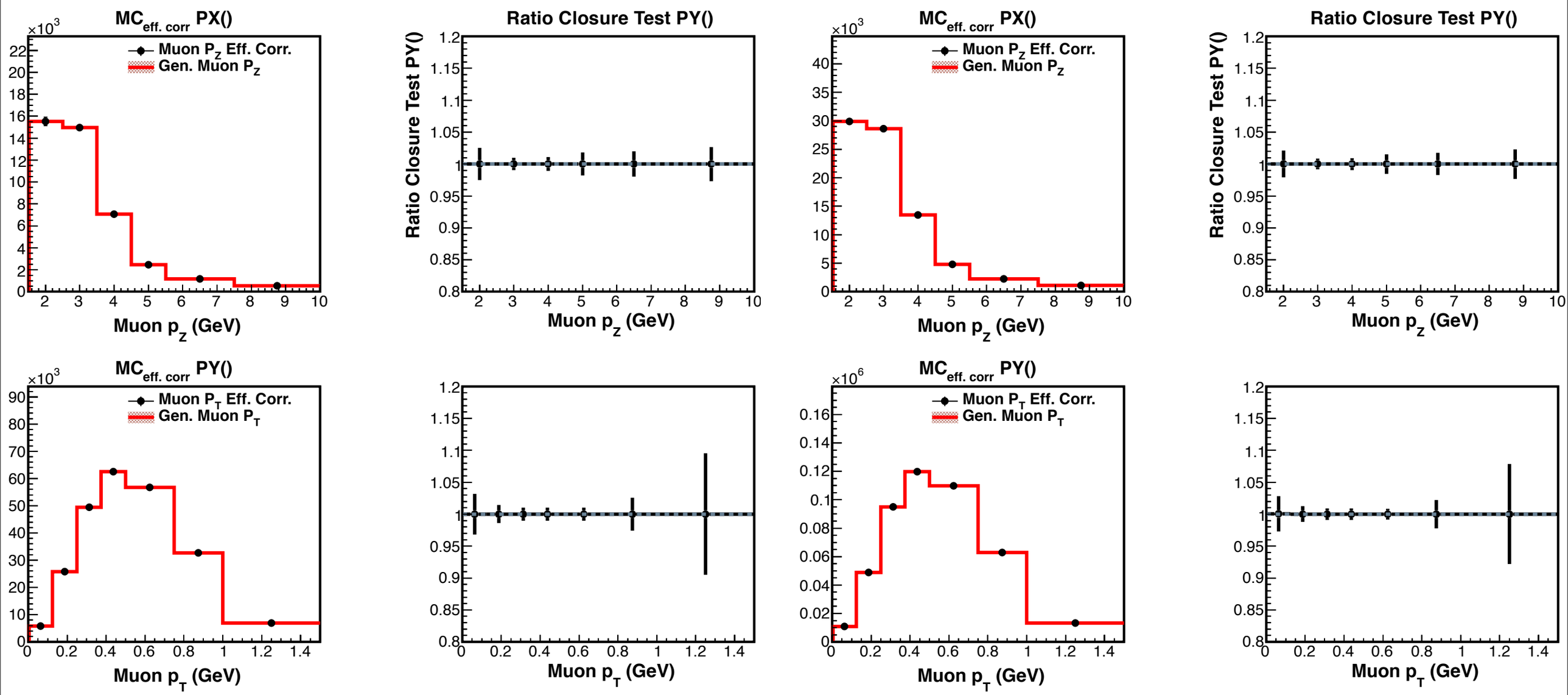
Playlist: 13



MC Closure: Efficiency Corrected

Playlist: 1+7+9

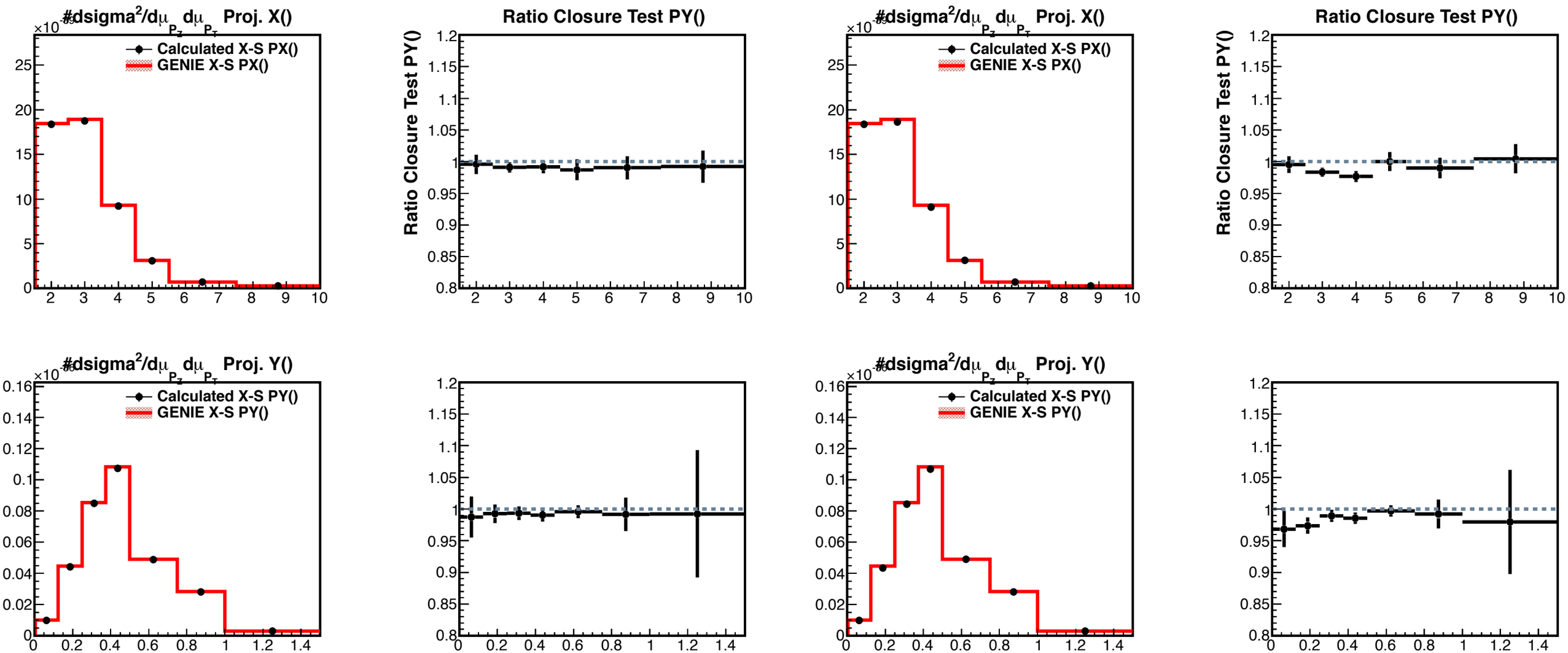
Playlist: 13



MC Closure: Cross-Sections

Playlist: 1+7+9

Playlist: 13

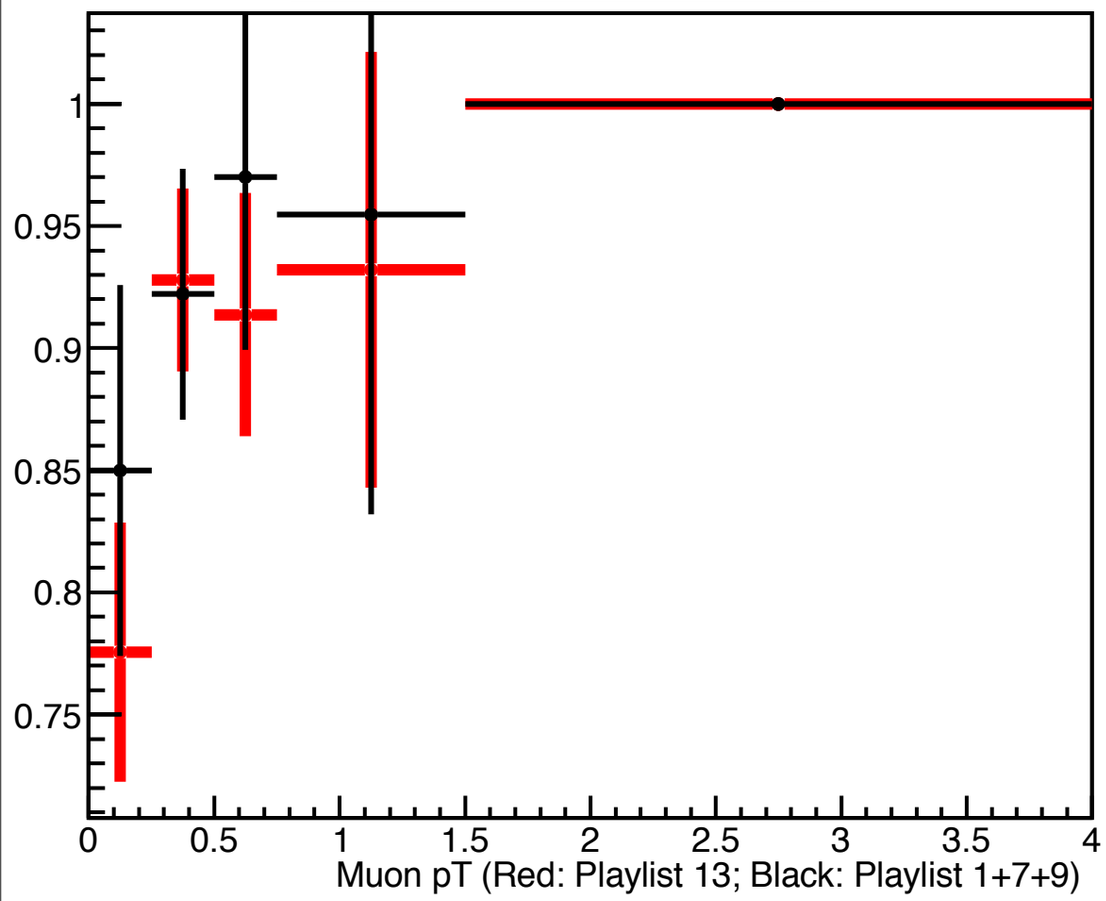


DATA Playlists
"1" and "13"

