



Medida da secção eficaz do TTbar

Céu Neiva
José Fernandes

Região de sinal

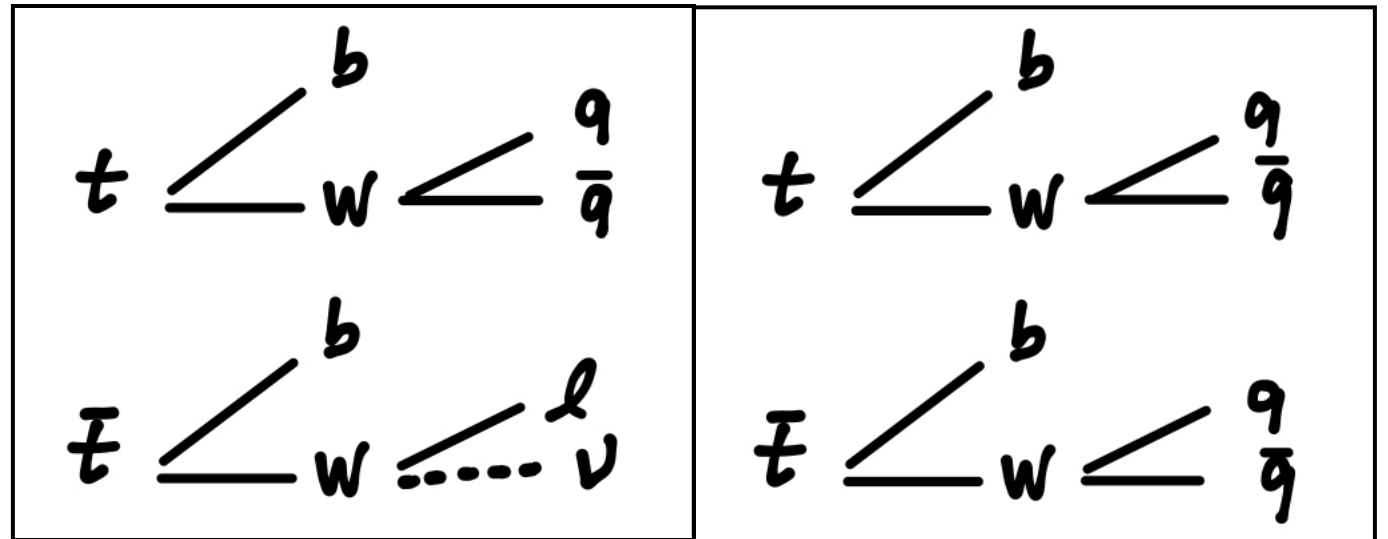
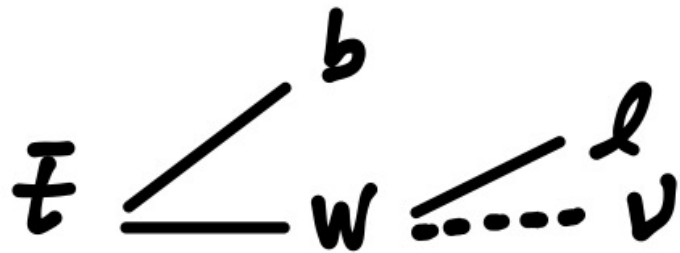
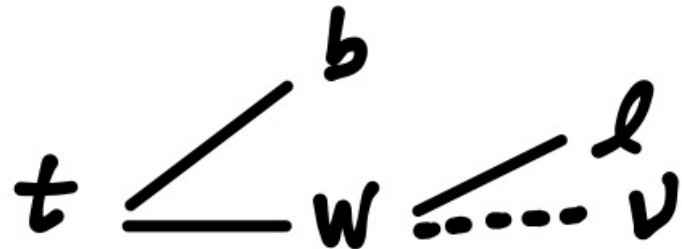
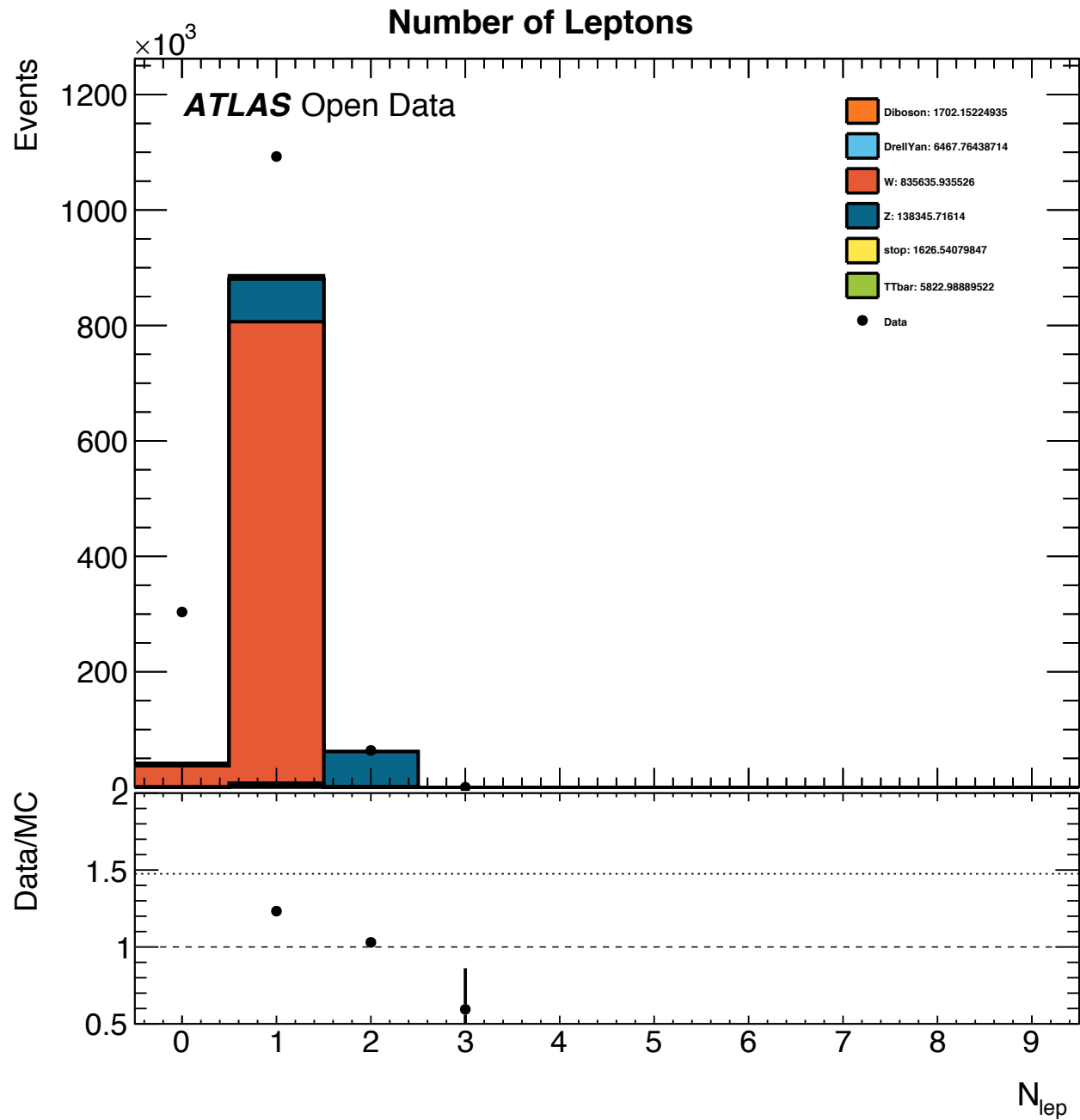


Diagrama usado:



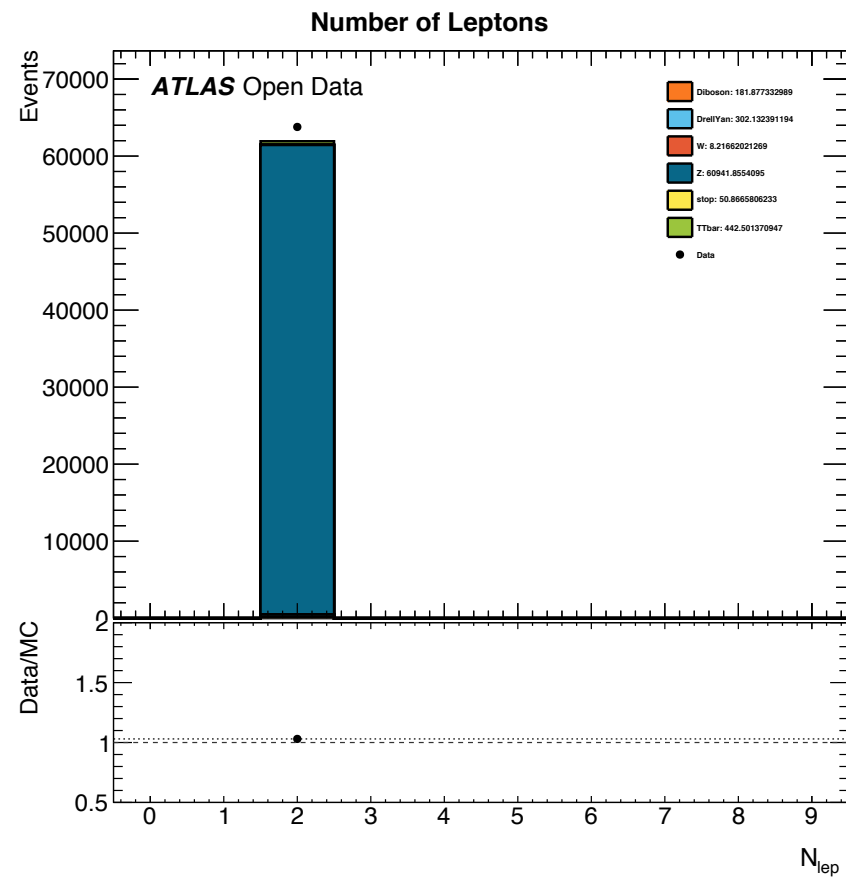
Cortes da região de sinal:

- Número de leptões (=2)
- Número de jatos (≥ 2)
- Número de btags (≥ 2)
- Massa do Z (rejeitar)