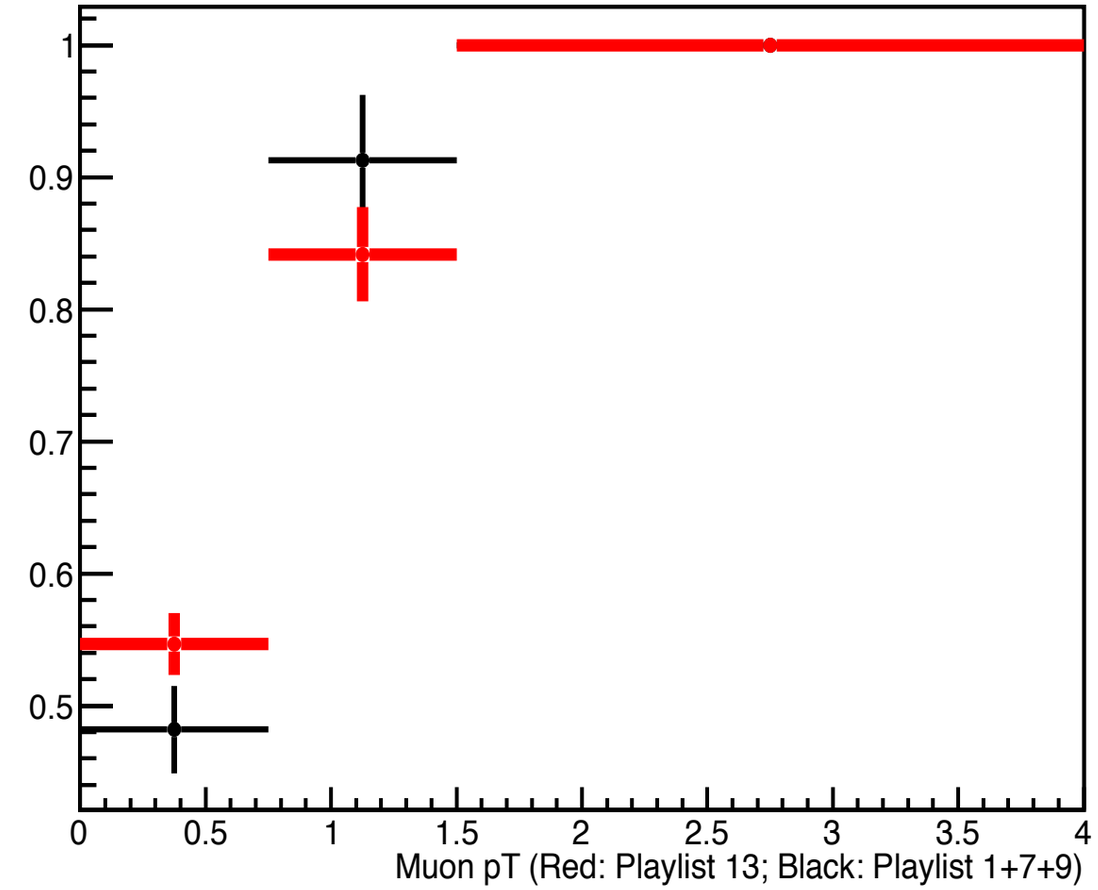
No cross-unfolding here i.e.
Unfold DATA "1" with smearing matrix "1"
Unfold DATA "13" with smearing matrix "13"

DATA: Background Weights

Muon Track



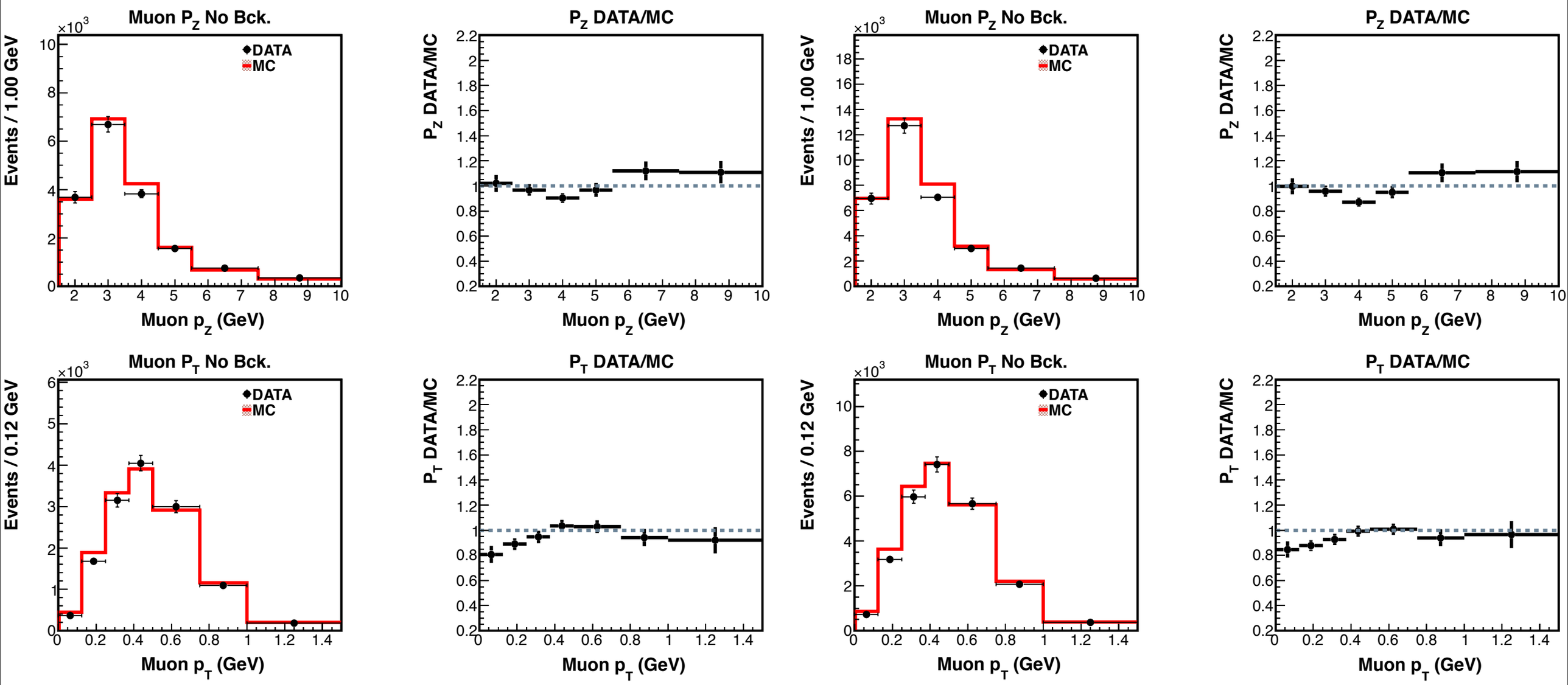
Muon+Proton Track



DATA: Background Subtracted

Playlist: 1+7+9

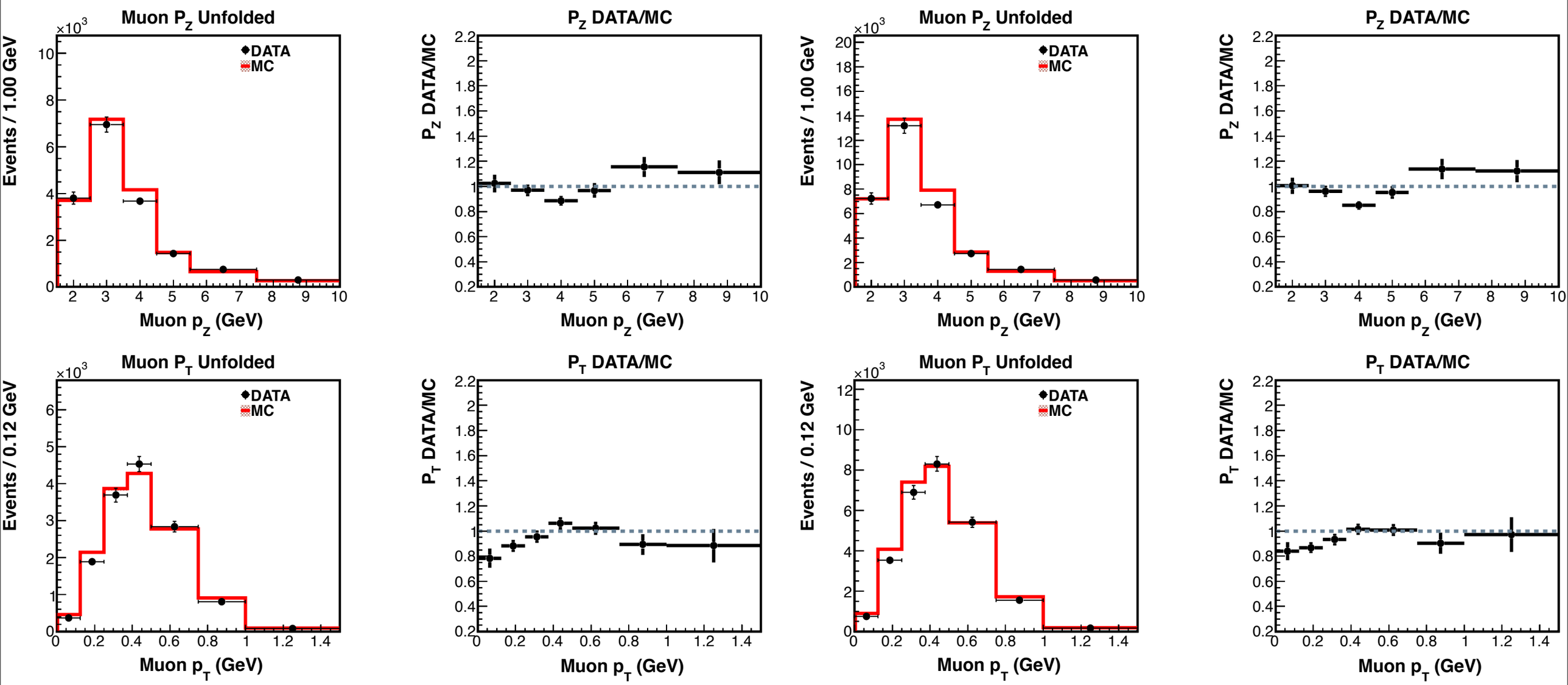
Playlist: 13



DATA: Unfolded

Playlist: 1+7+9

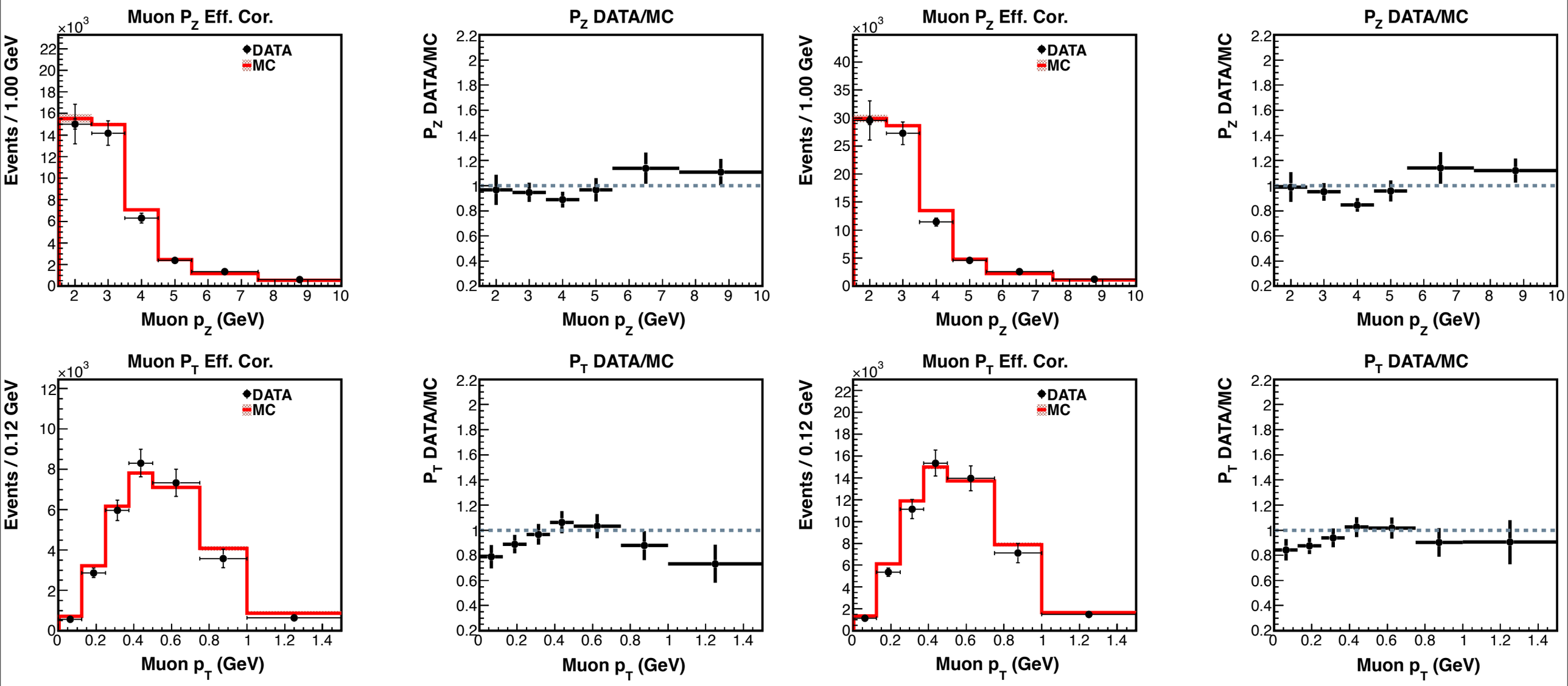
Playlist: 13



DATA: Efficiency Corrected

Playlist: 1+7+9