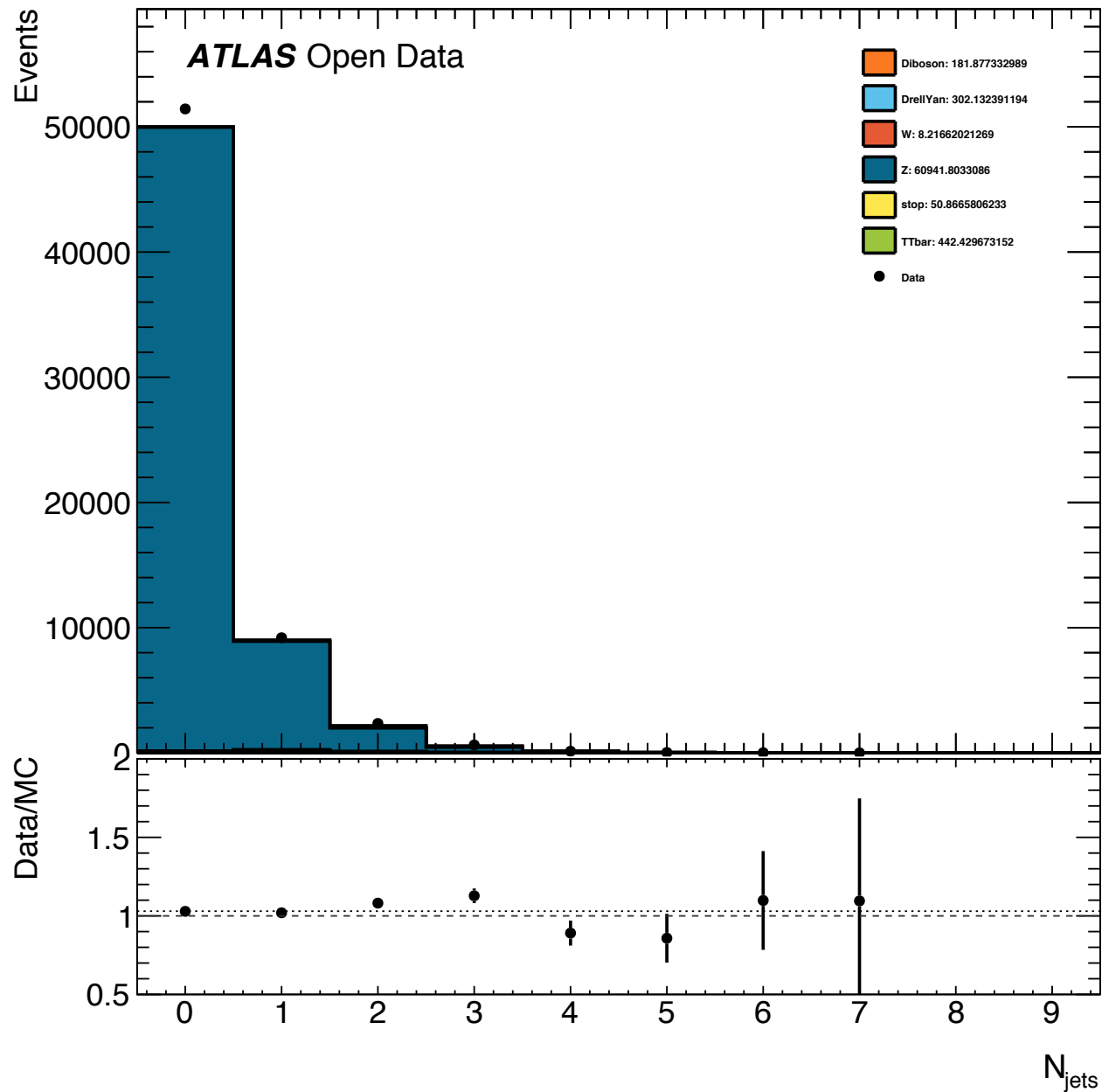


- Corte nos leptões

Número leptões == 2

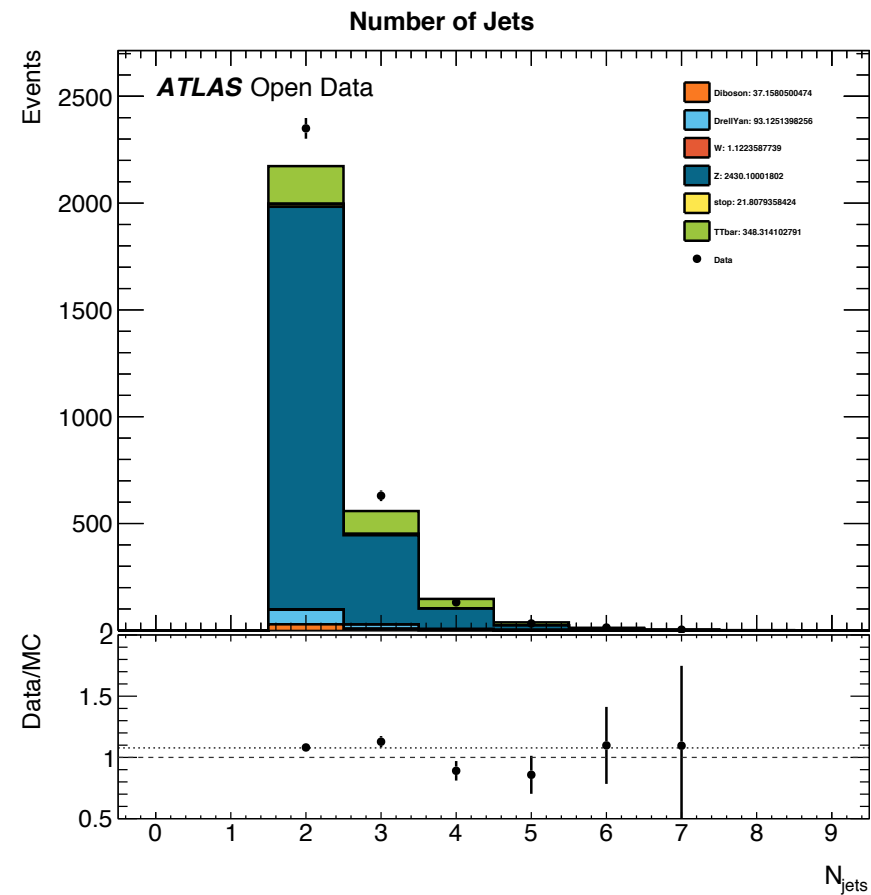


Number of Jets

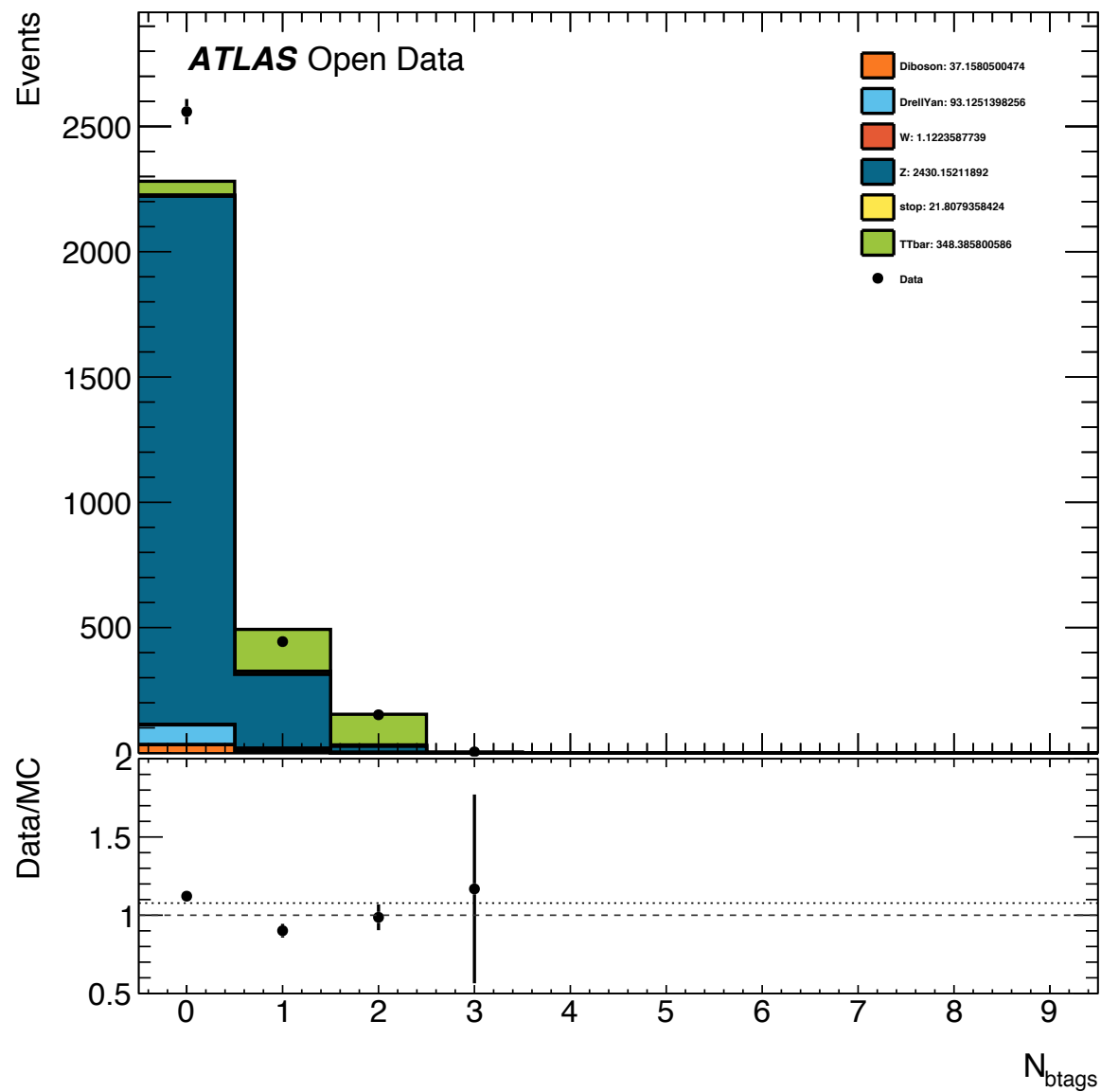


- Corte nos jatos

Número de jatos ≥ 2

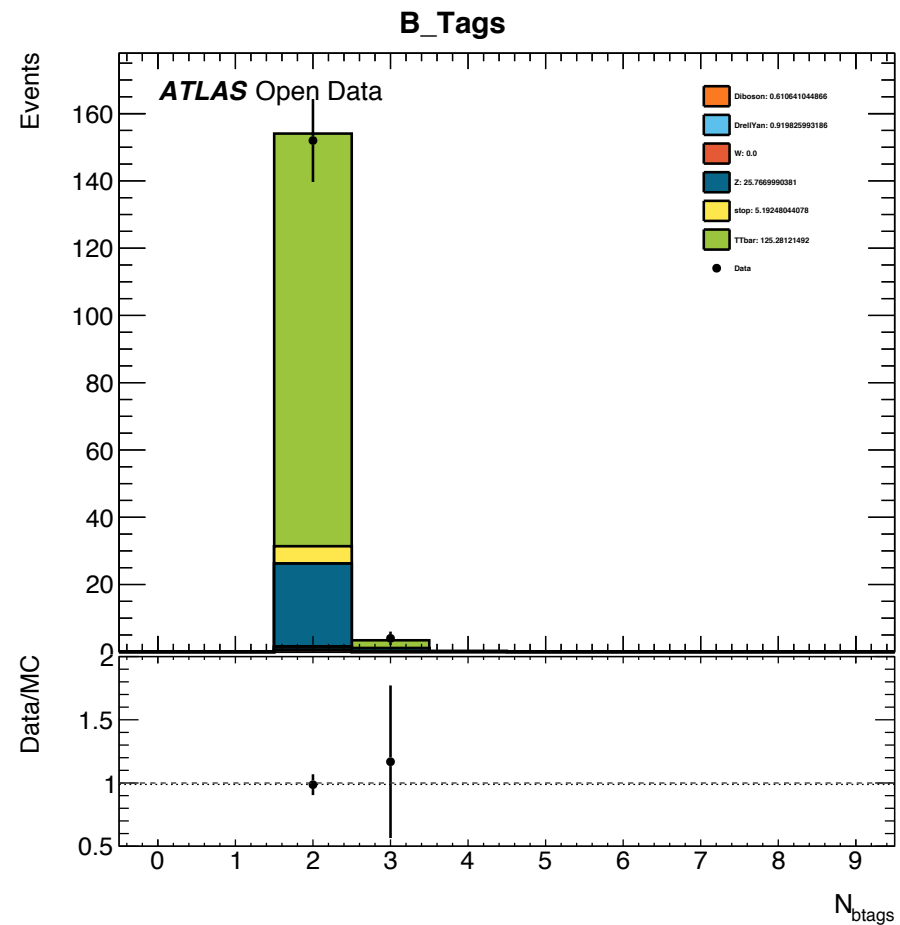


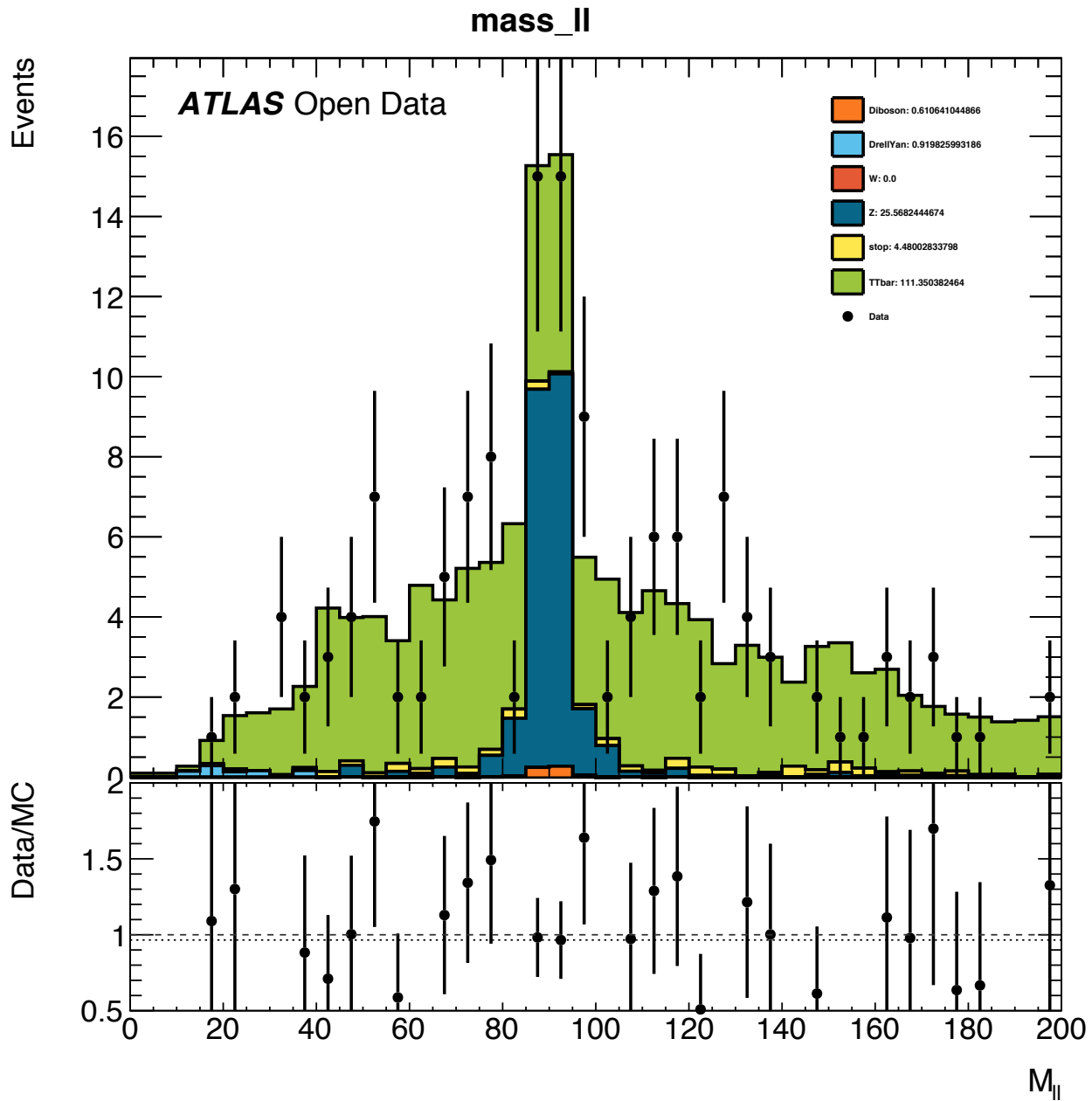
B_Tags



- Corte nos btags

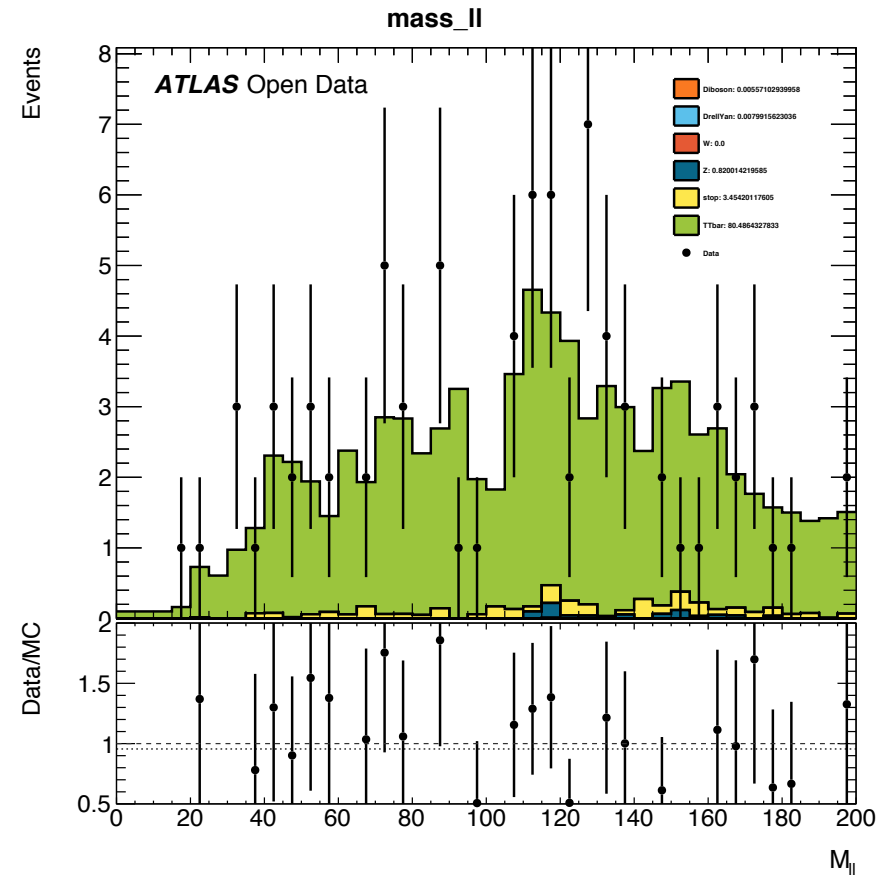
Número de btags ≥ 2



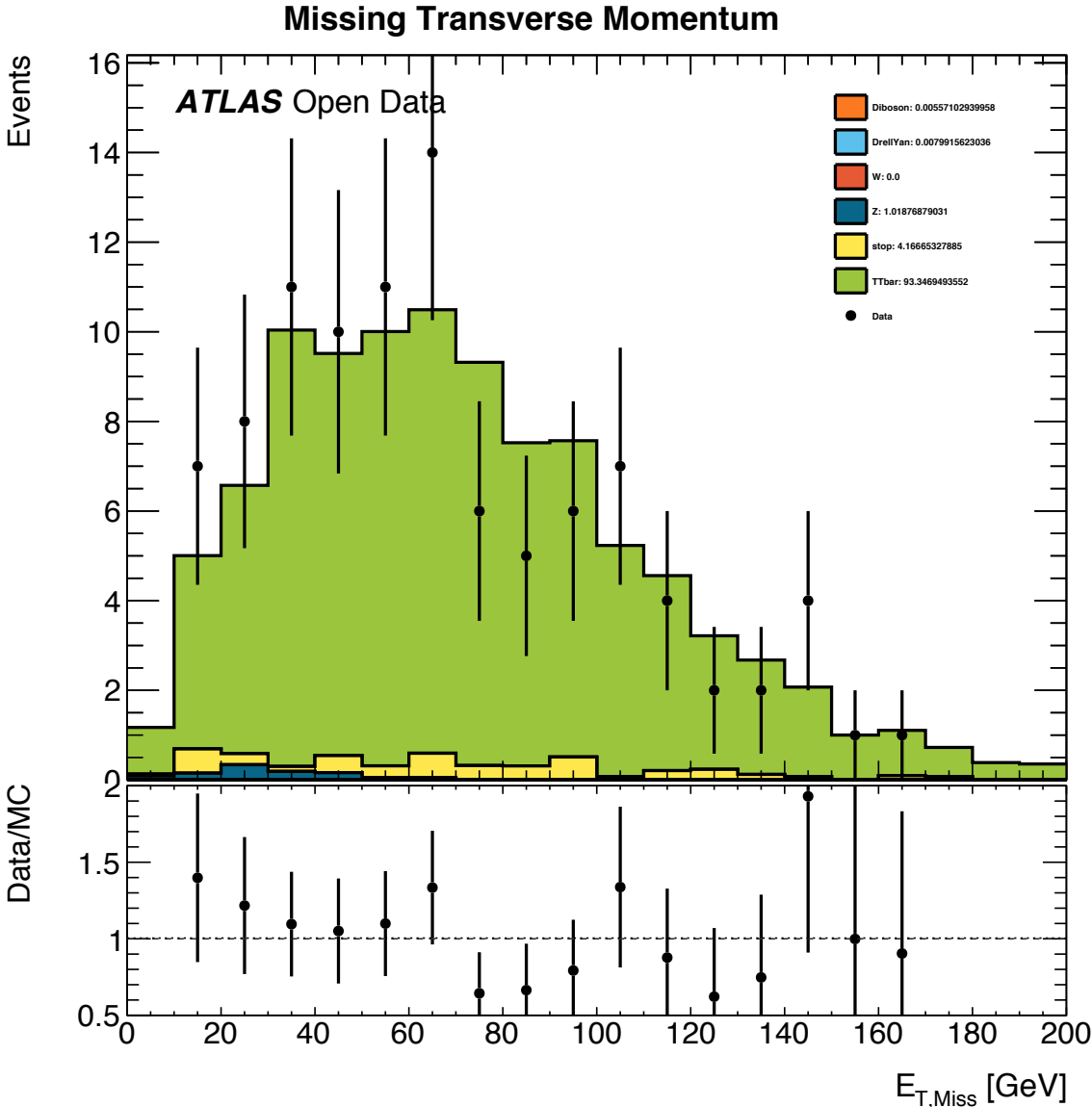
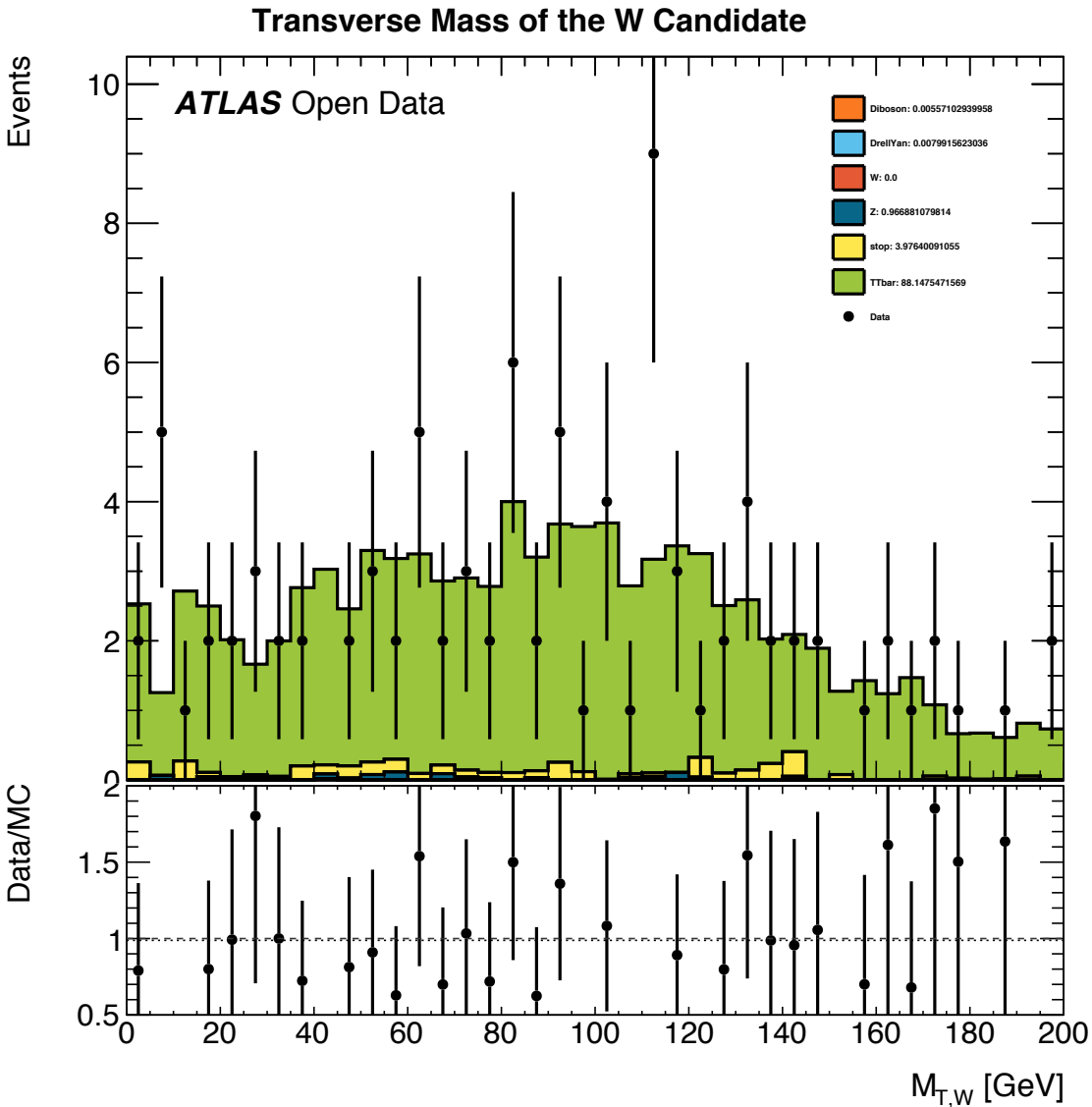


- Corte na massa dos leptões

Rejeitar massa do Z



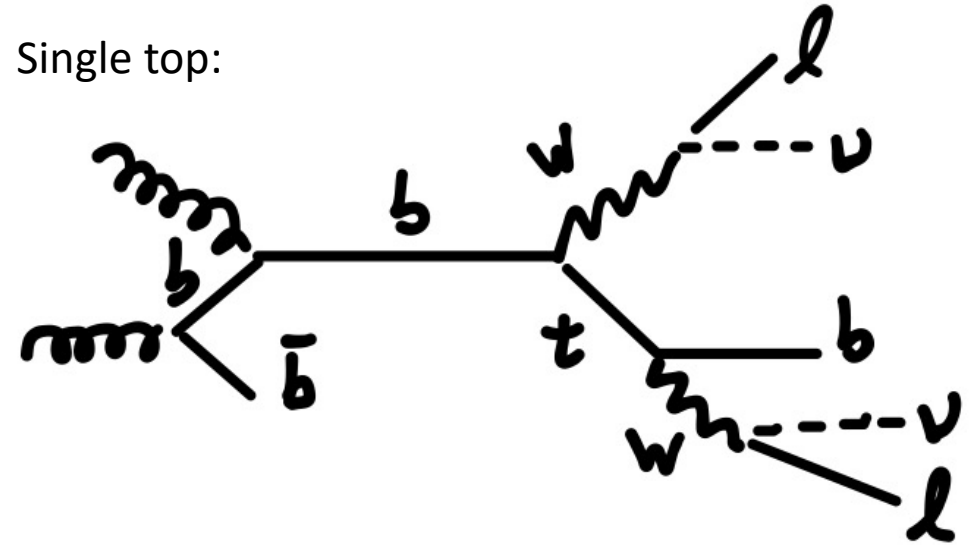
Exemplos de gráficos usados no Fit



Região de controlo

- Região de controlo de Z
- Região de controlo de Single-Top

Single top:



Cortes da região de controlo Z_2:

- Número de leptões (=2)
- Número de jatos (≥ 2)
- Número de btags (≥ 2)
- Massa do Z (aceitar)

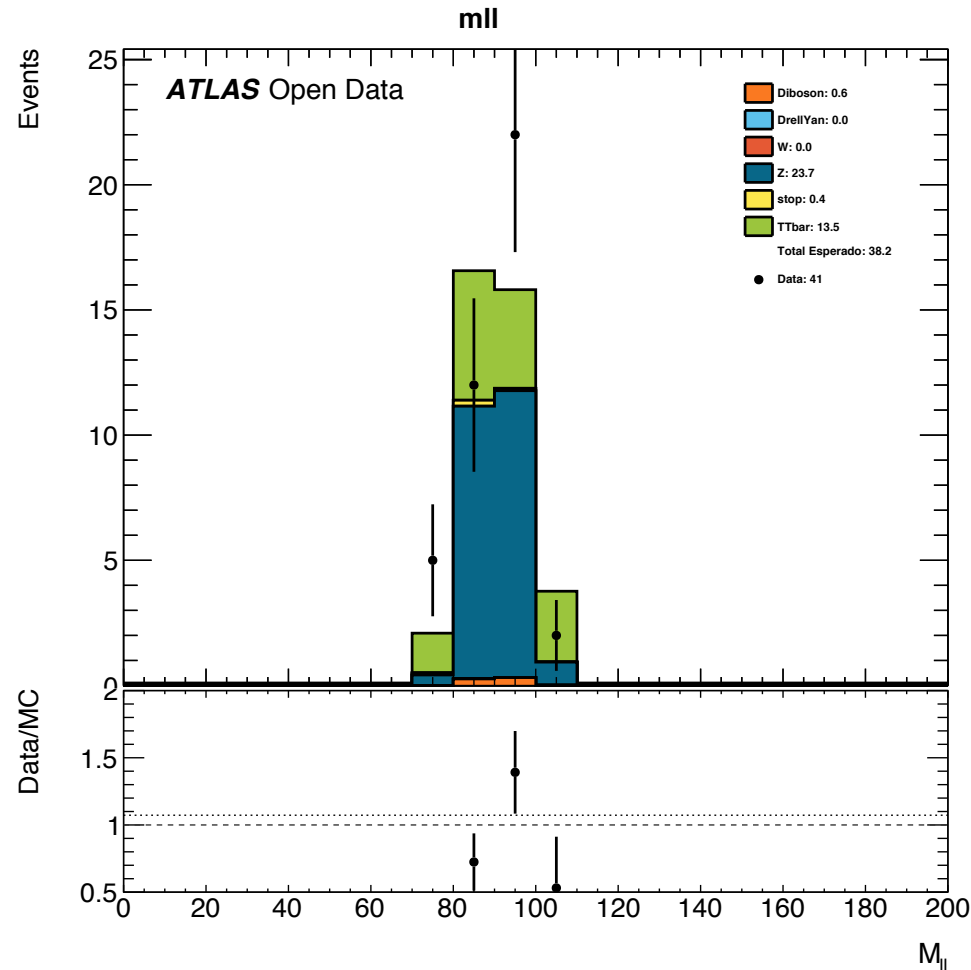
Cortes da região de controlo Z_1:

- Número de leptões (=2)
- Número de jatos (≥ 2)
- Número de btags (=1)
- Massa do Z (aceitar)

Cortes da região de controlo SingleTop:

- Número de leptões (=2)
- Número de jatos (≥ 2)
- Número de btags (=1)
- Massa do Z (rejeitar)

Região de controlo de Z_2



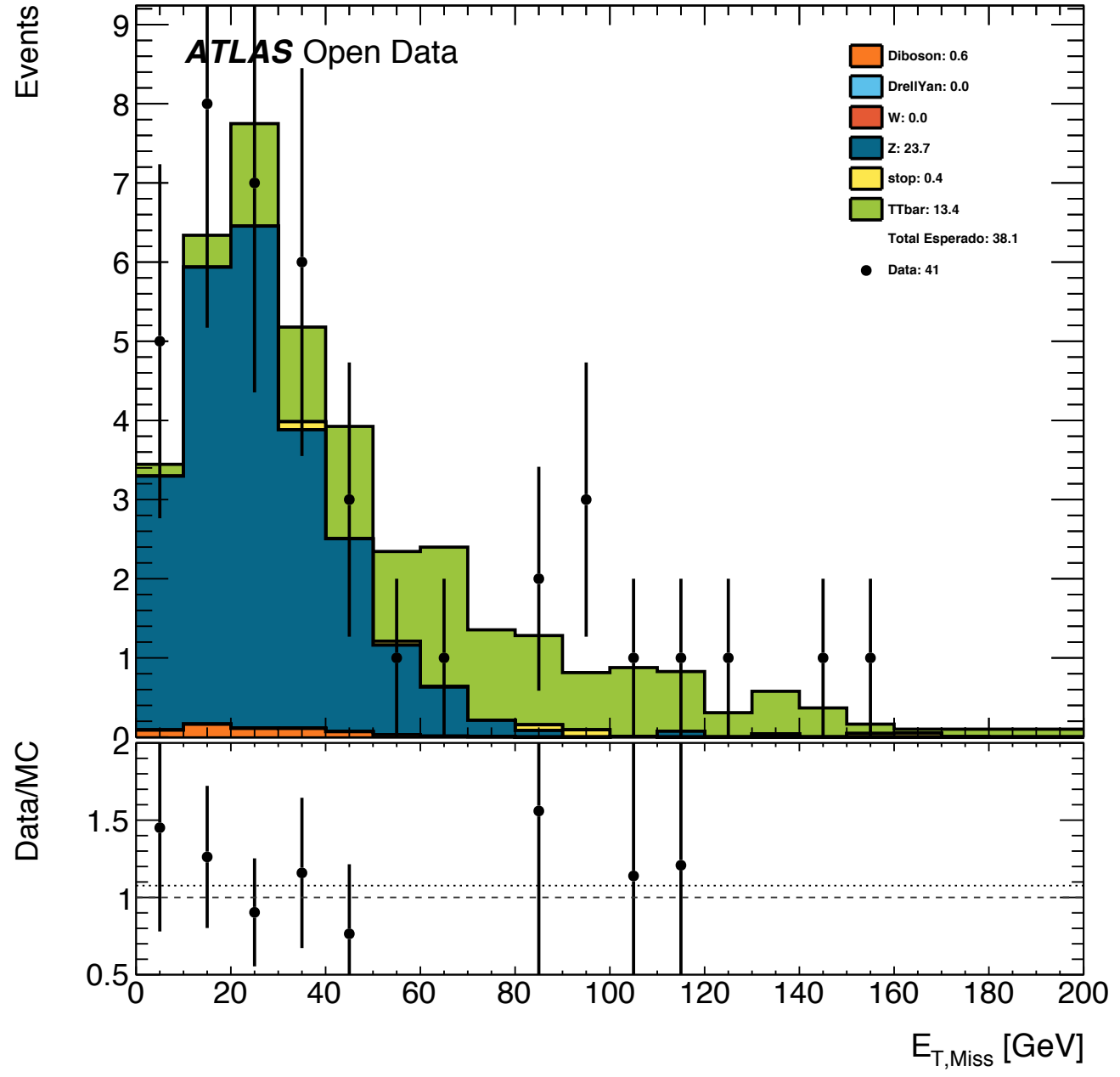
- Sequência de cortes da região de sinal

- Corte nos 2 leptões
- Corte em jatos ≥ 2
- Corte em btags ≥ 2
- Corte na massa dos leptões (rejeitar massa do Z)

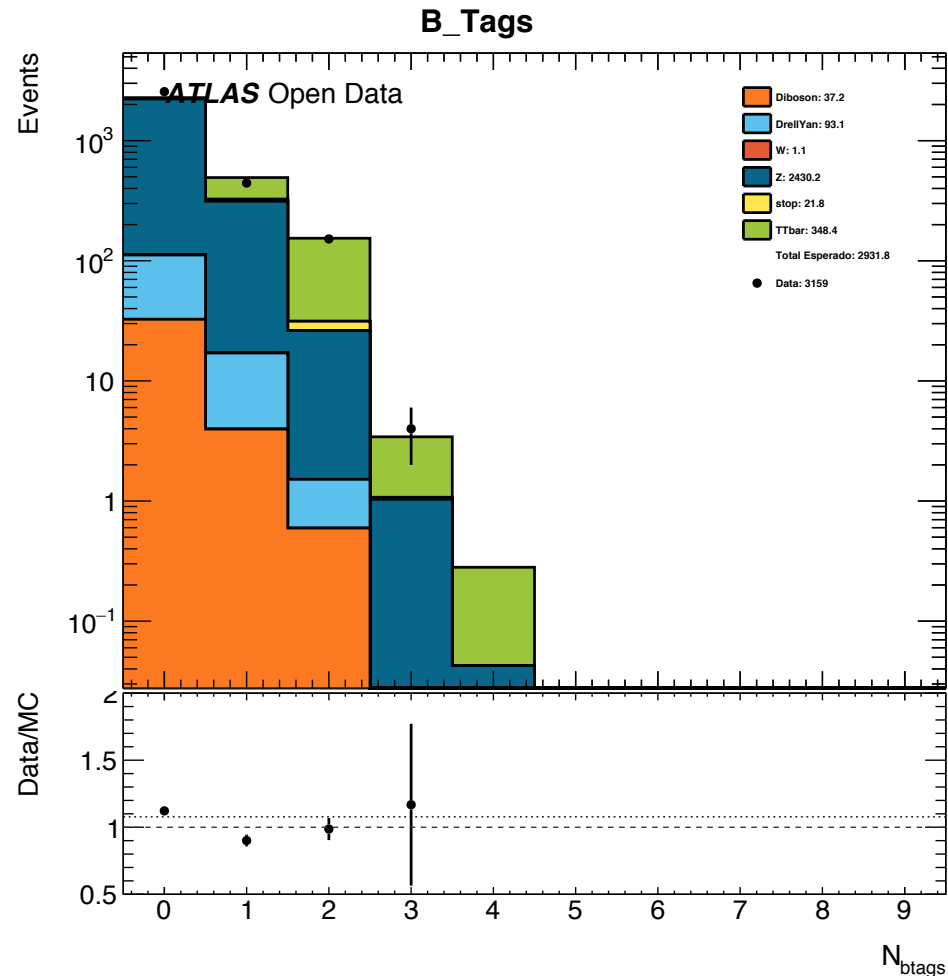
- Sequência de cortes da região de controlo Z_2

- Corte nos 2 leptões
- Corte em jatos ≥ 2
- Corte em btags ≥ 2
- Corte na massa dos leptões (aceitar massa do Z)

Missing Transverse Momentum



Região de controlo de Z_1



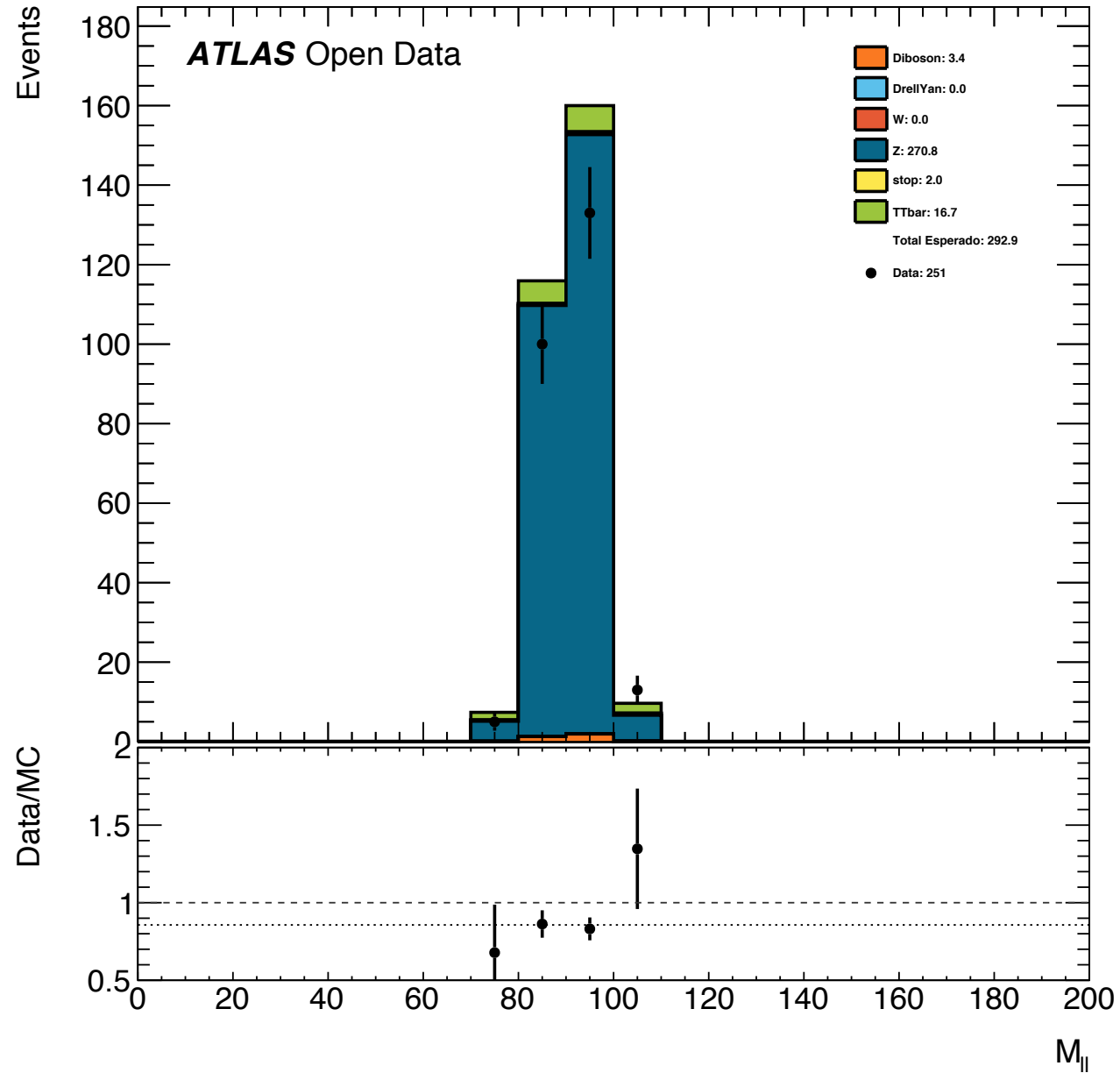
- Sequência de cortes da região de sinal

- Corte nos 2 leptões
- Corte em jatos ≥ 2
- Corte em btags ≥ 2
- Corte na massa dos leptões (rejeitar massa do Z)

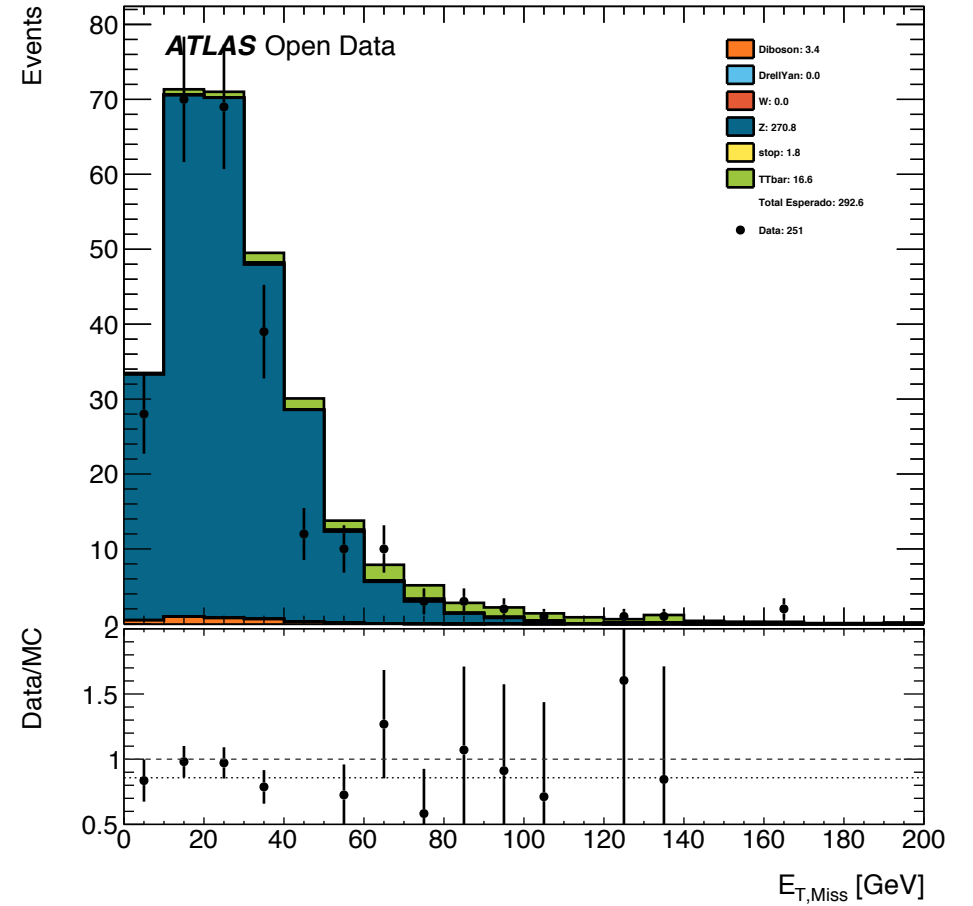
- Sequência de cortes da região de controlo Z_1

- Corte nos 2 leptões
- Corte em jatos ≥ 2
- Corte em btags $= 1$
- Corte na massa dos leptões (aceitar massa do Z)