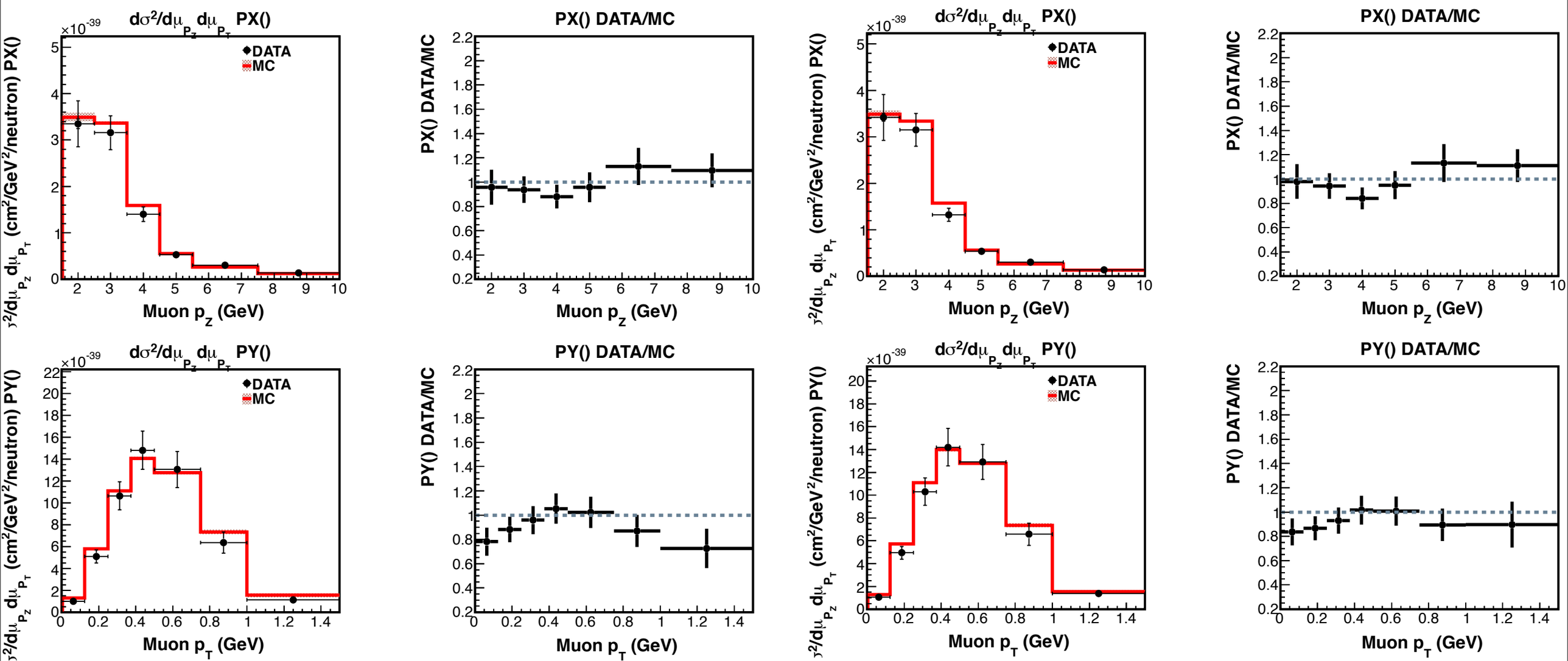
Playlist: 13



DATA Cross-Section: pZ & pT

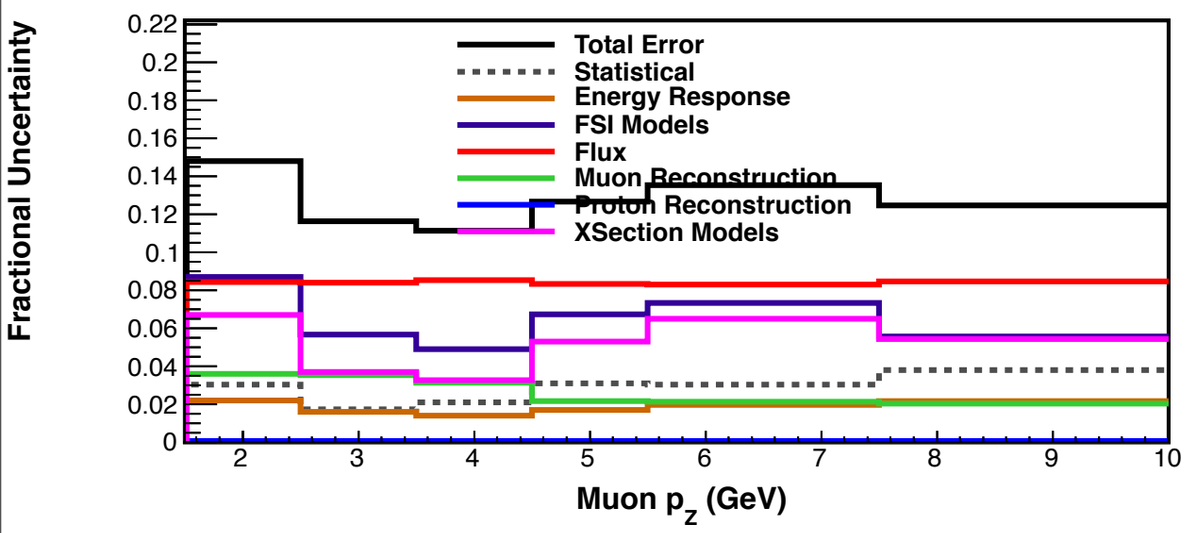
Playlist: 1+7+9

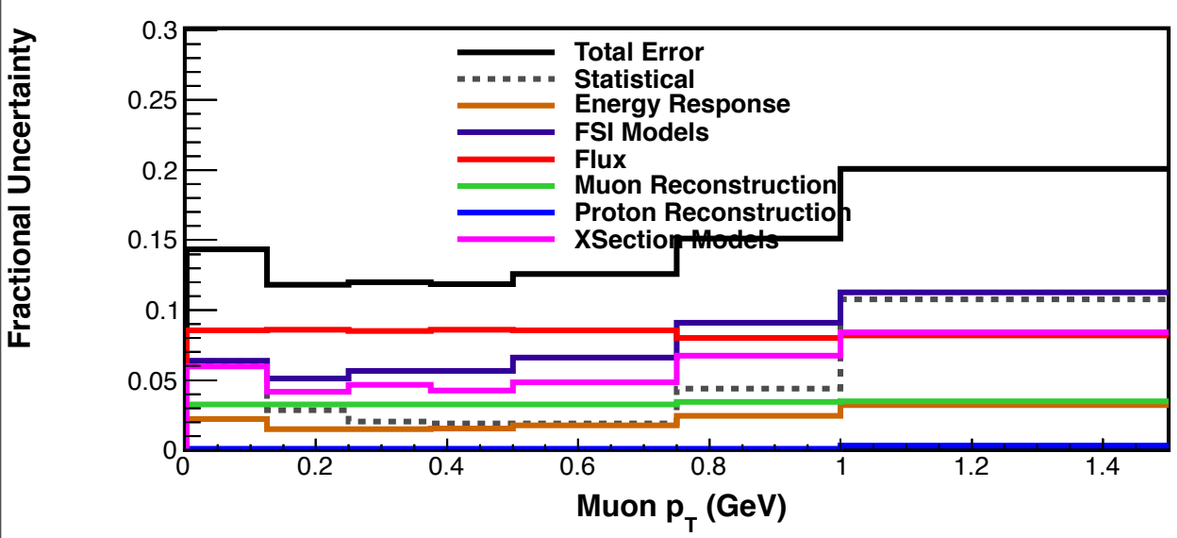
Playlist: 13



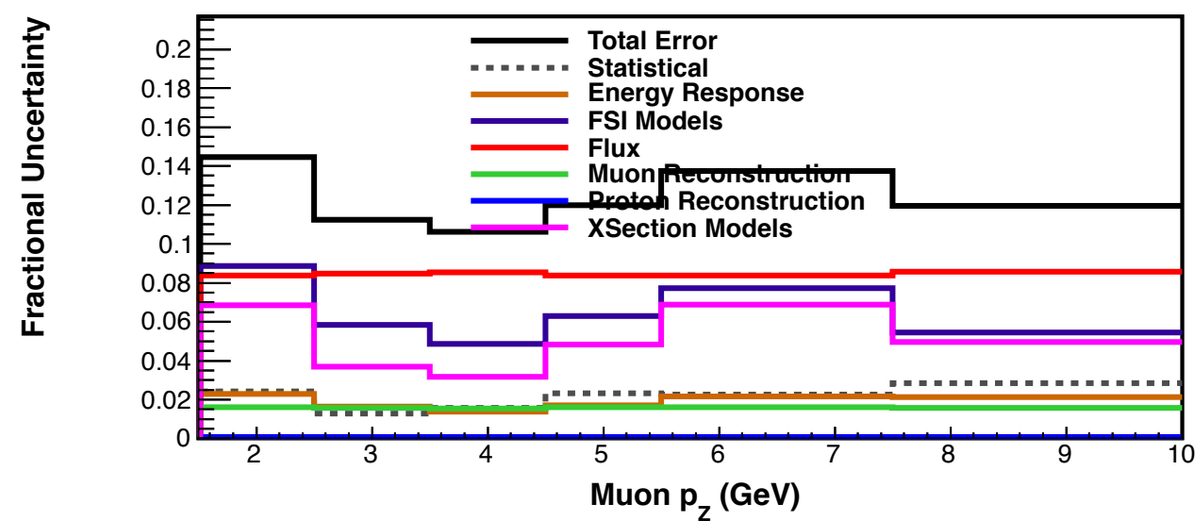
Error Summaries

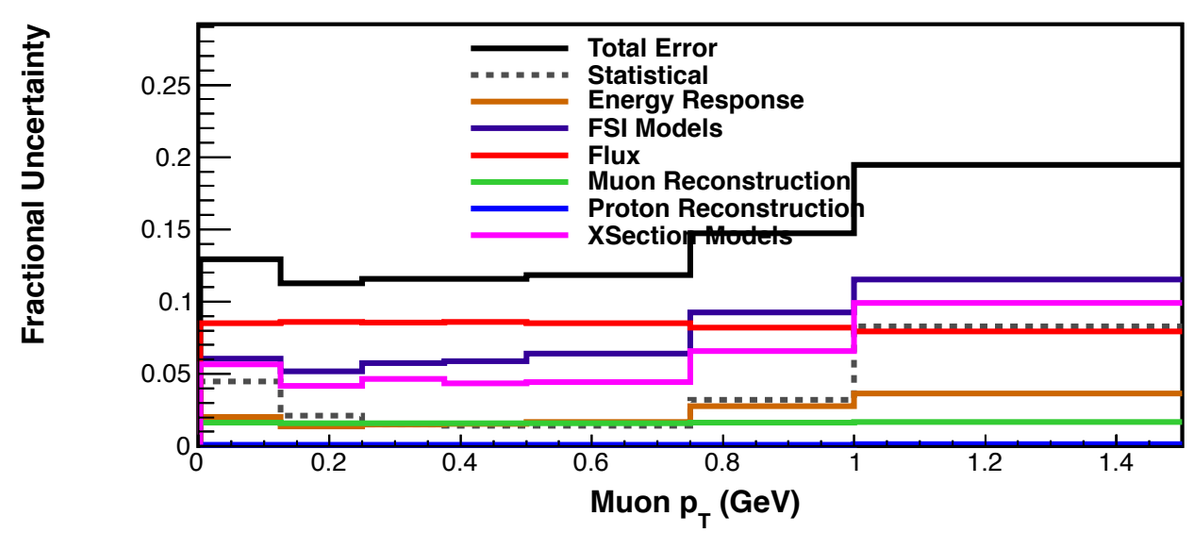
Playlist: 1+7+9





Playlist: 13





DATA Playlists
"1"