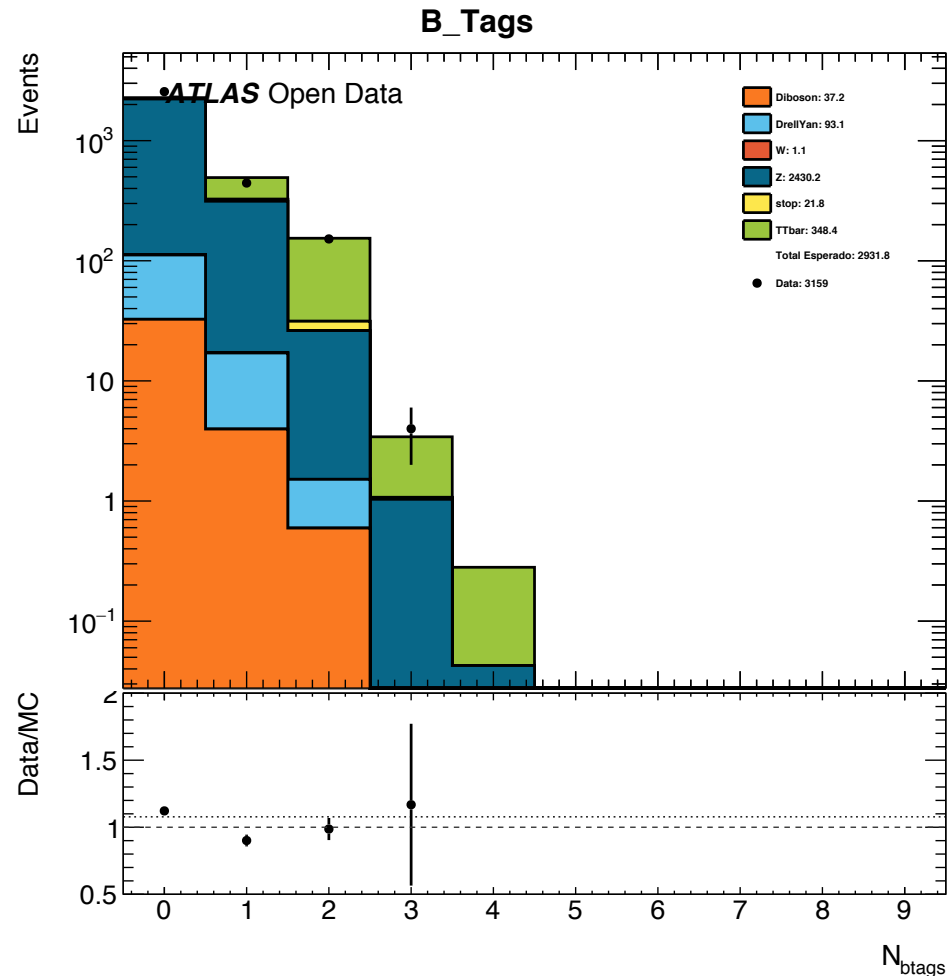
mll



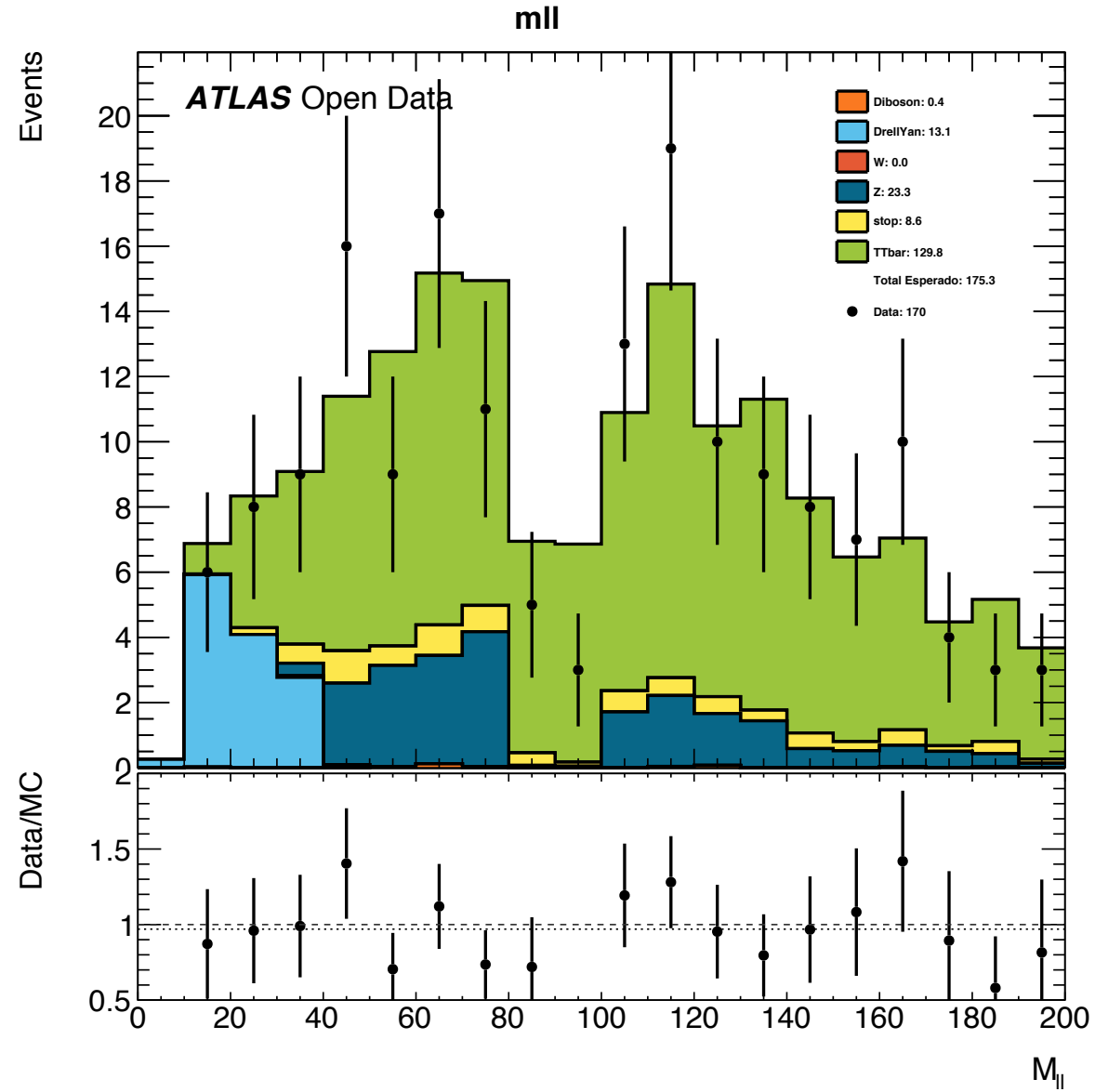
Missing Transverse Momentum



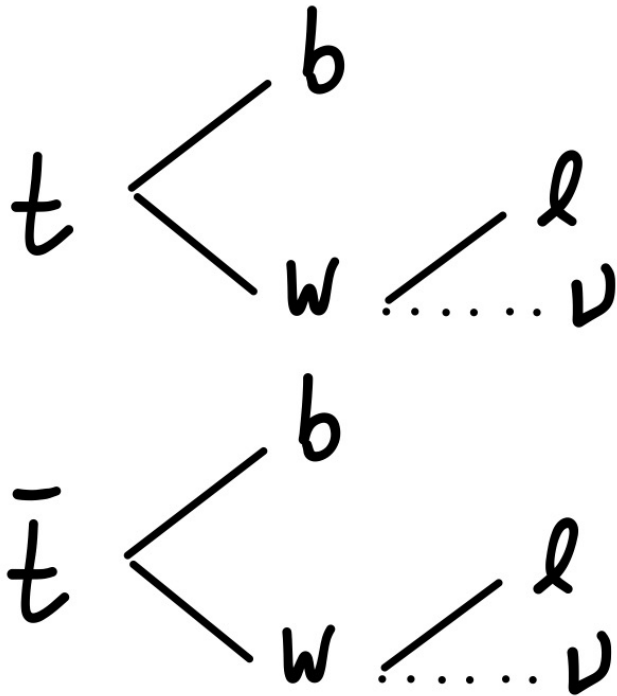
Região de controlo de single-top



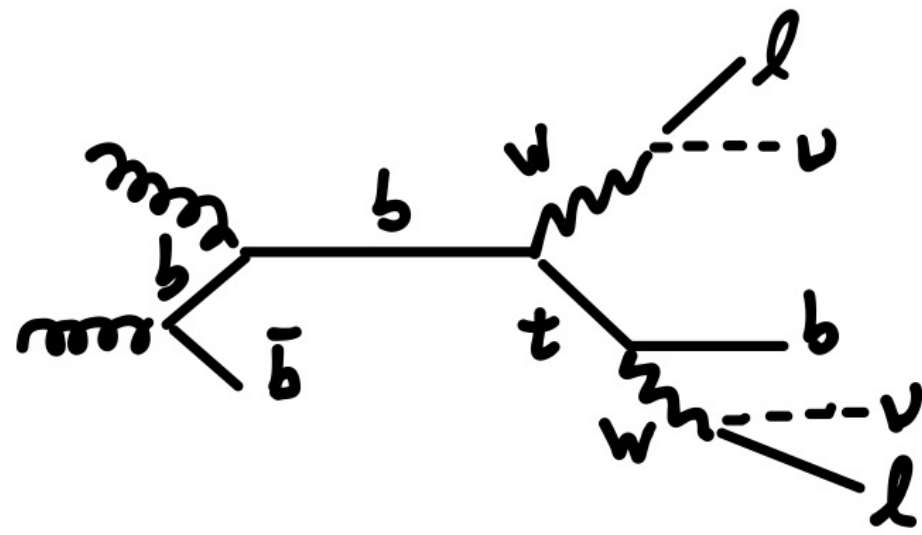
- Sequência de cortes da região de sinal
 - Corte nos 2 leptões
 - Corte em jatos ≥ 2
 - Corte em btags ≥ 2
 - Corte na massa dos leptões (rejeitar massa do Z)
- Sequência de cortes da região de controlo single-top
 - Corte nos 2 leptões
 - Corte em jatos ≥ 2
 - Corte em btags $= 1$
 - Corte na massa dos leptões (rejeitar massa do Z)



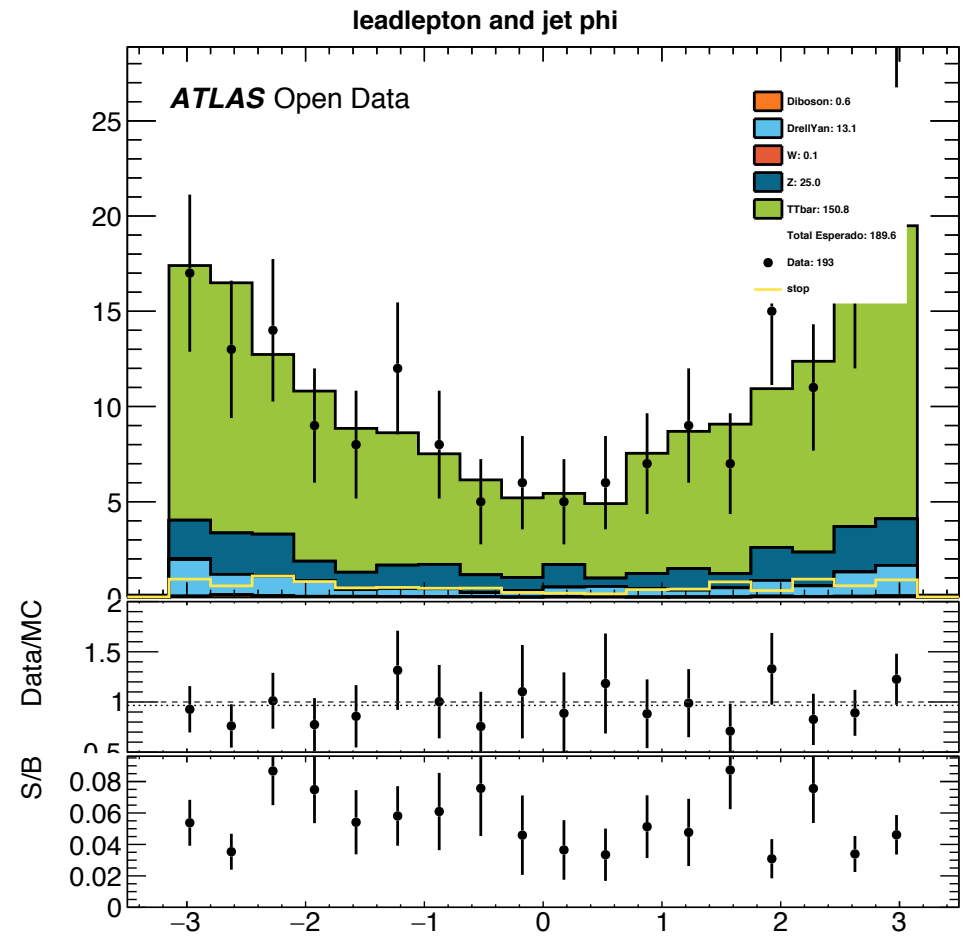
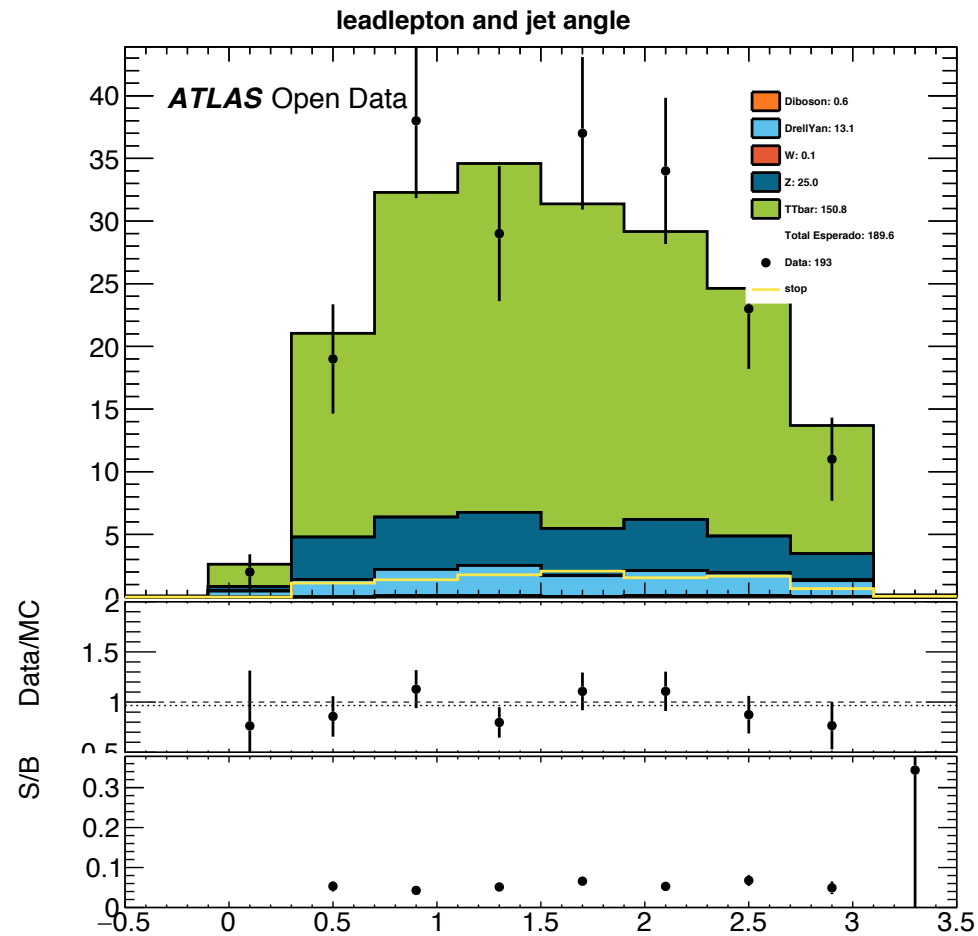
Região sinal

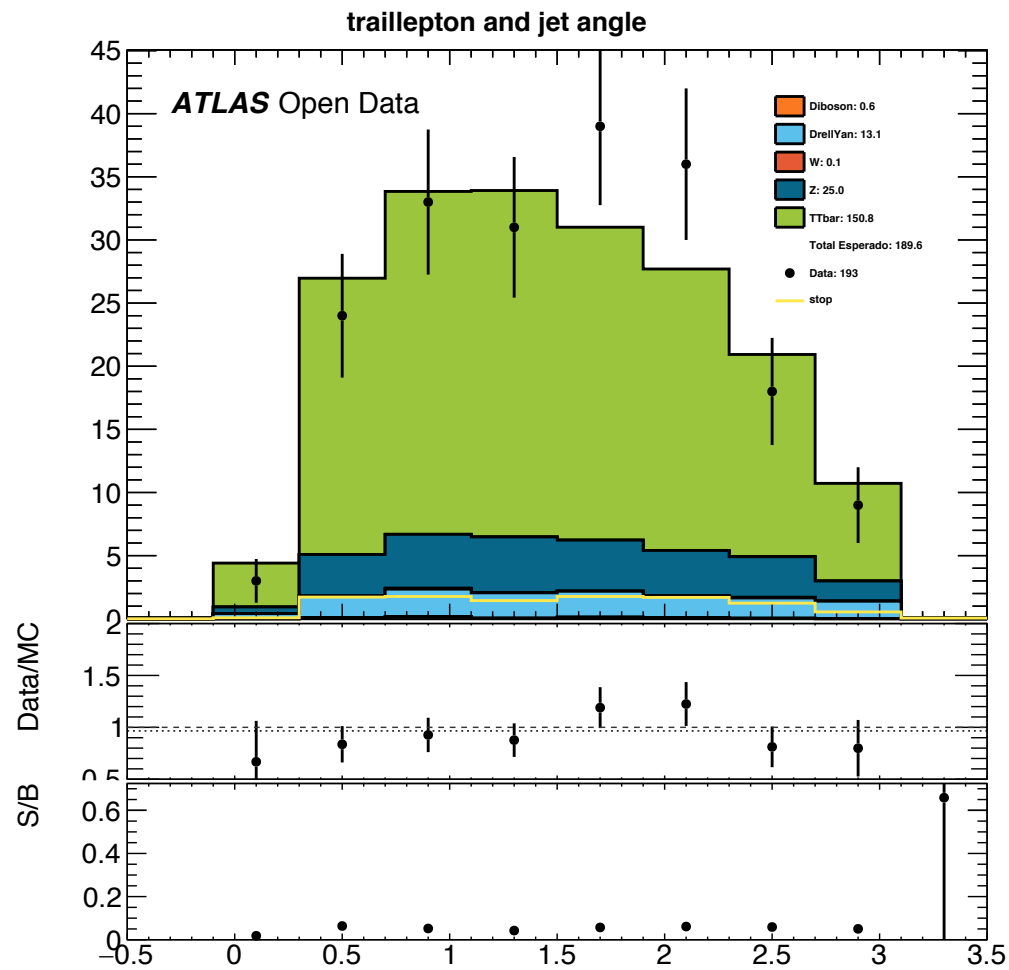
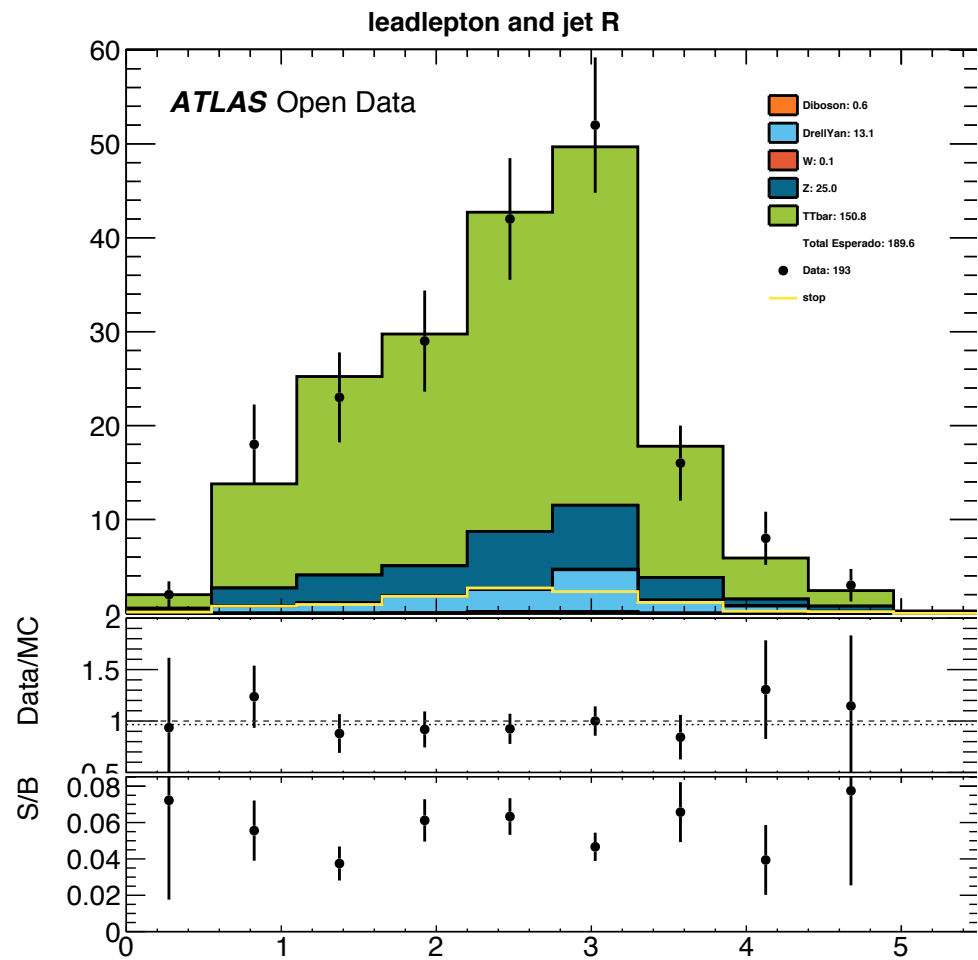


Região Controlo SingleTop



- Ângulos entre o jato não b e os leptões





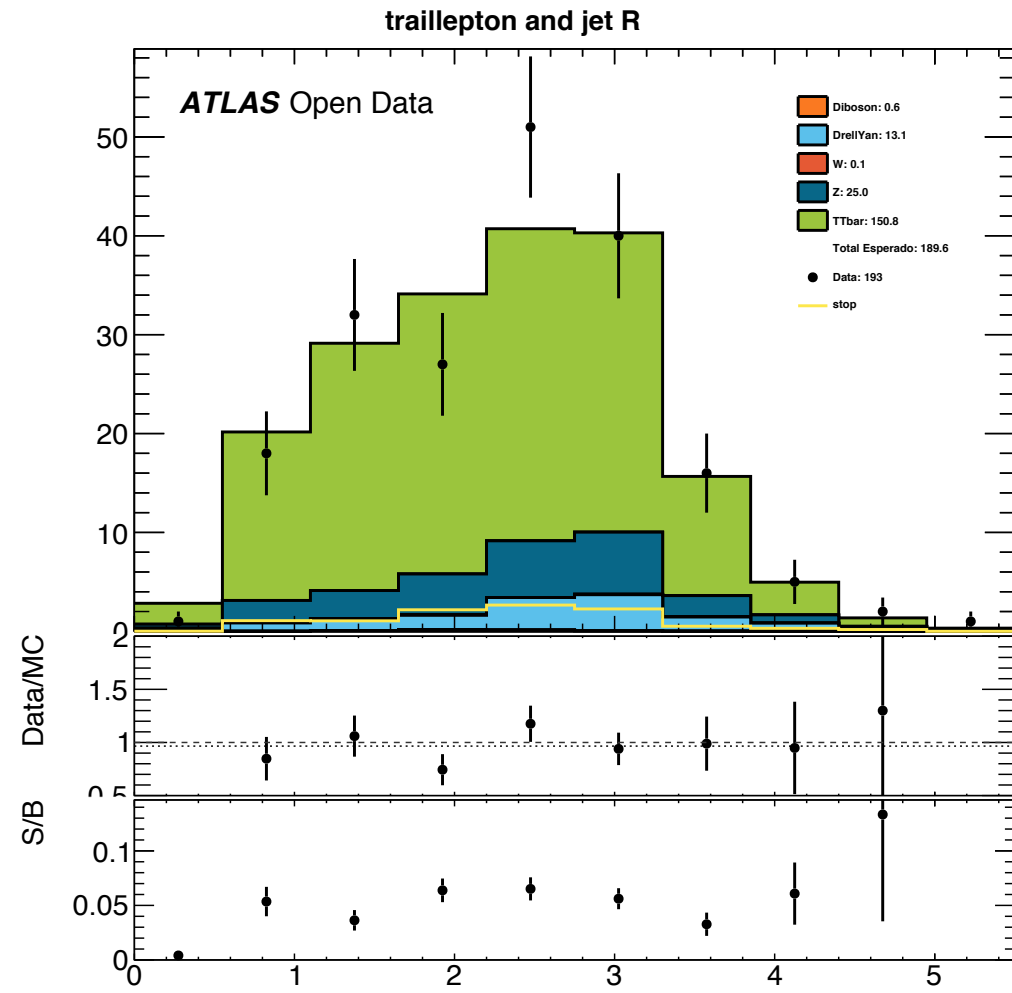
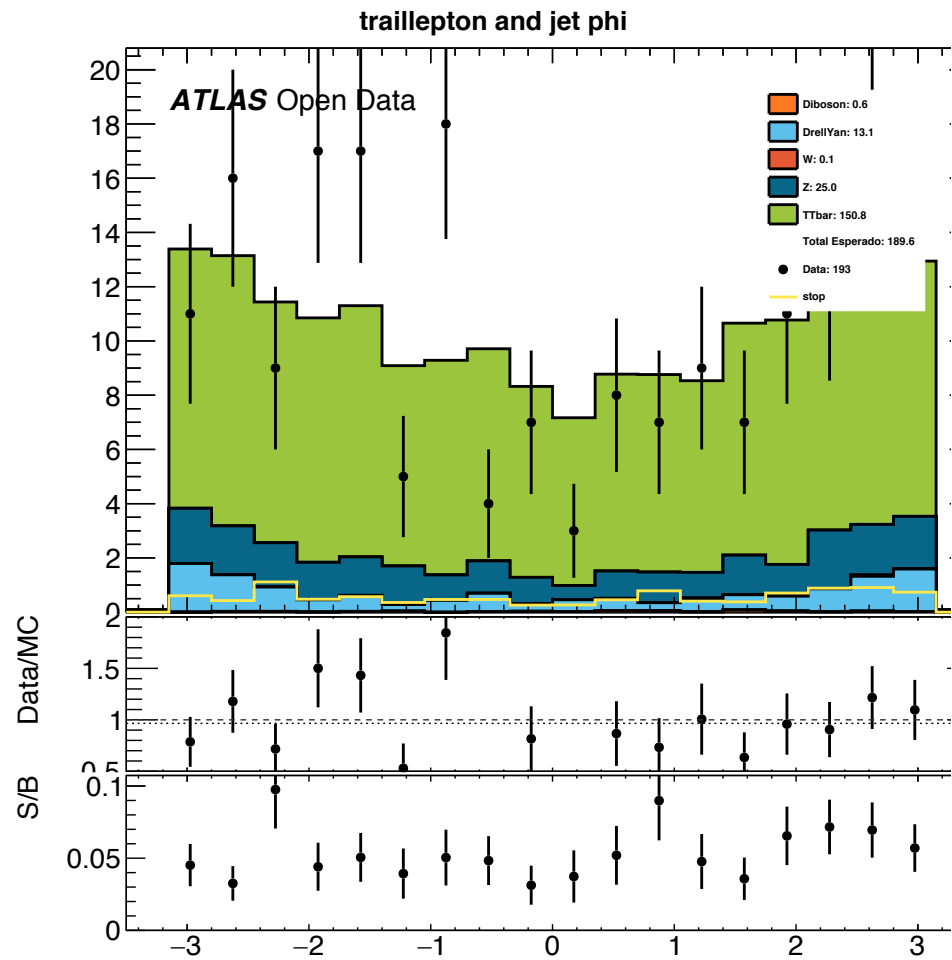
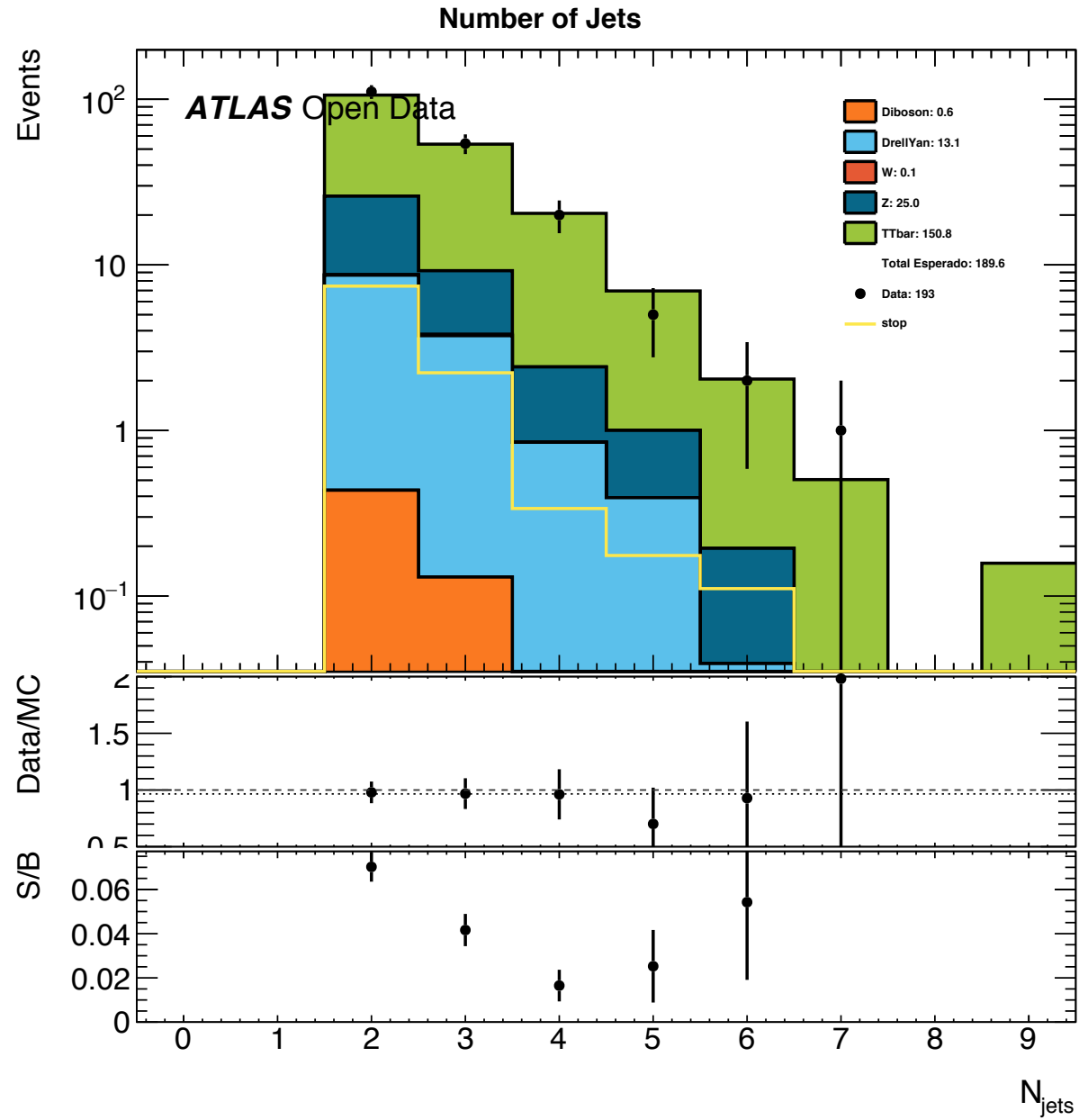


Gráfico utilizado no Fit

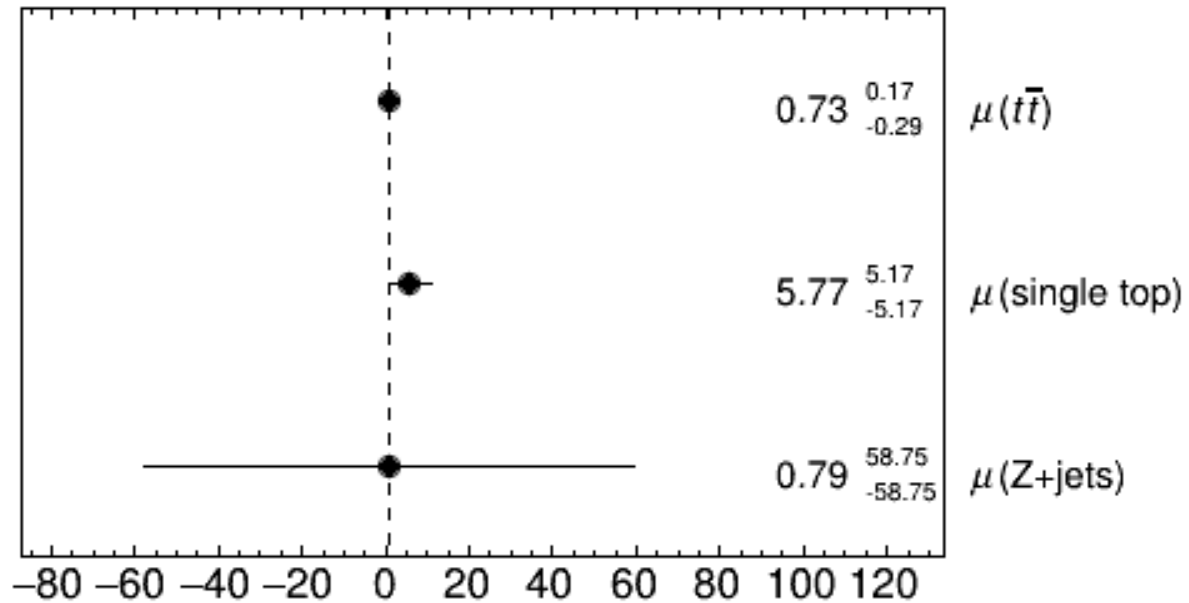


Fit – região sinal

$$N_{\text{data}} = \mu_1 * N_{(tt)} + \mu_2 * N_{(\text{stop})} + \mu_3 * N_{(Z)}$$

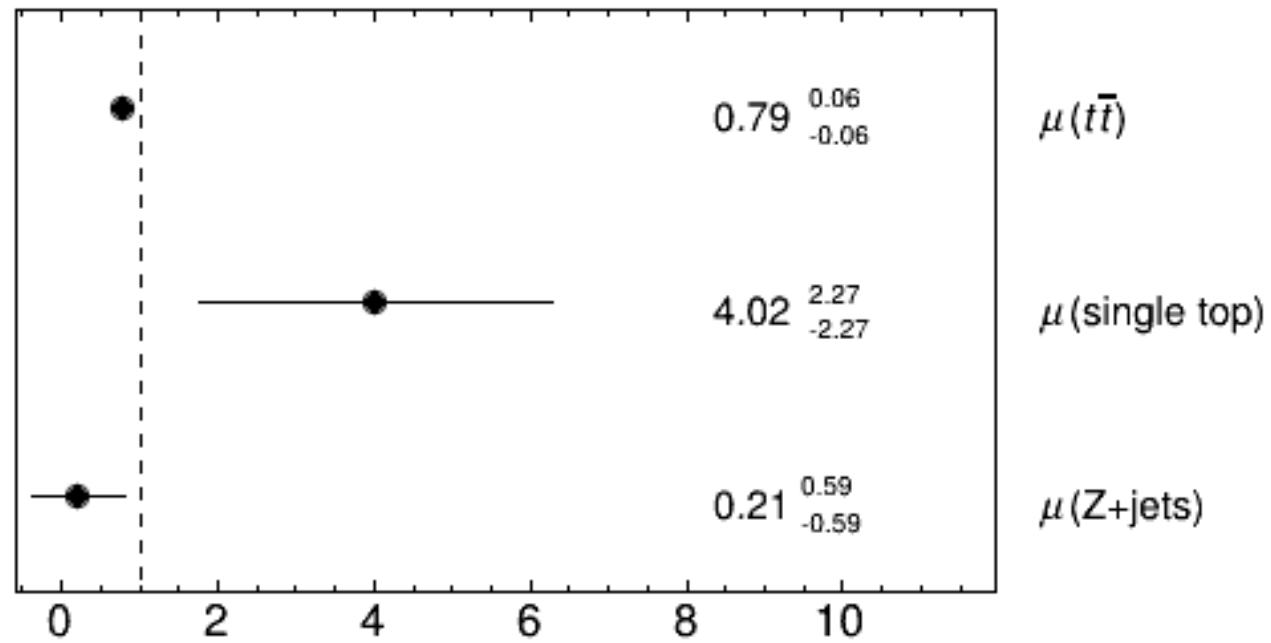
Secção eficaz ttbar utilizado: 252.85 pb