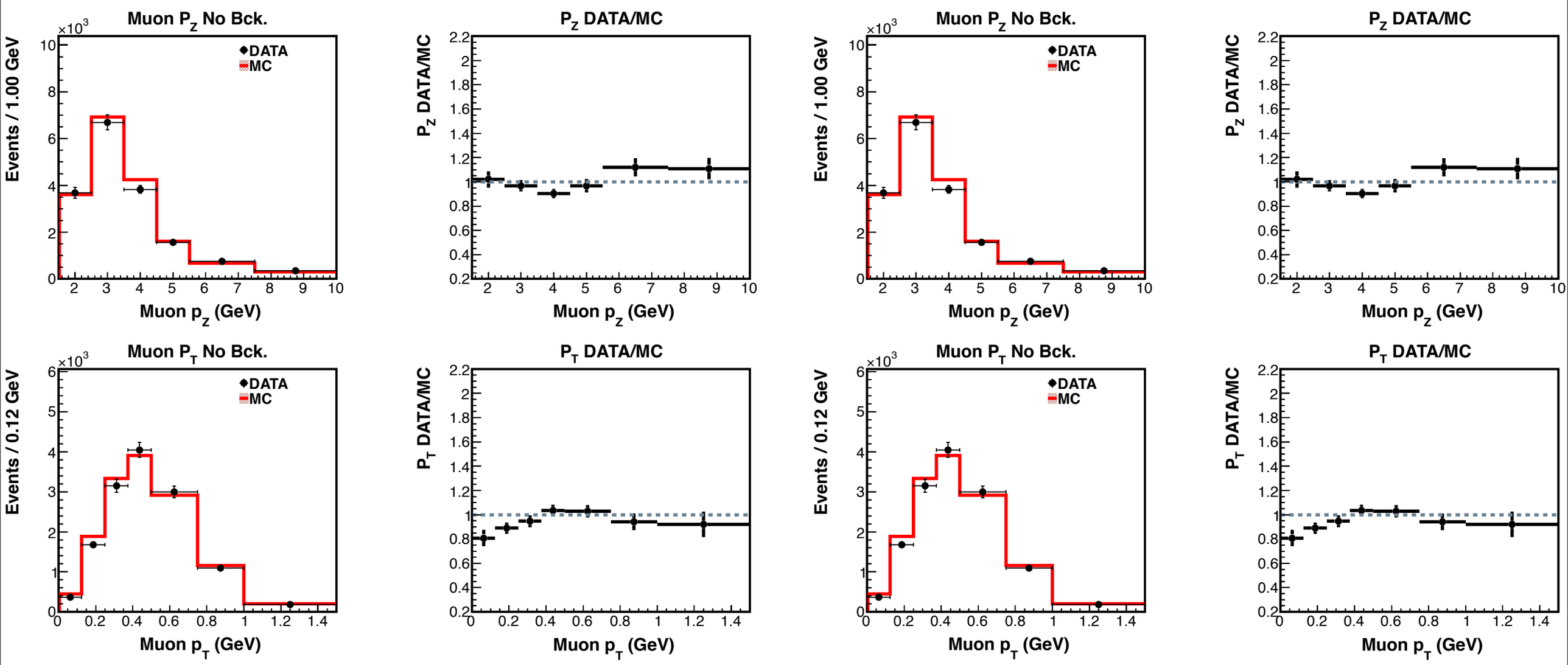
Cross-unfolding done i.e.
Unfold DATA "1" with smearing matrix "13"

Compare with
Unfold DATA "1" with smearing matrix "1"