Nº jets



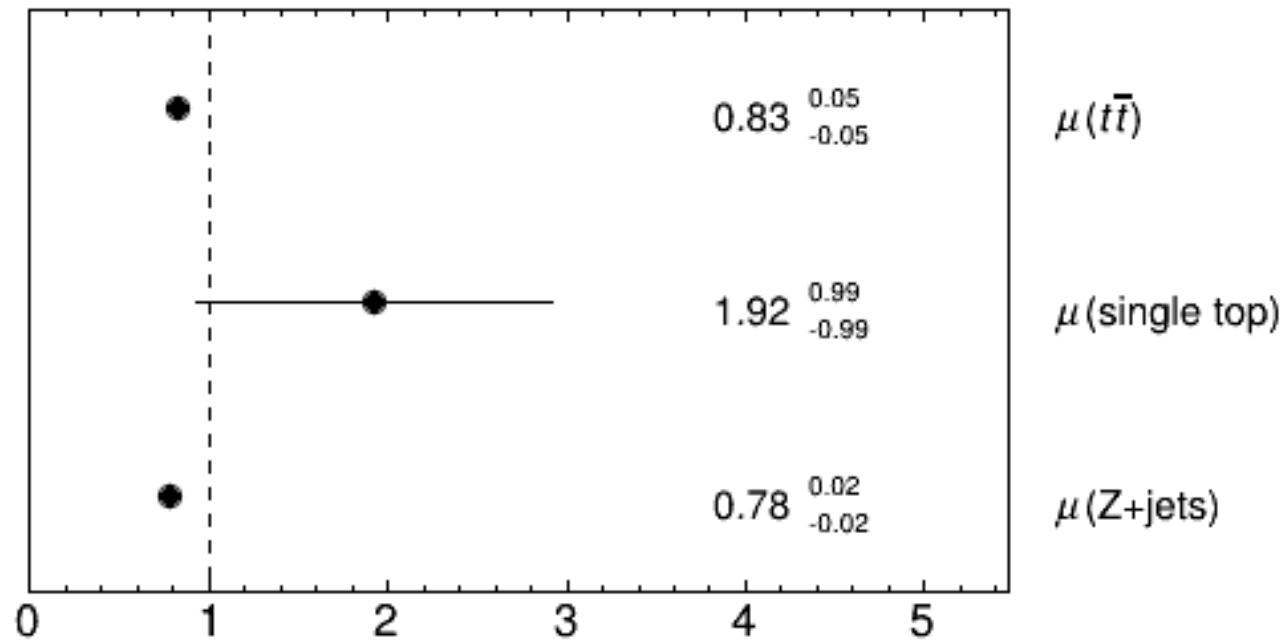
Fit – região de sinal + single-top

Nº jets



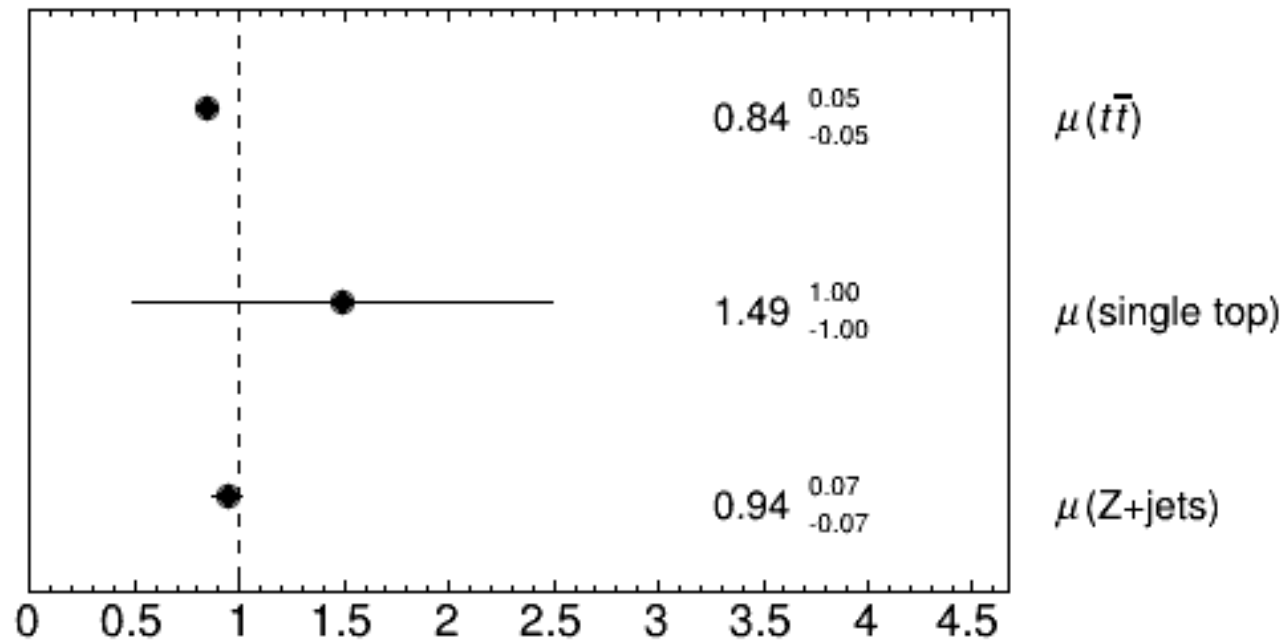
Fit – região sinal + single top + z_1

Nº jets

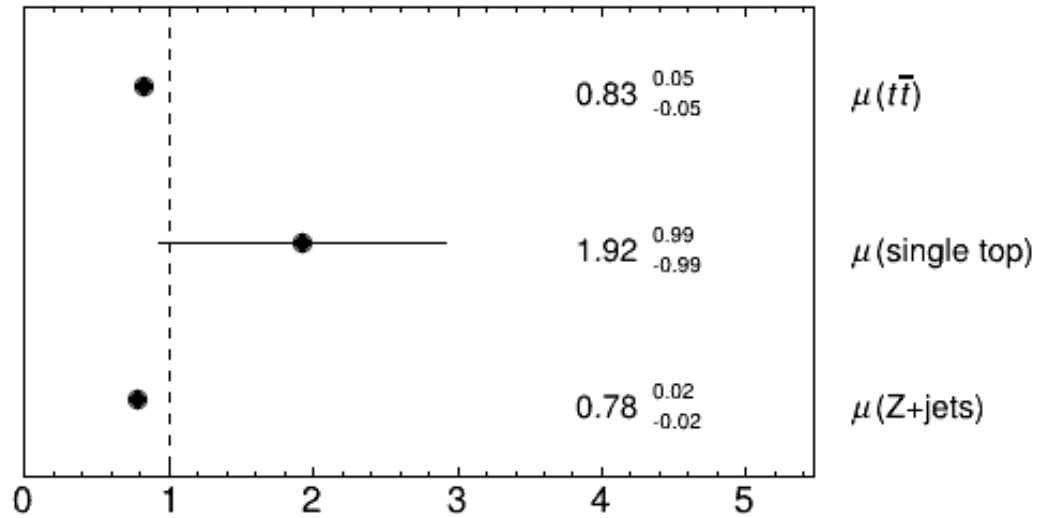


Fit – região sinal + single top + z_2

Nº jets

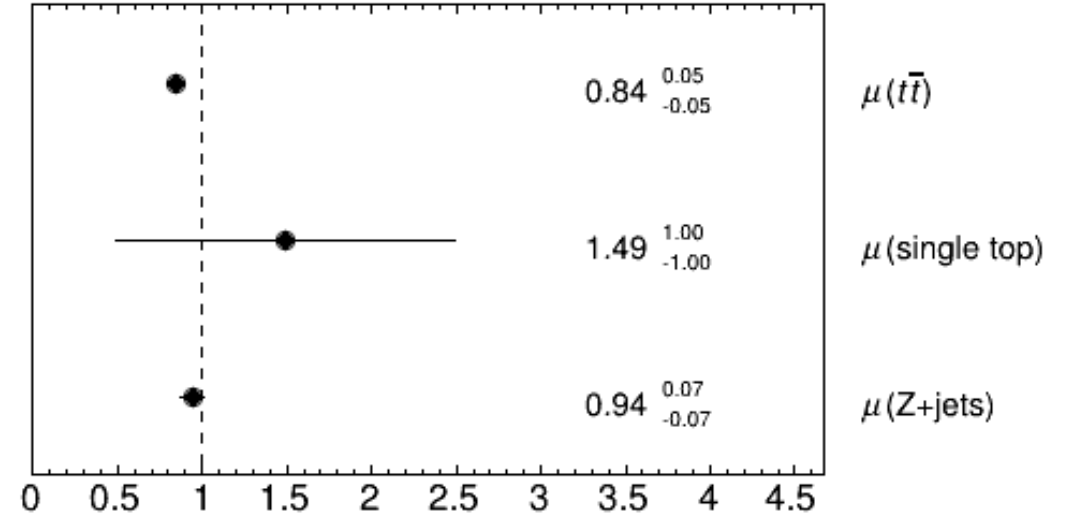


Fit – região sinal + single top + z_1



Nº jets

Fit – região sinal + single top + z_2

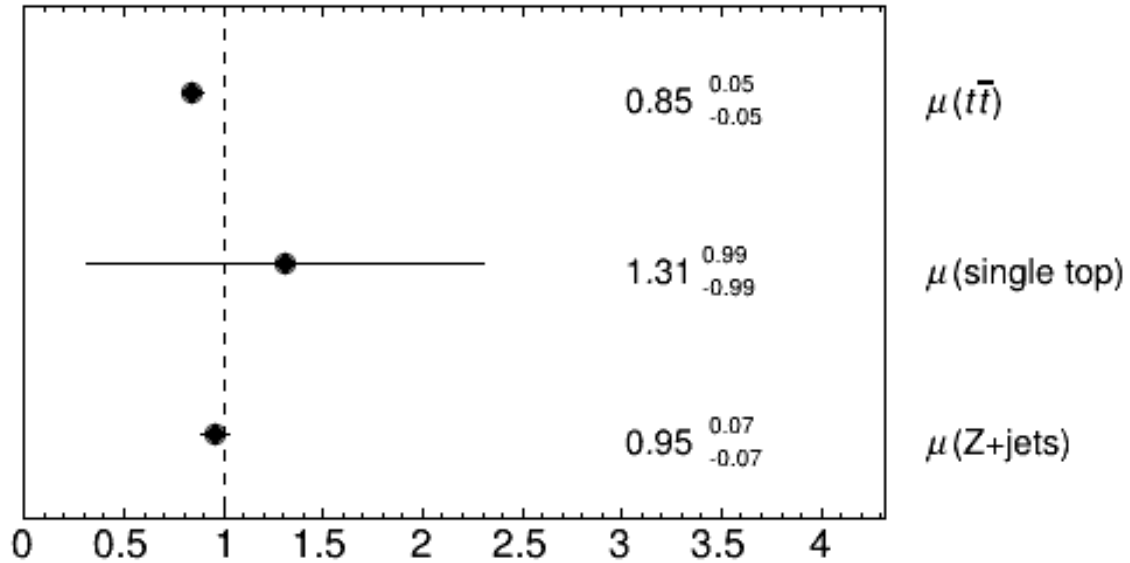


Nº jets

Secção eficaz $t\bar{t}$ = 212.394 +/- 12.6425 pb

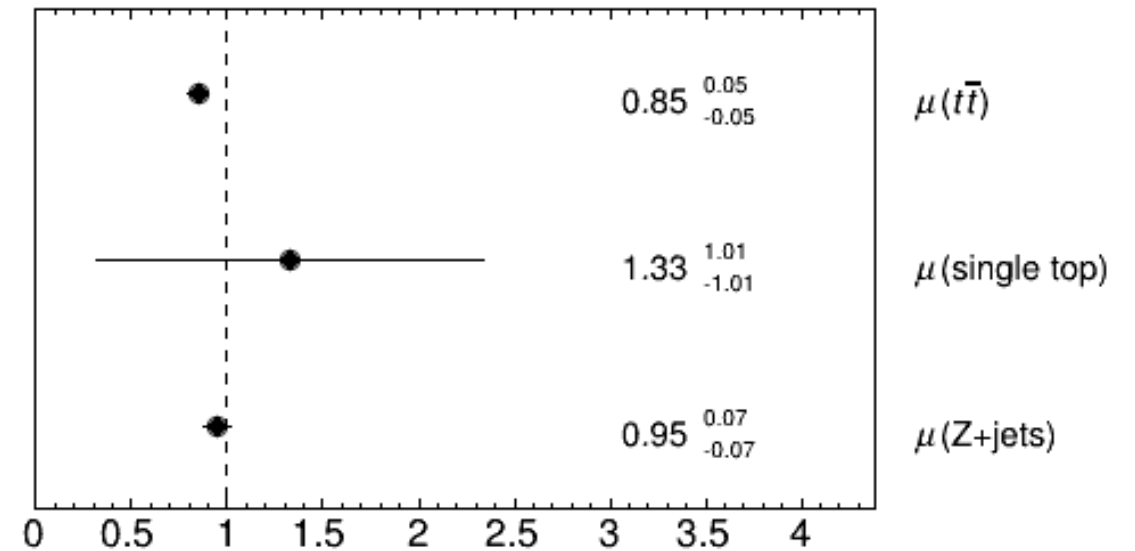
Fit – região sinal + single top + z_2

Et Miss



Secção eficaz $t\bar{t}$ = 214.923 +/- 12.6425 pb

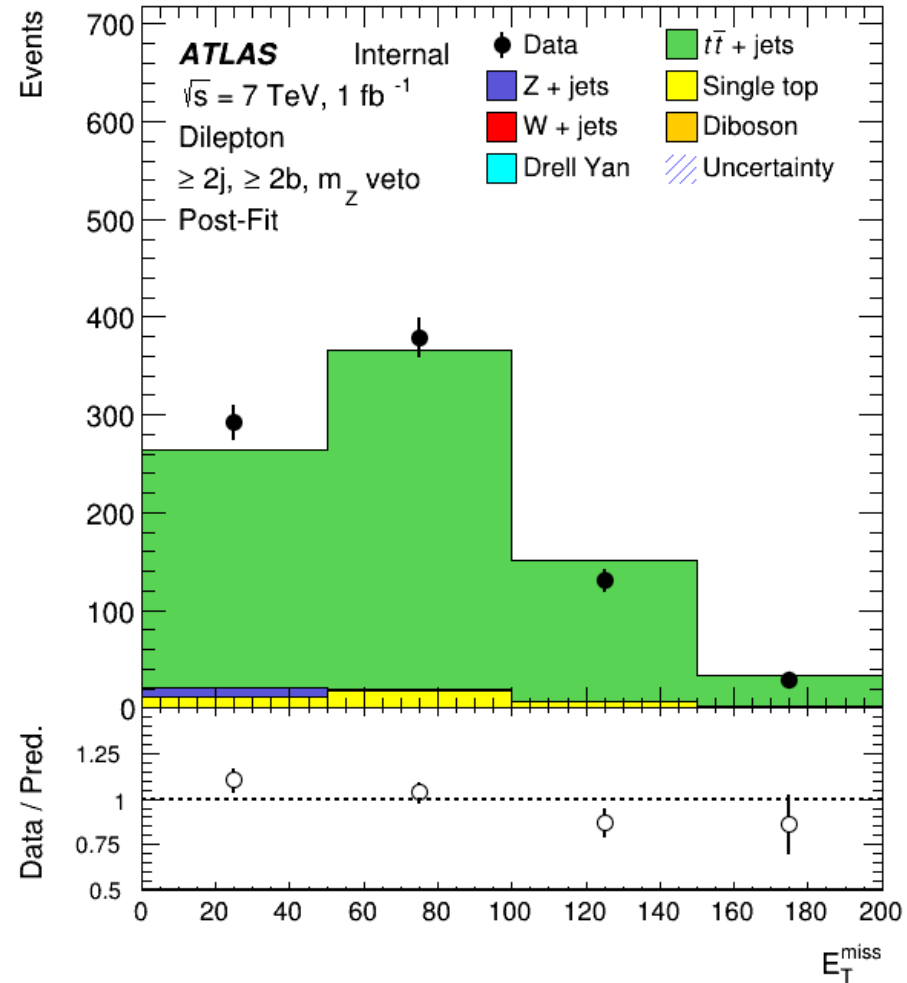
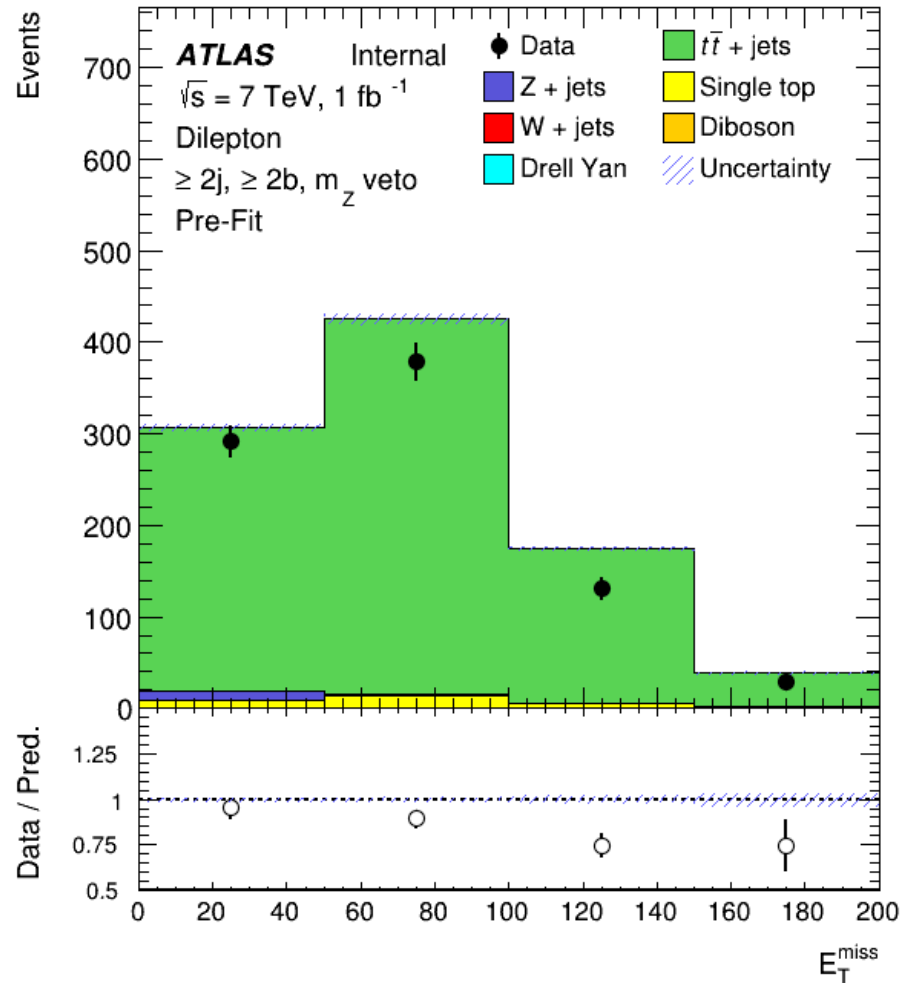
MWT



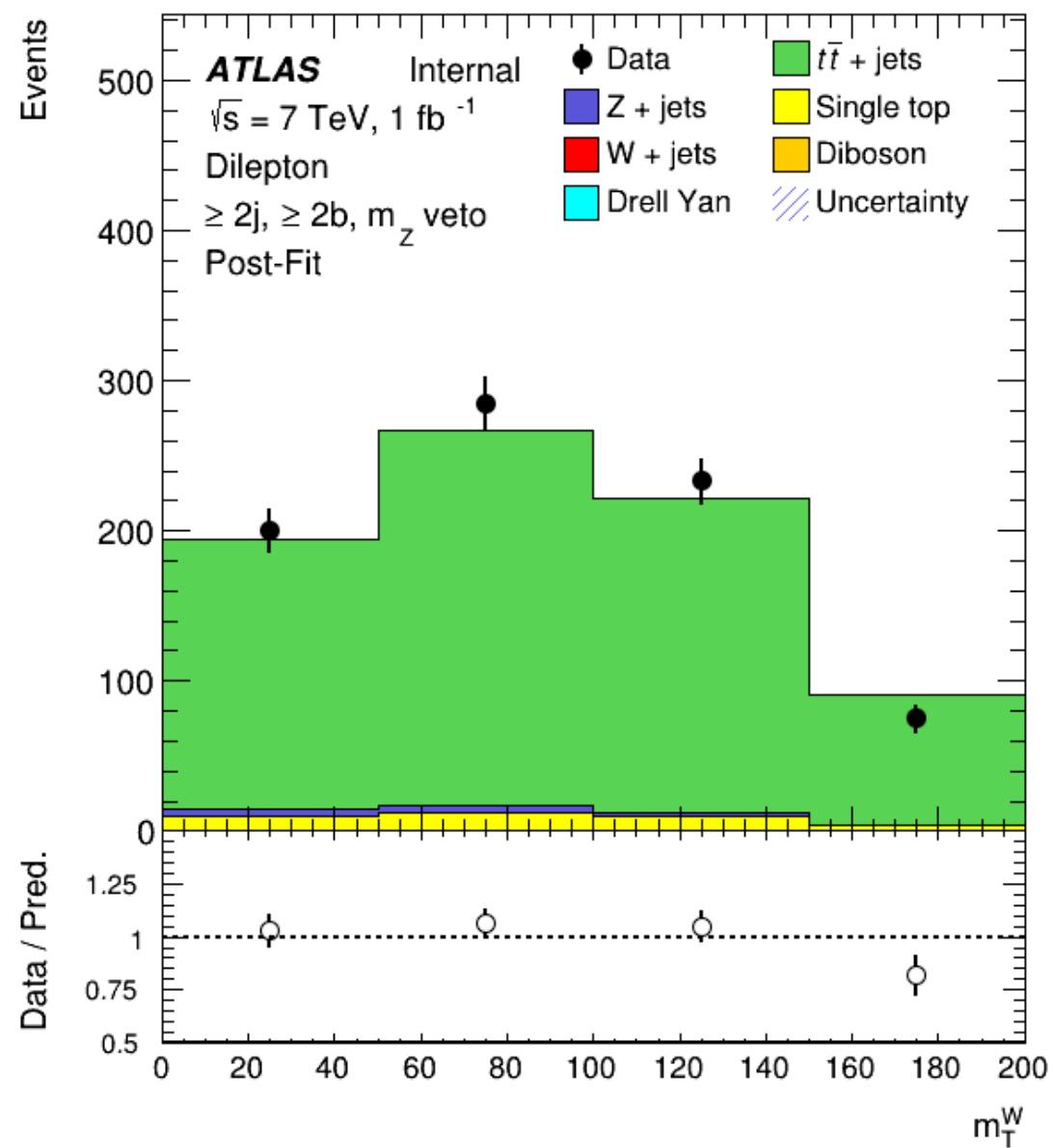
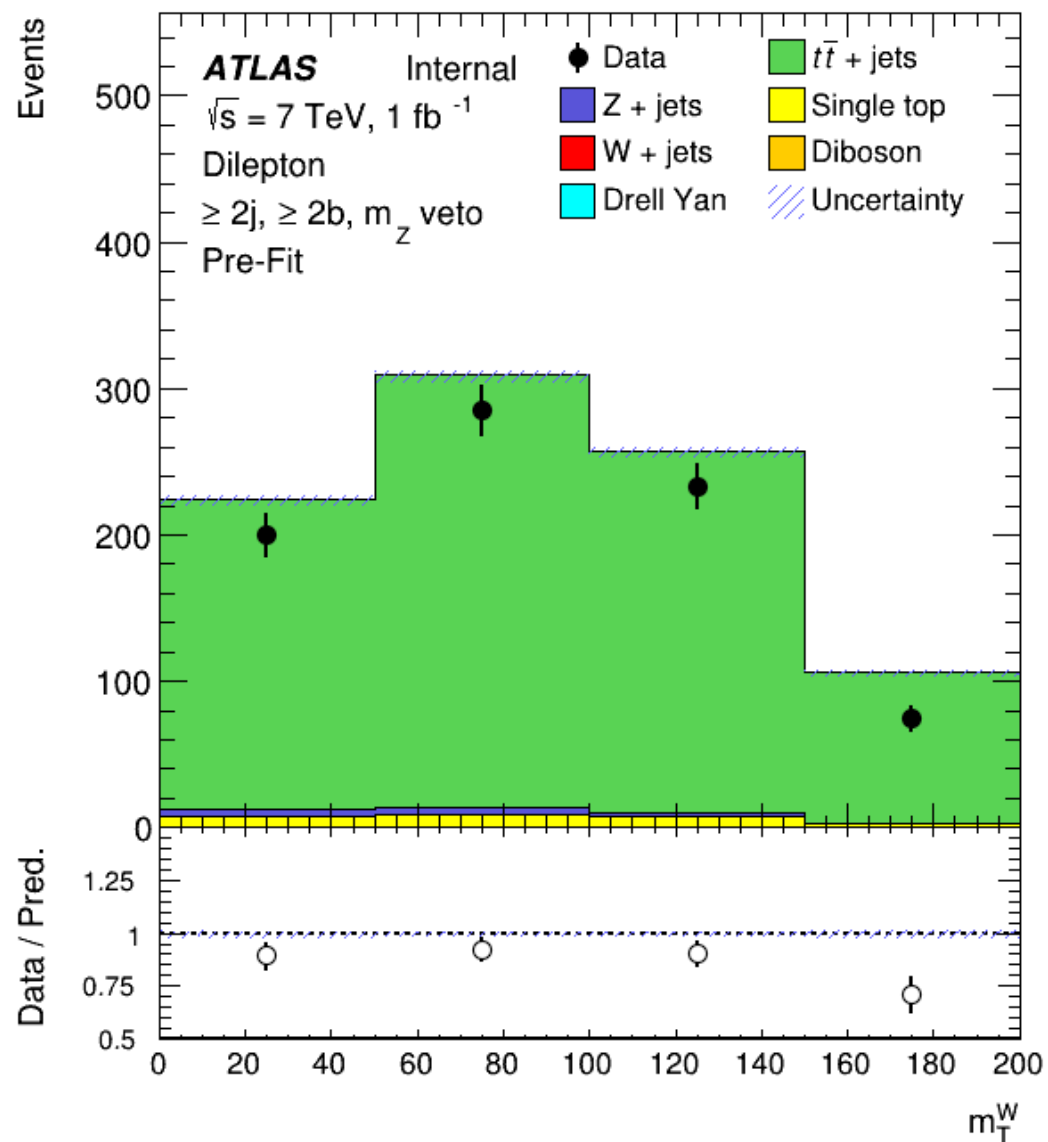
Secção eficaz $t\bar{t}$ = 214.923 +/- 12.6425 pb

Fit Outputs – Região Sinal

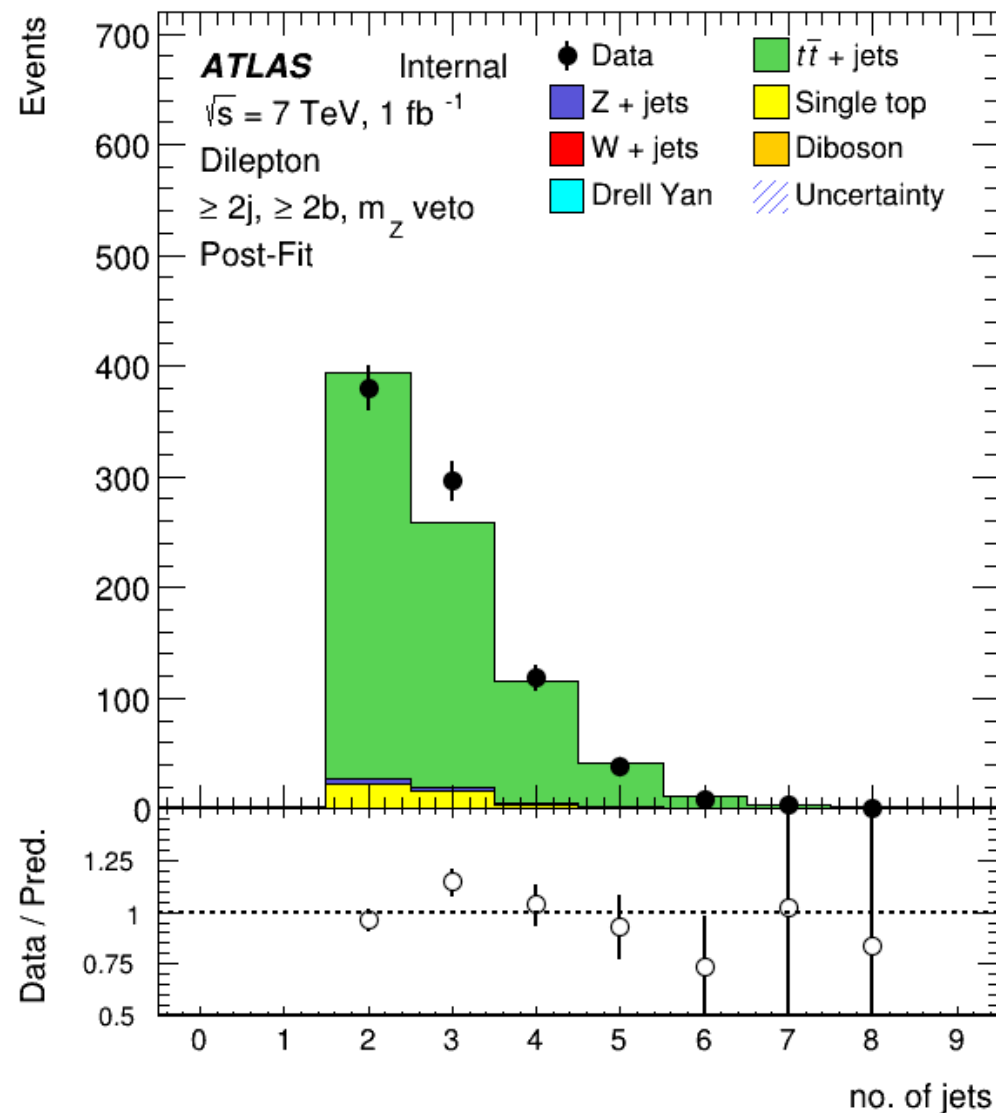
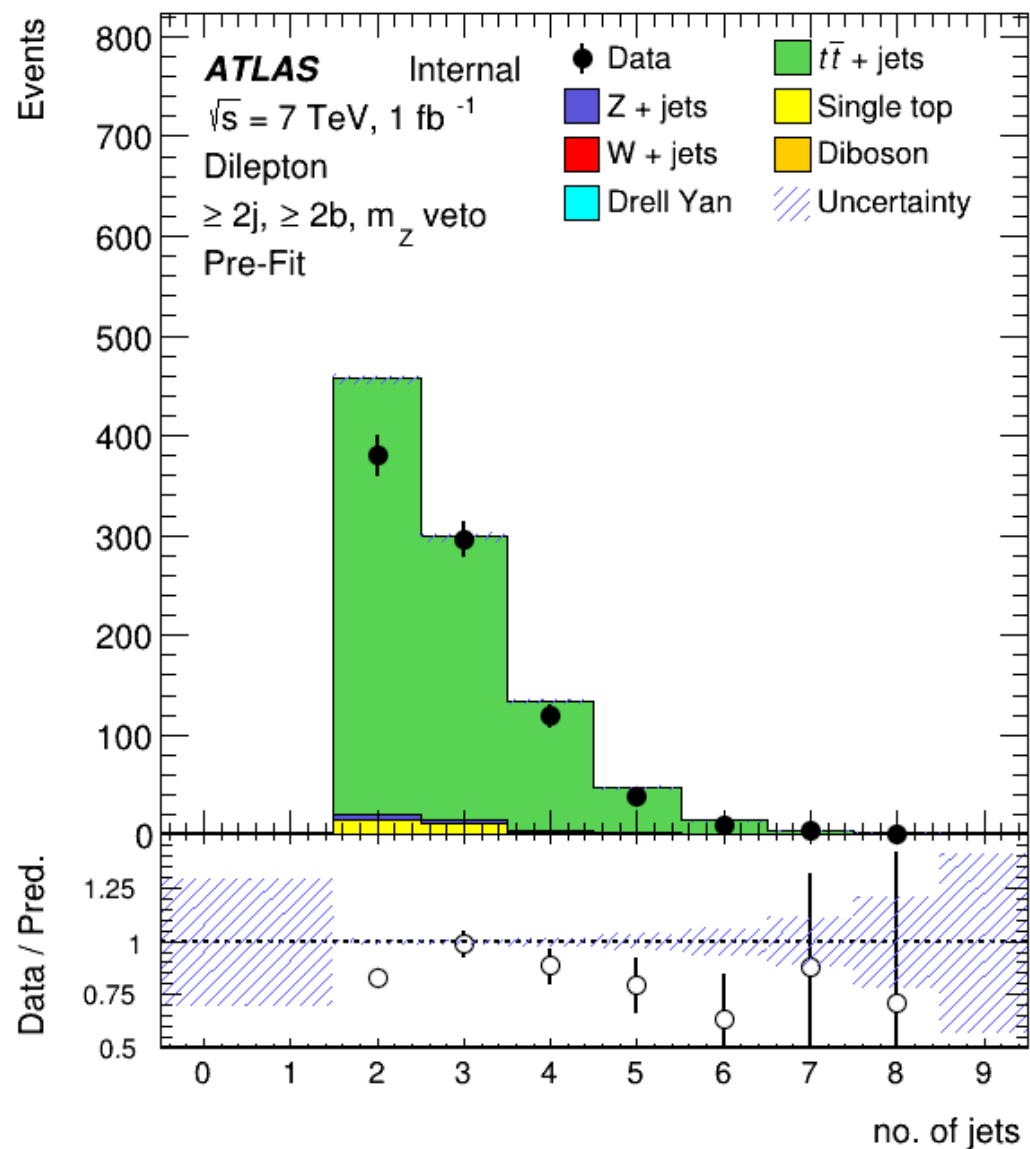
Et Miss



MWT

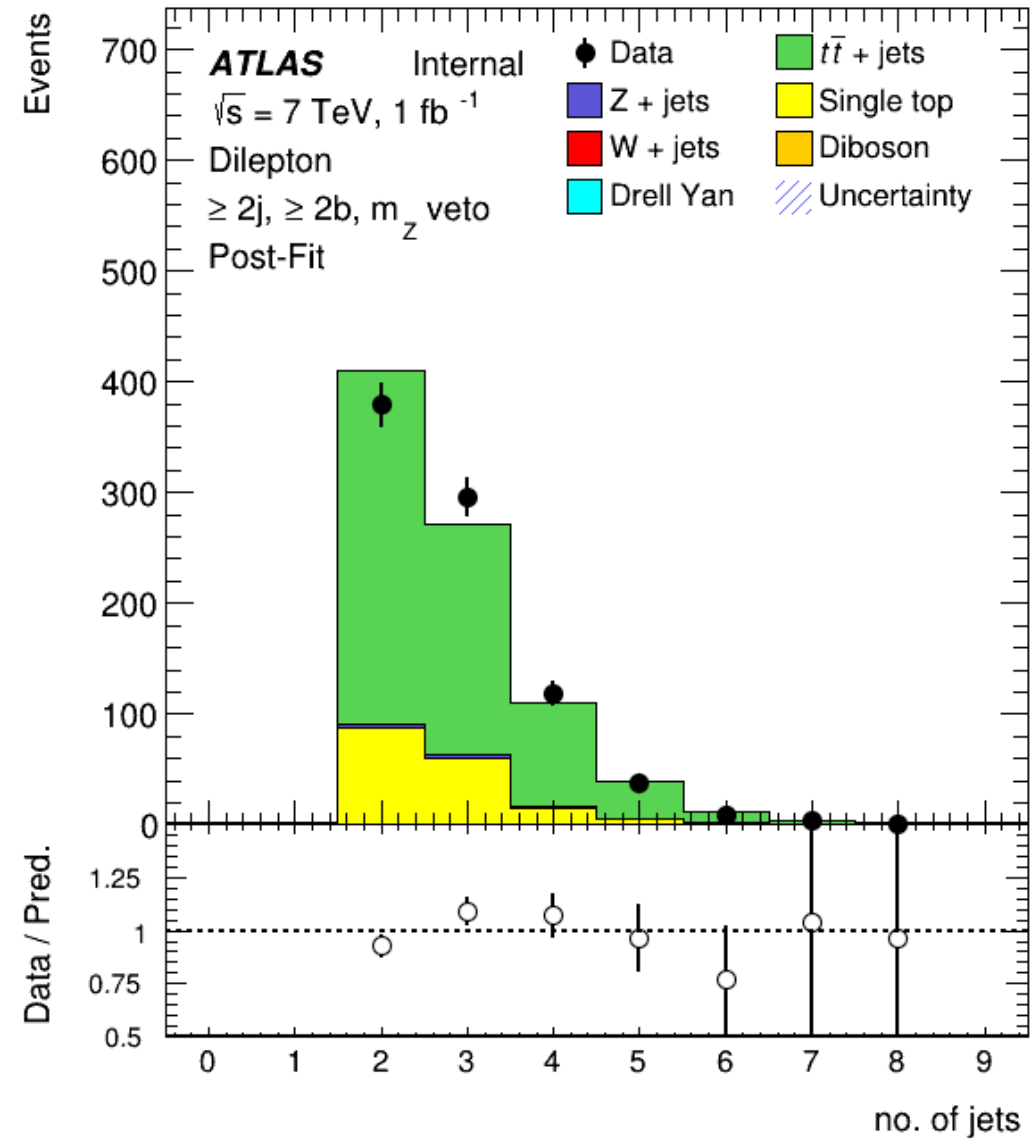
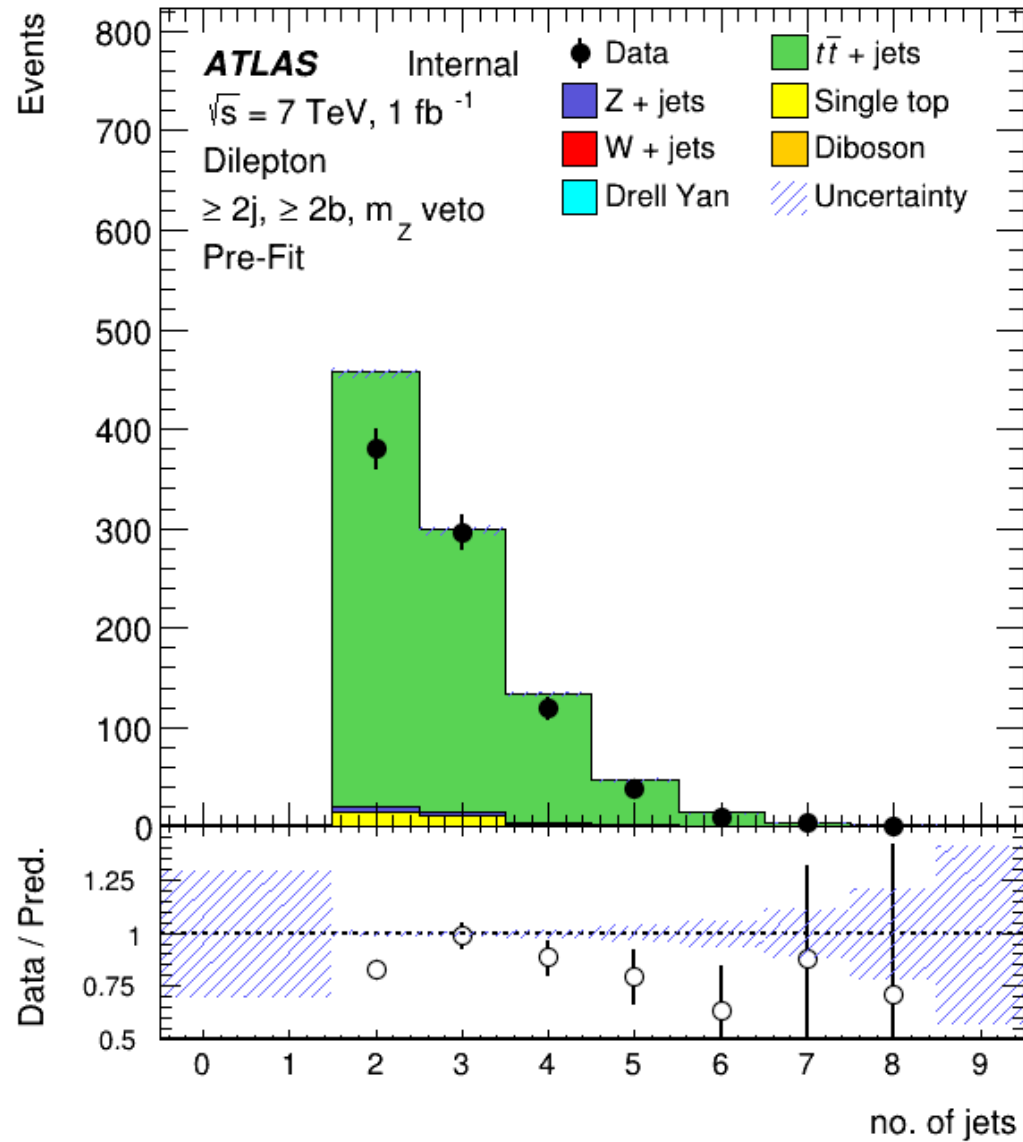