DATA: Background Subtracted

Playlist: 1+7+9
Unfolded with 1+7+9

Playlist: 1+7+9
Unfolded with 13

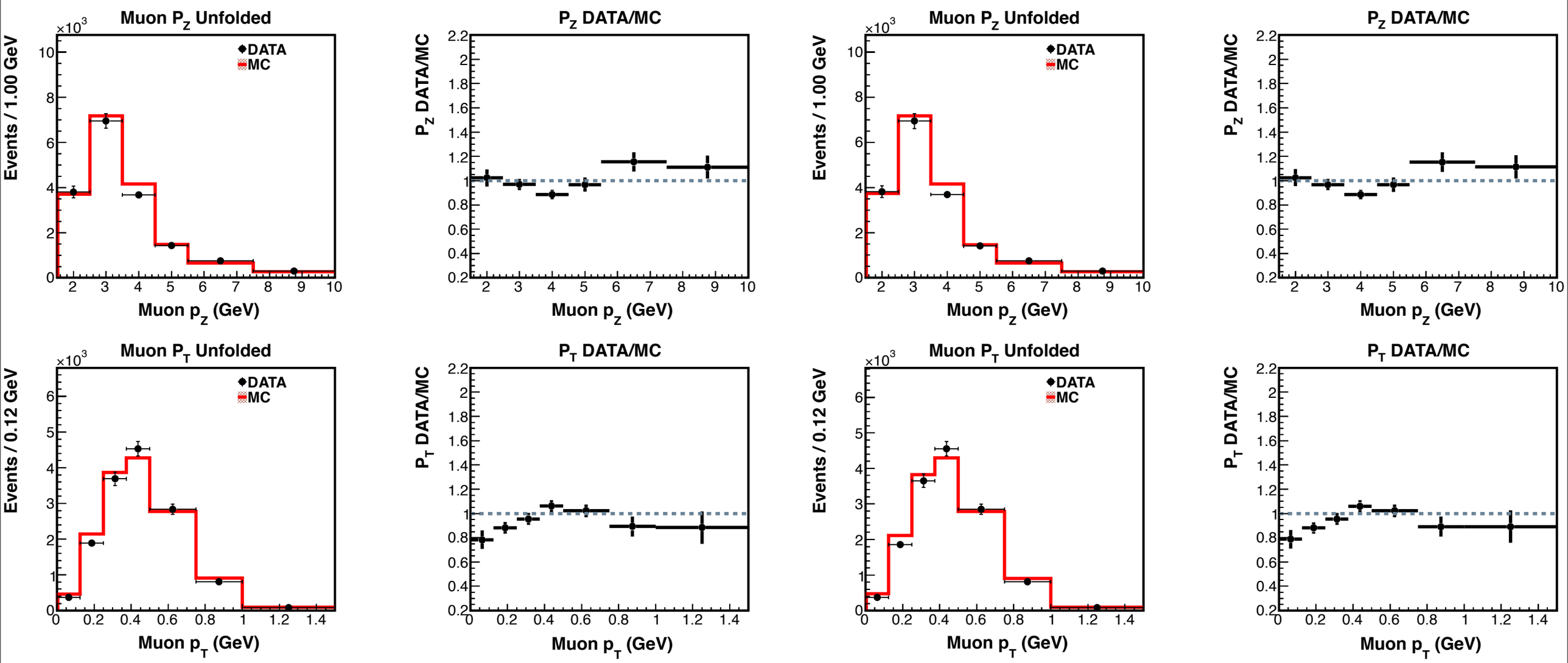


Obviously this won't change, the background is the same

DATA: Unfolded

Playlist: 1+7+9
Unfolded with 1+7+9

Playlist: 1+7+9
Unfolded with 13

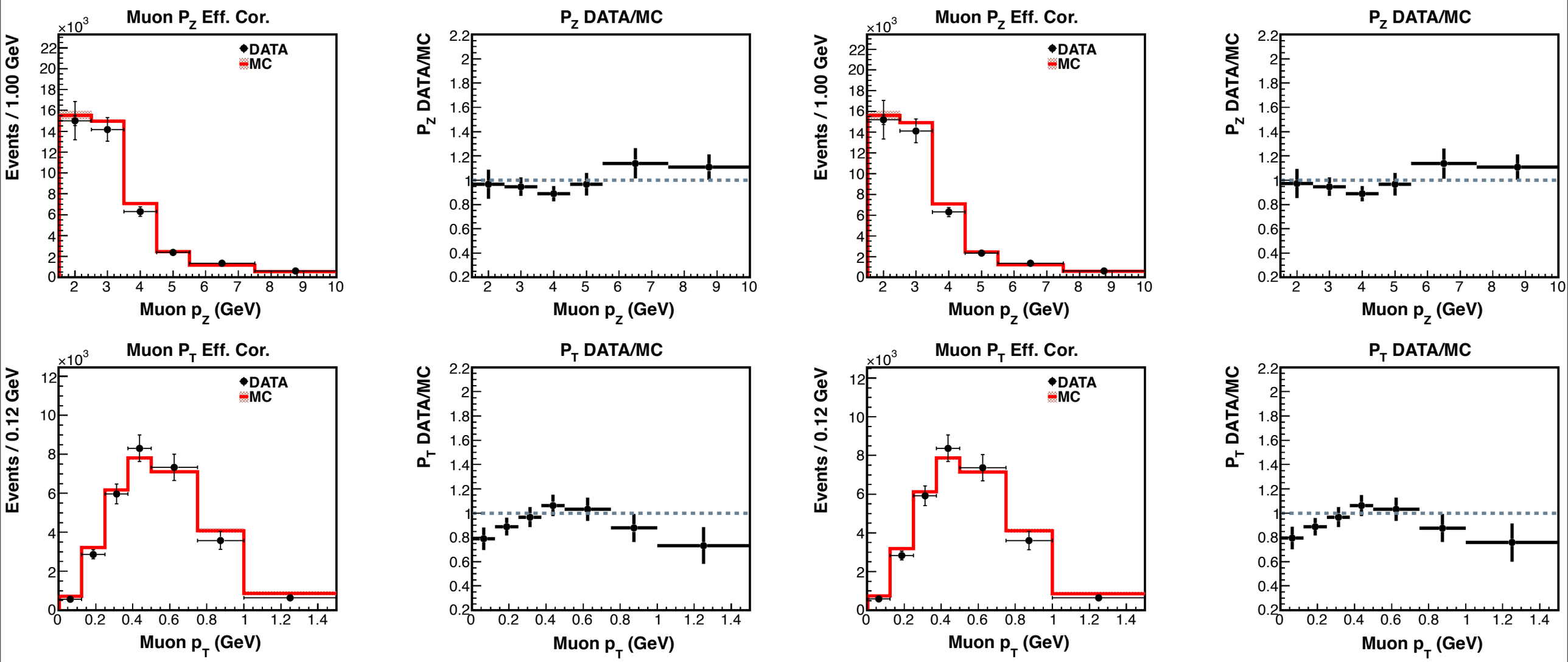


Very tiny change, notice it in last 2 p_T bins in ratio plots

DATA: Efficiency Corrected

Playlist: 1+7+9
Unfolded with 1+7+9

Playlist: 1+7+9
Unfolded with 13

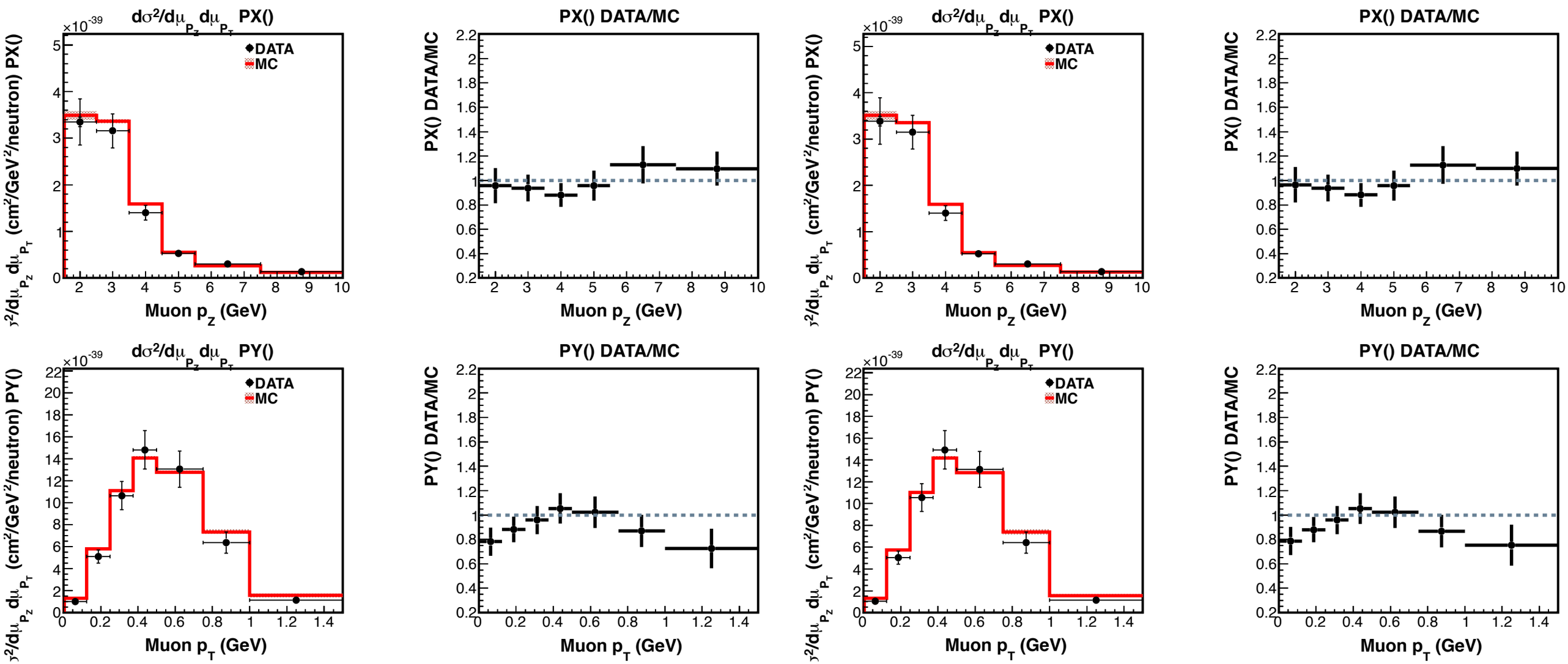


I don't see any change, should I ?

DATA Cross-Section: pZ & pT

Playlist: 1+7+9
Unfolded with 1+7+9

Playlist: 1+7+9
Unfolded with 13



DATA Playlists
"13"

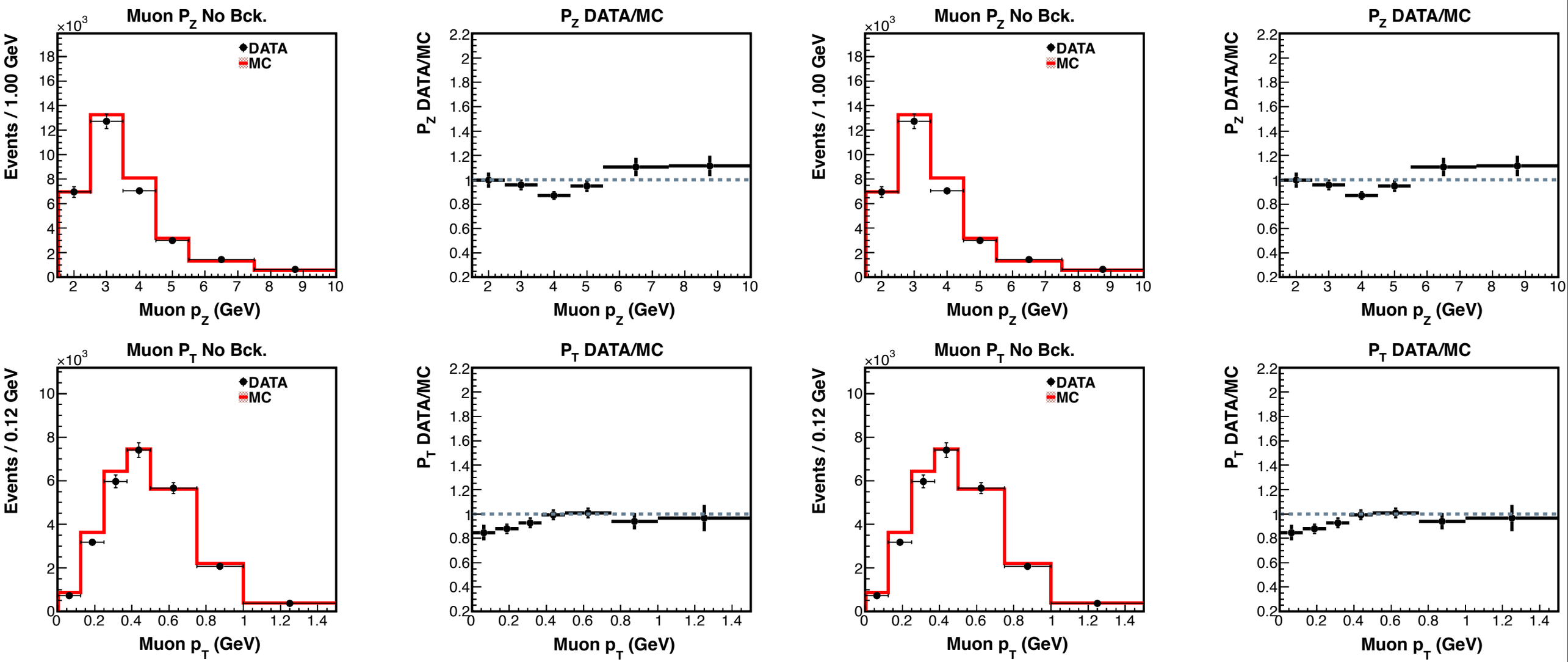
Cross-unfolding done i.e.
Unfold DATA "13" with smearing matrix "1"

Compare with
Unfold DATA "13" with smearing matrix "13"

DATA: Background Subtracted

Playlist:13
Unfolded with 13

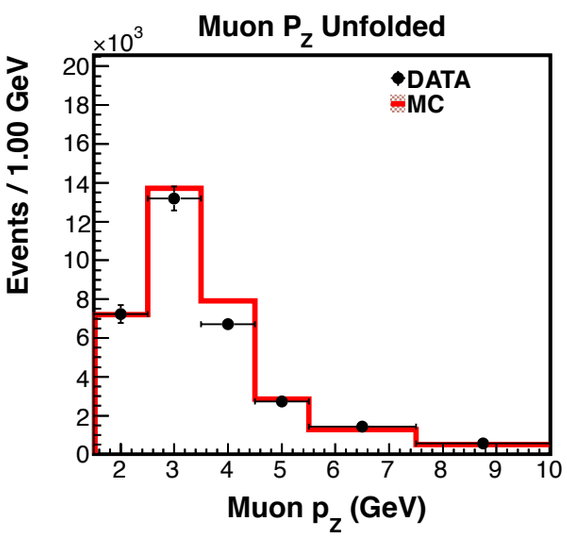
Playlist:13
Unfolded with 1+7+9

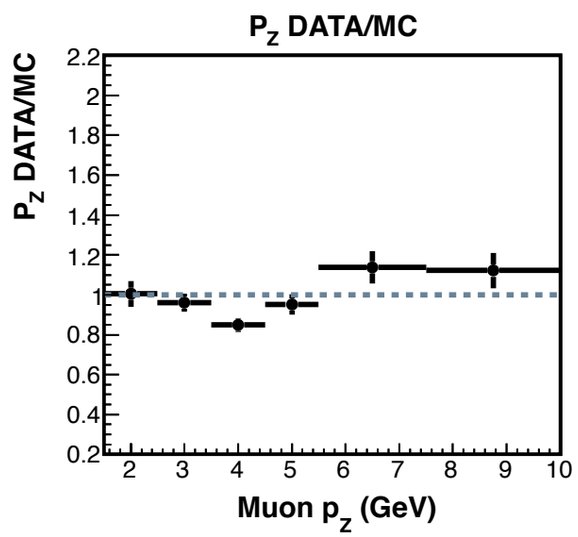


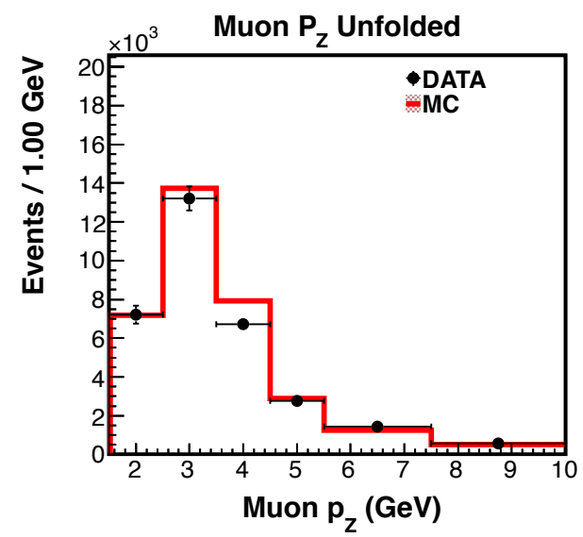
DATA: Unfolded

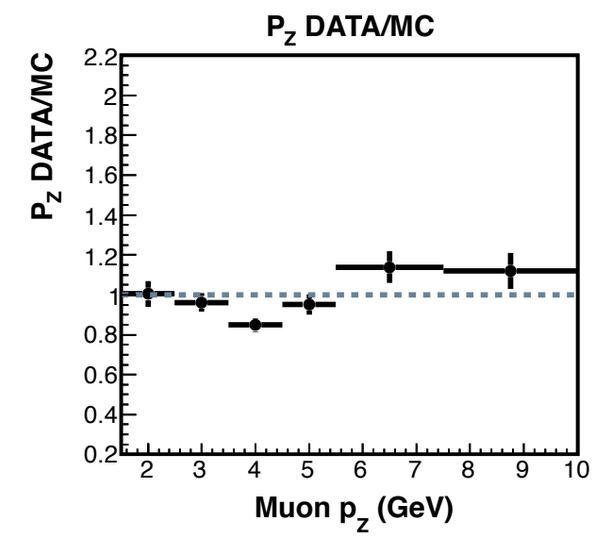
Playlist:13
Unfolded with 13

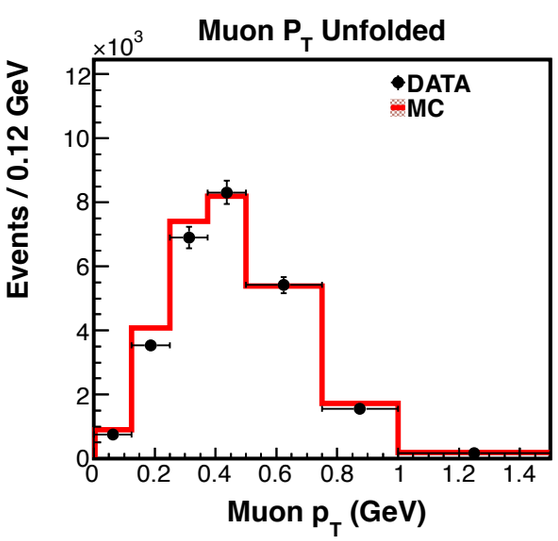
Playlist:13
Unfolded with 1+7+9

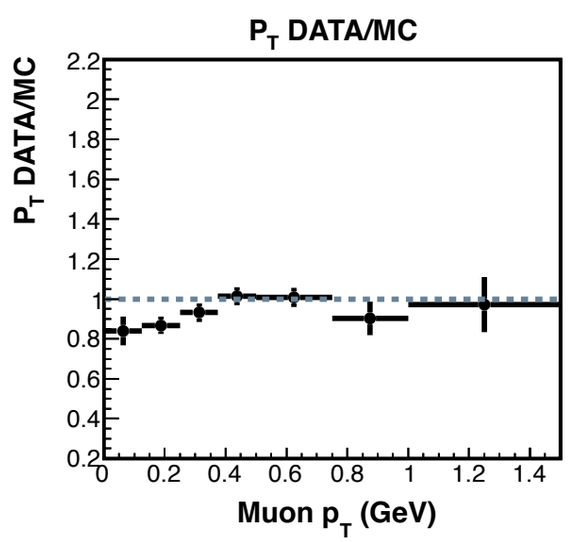


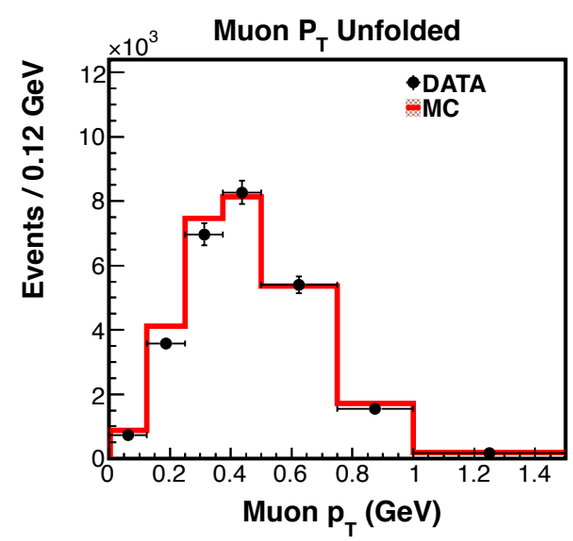


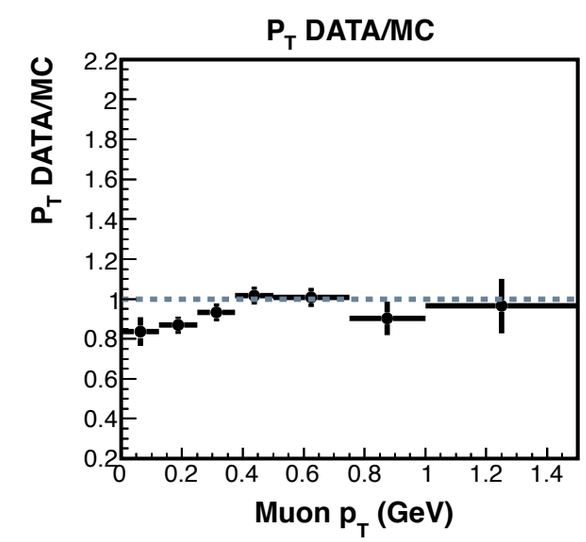








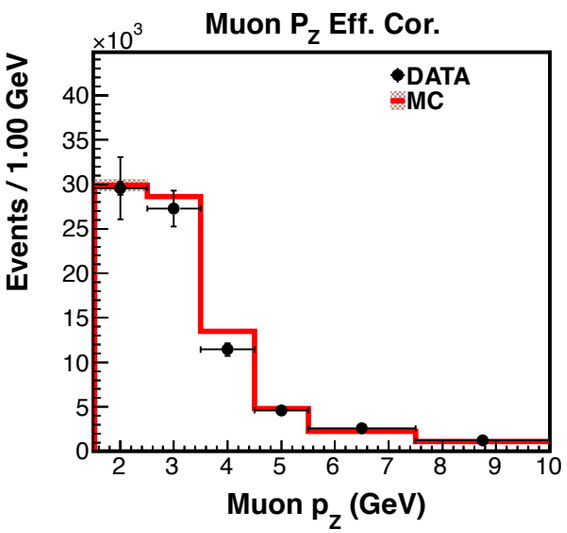


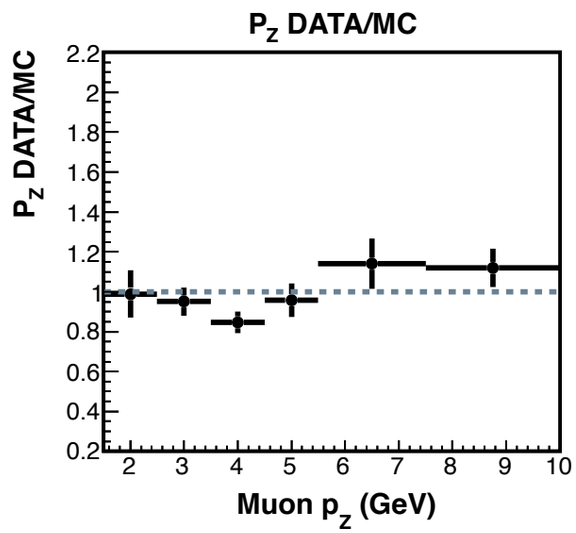


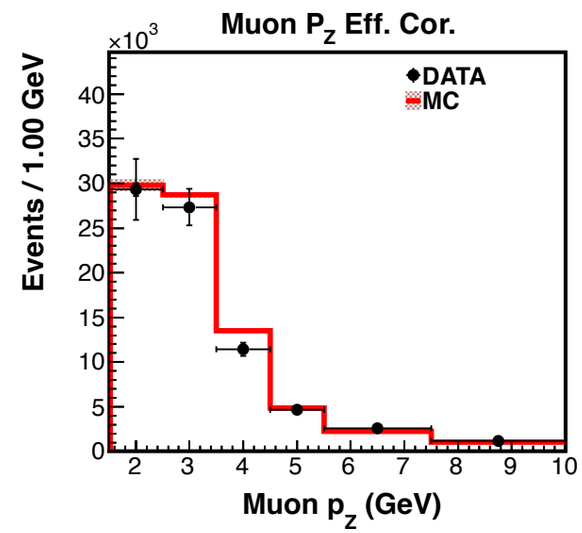
DATA: Efficiency Corrected

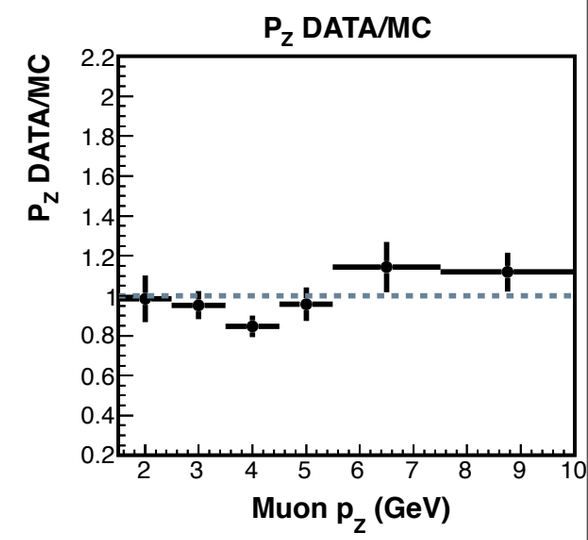
Playlist:13
Unfolded with 13

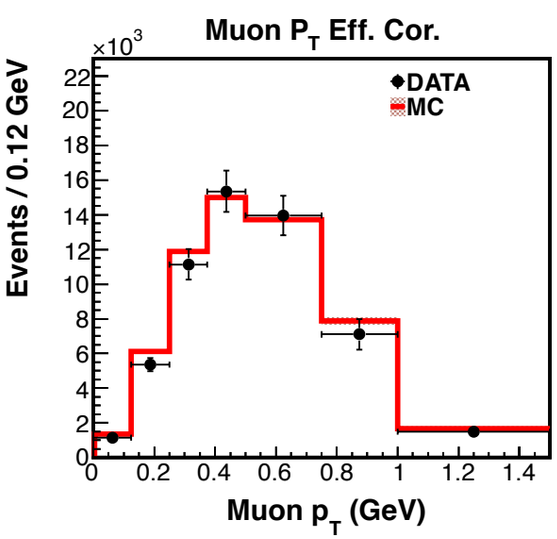
Playlist:13
Unfolded with 1+7+9

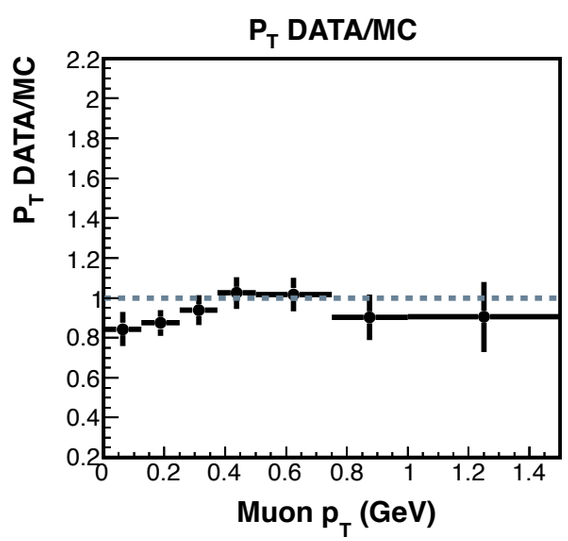


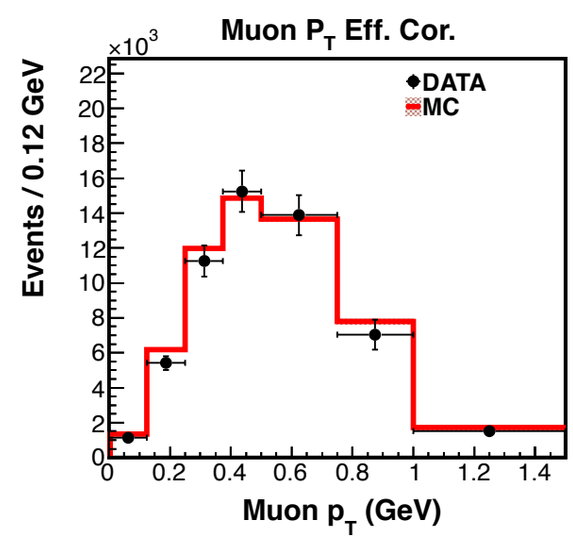


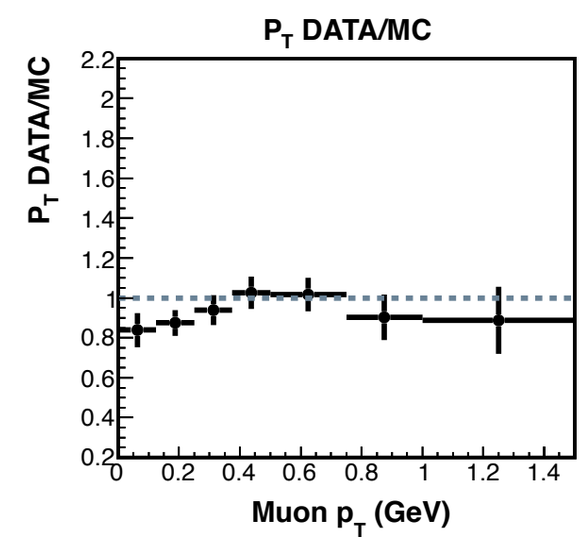










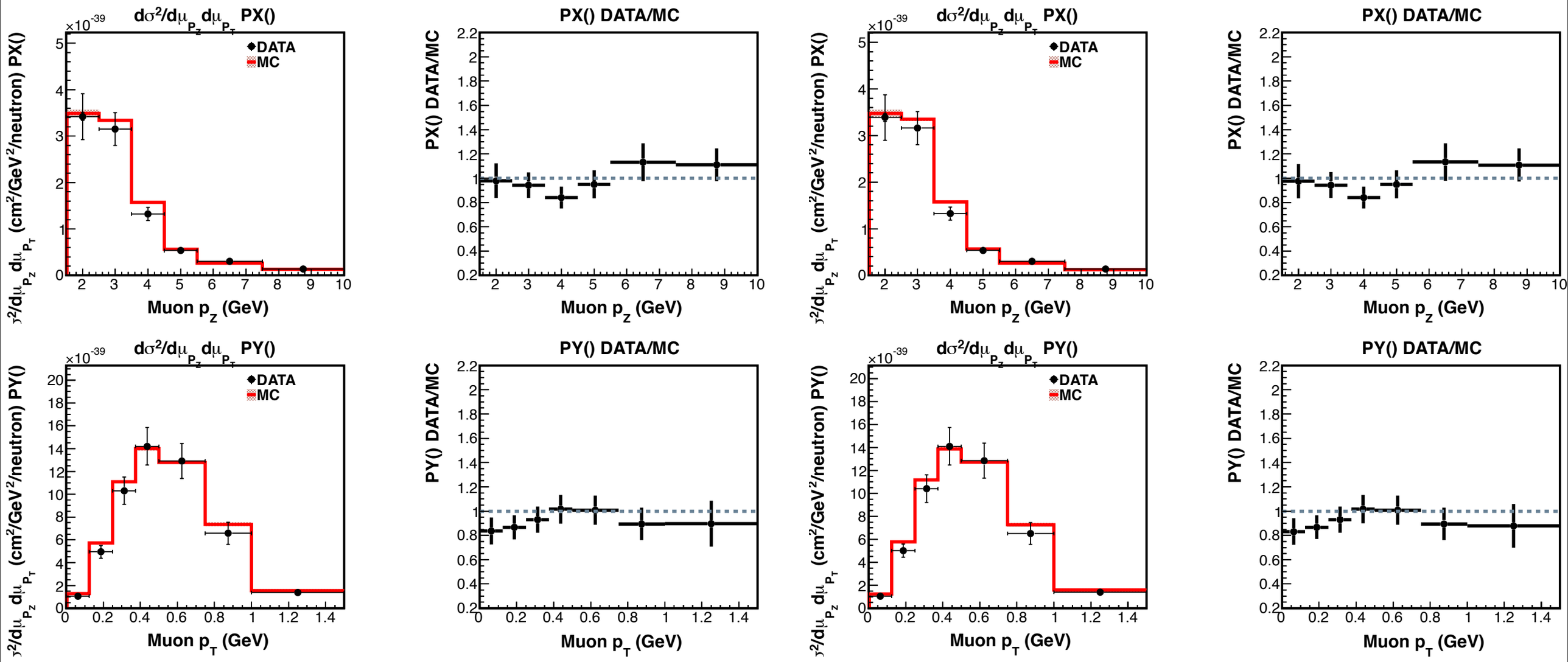


Very tiny change, notice it in last 2 p_T bins in ratio plots

DATA Cross-Section: pZ & pT

Playlist:13
Unfolded with 13

Playlist:13
Unfolded with 1+7+9



POT for DATA & MC
After MinModDepCCQE processing

- Playlist 1:
  - DATA: 0.920 E+20
  - MC: 6.929 E+20
- Playlist 7:
  - DATA: 0.025 E+20
  - MC: 0.777 E+20
- Playlist 9:
  - DATA: 0.063 E+20
  - MC: 0.789 E+20
- Playlist 13:
  - DATA: 1.944 E+20
  - MC: 11.481 E+20

- Total DATA POT : 2.952 E+20
- Total MC POT : 19.976 E+20

- For playlist 1 ratios: : DATA: 0.3116; MC: 0.3469
- For playlist 7 ratios: : DATA: 0.00847; MC: 0.03890
- For playlist 9 ratios: : DATA: 0.0213; MC: 0.03950
- For playlist 13 ratios: : DATA: 0.65853; MC : 0.57474