N^o Jets



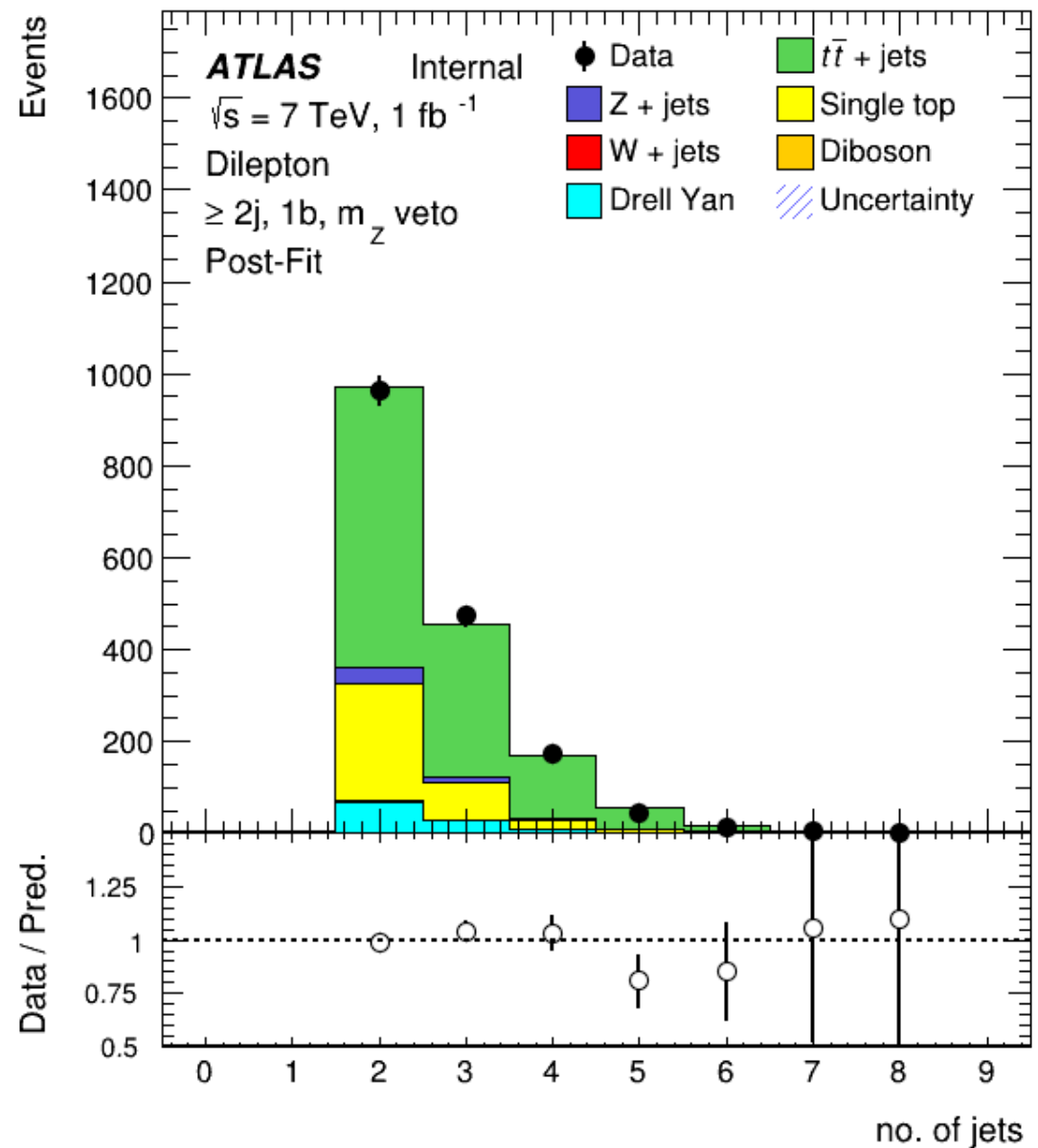
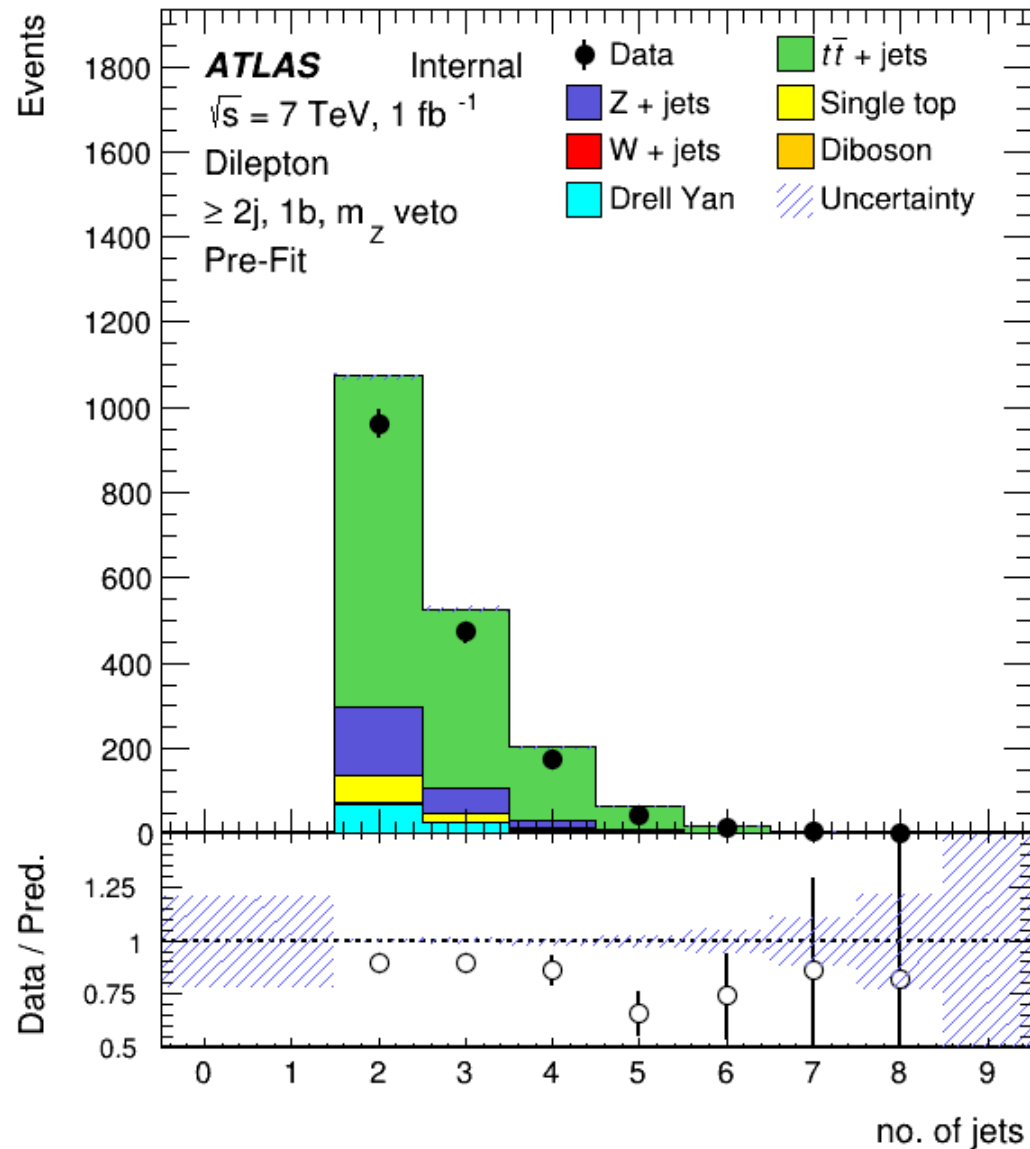
Fit – região sinal

Mudanças nos gráficos de sinal (gráfico do número de jatos)



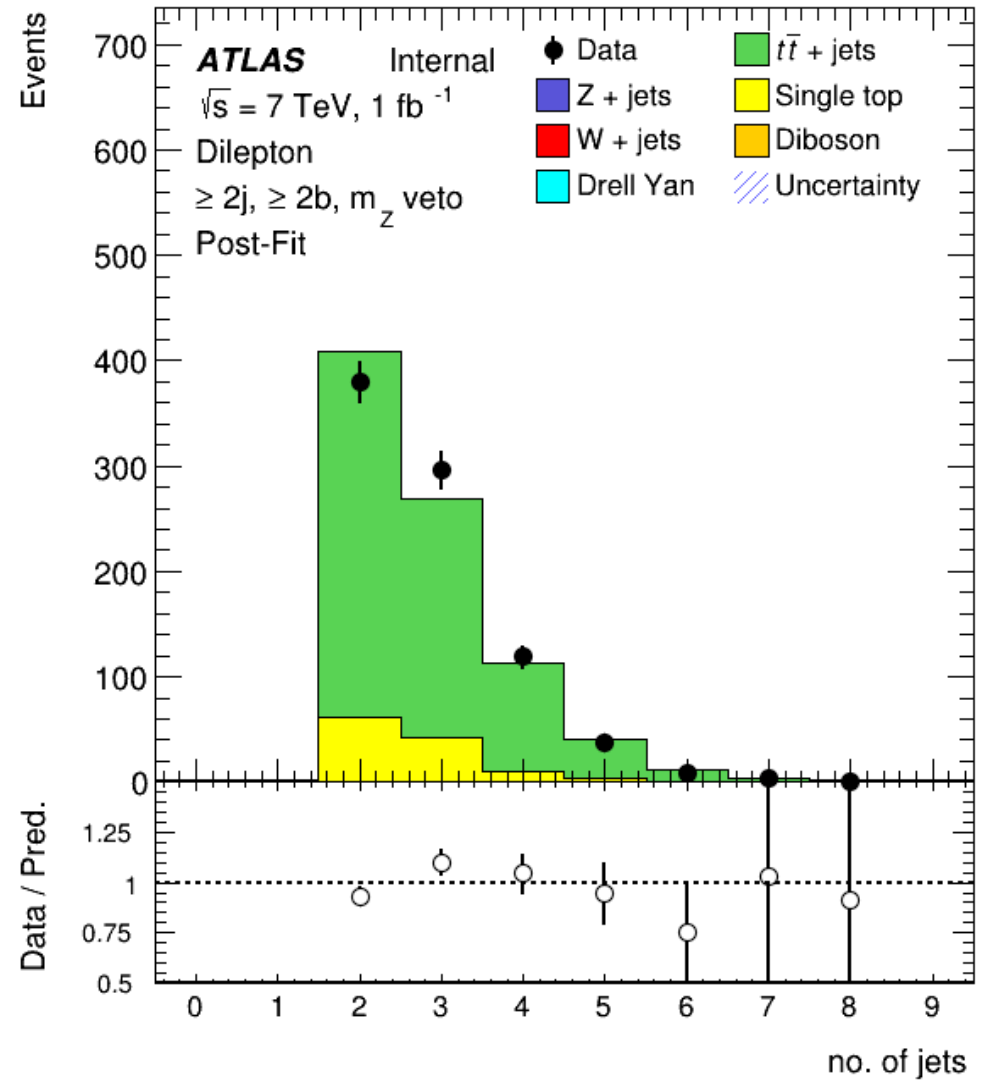
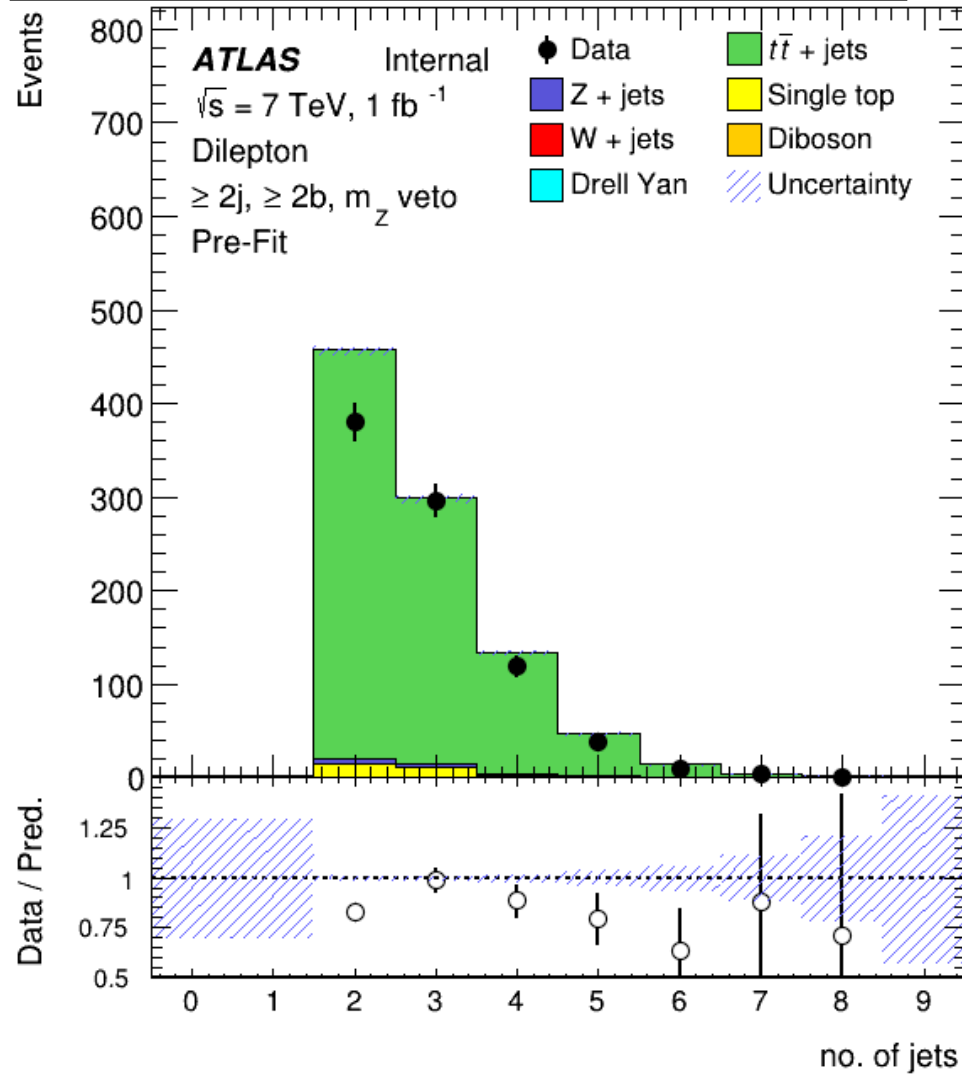
Fit – região sinal + single top

Mudanças nos gráficos de controlo (gráfico do número de jatos)



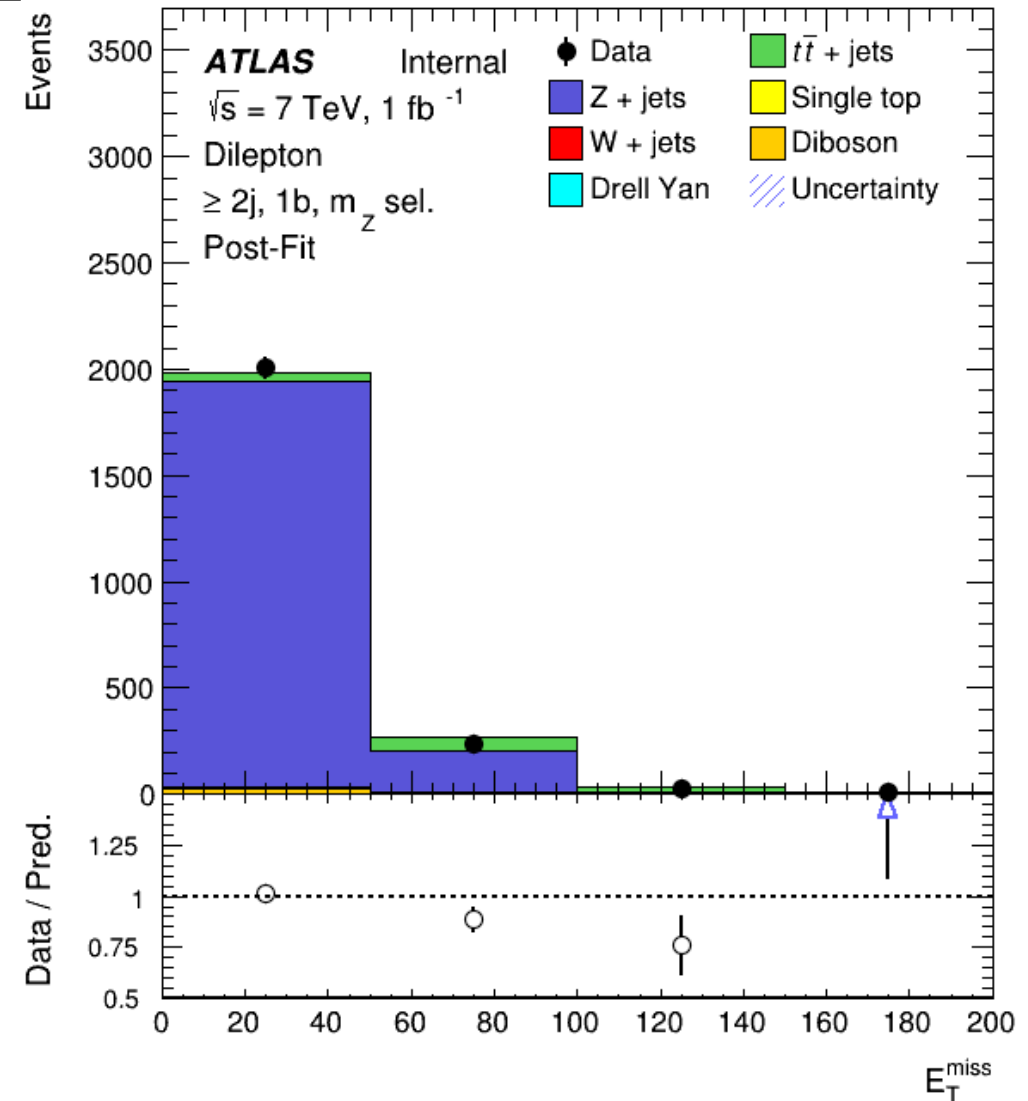
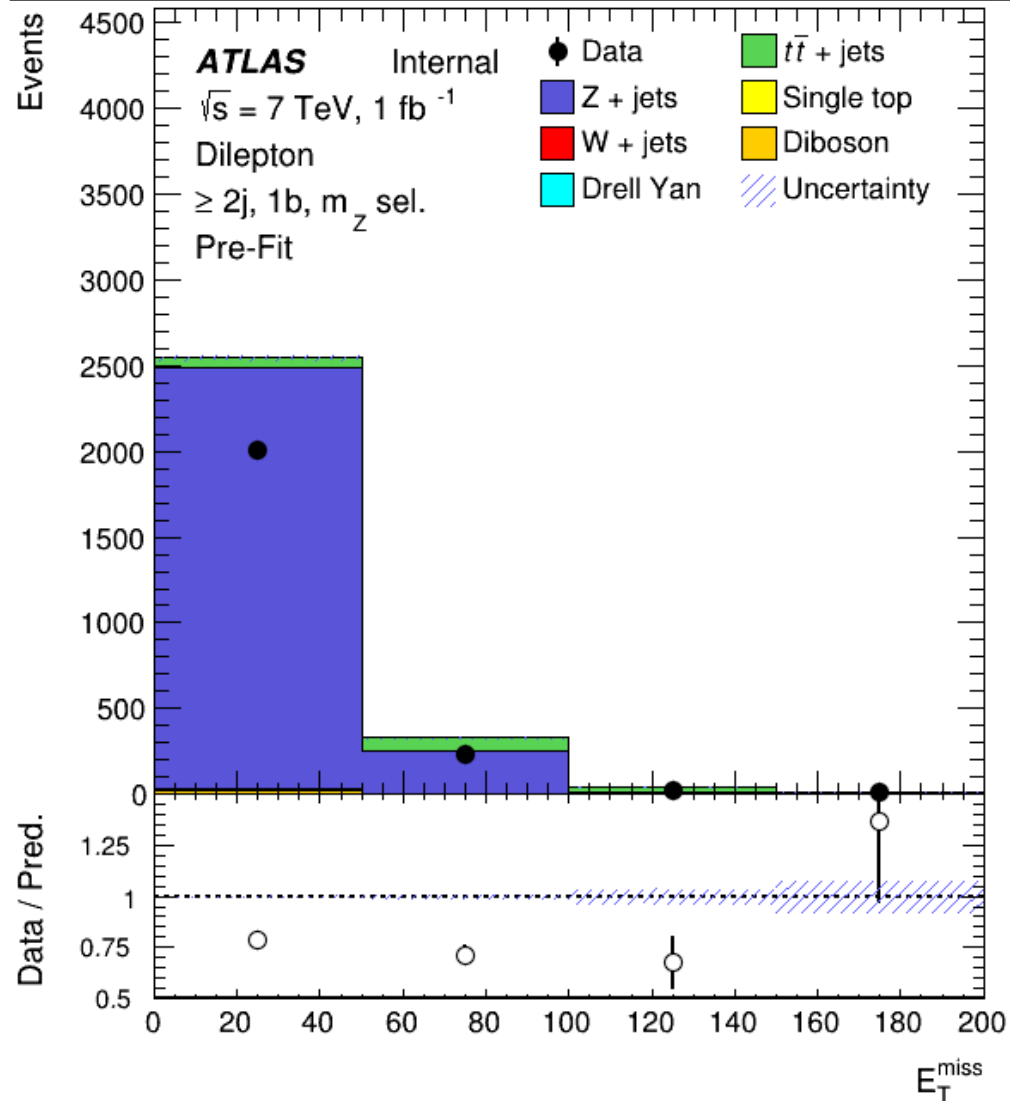
Fit – região sinal + single top

Mudanças nos gráficos de sinal (gráfico do número de jatos)

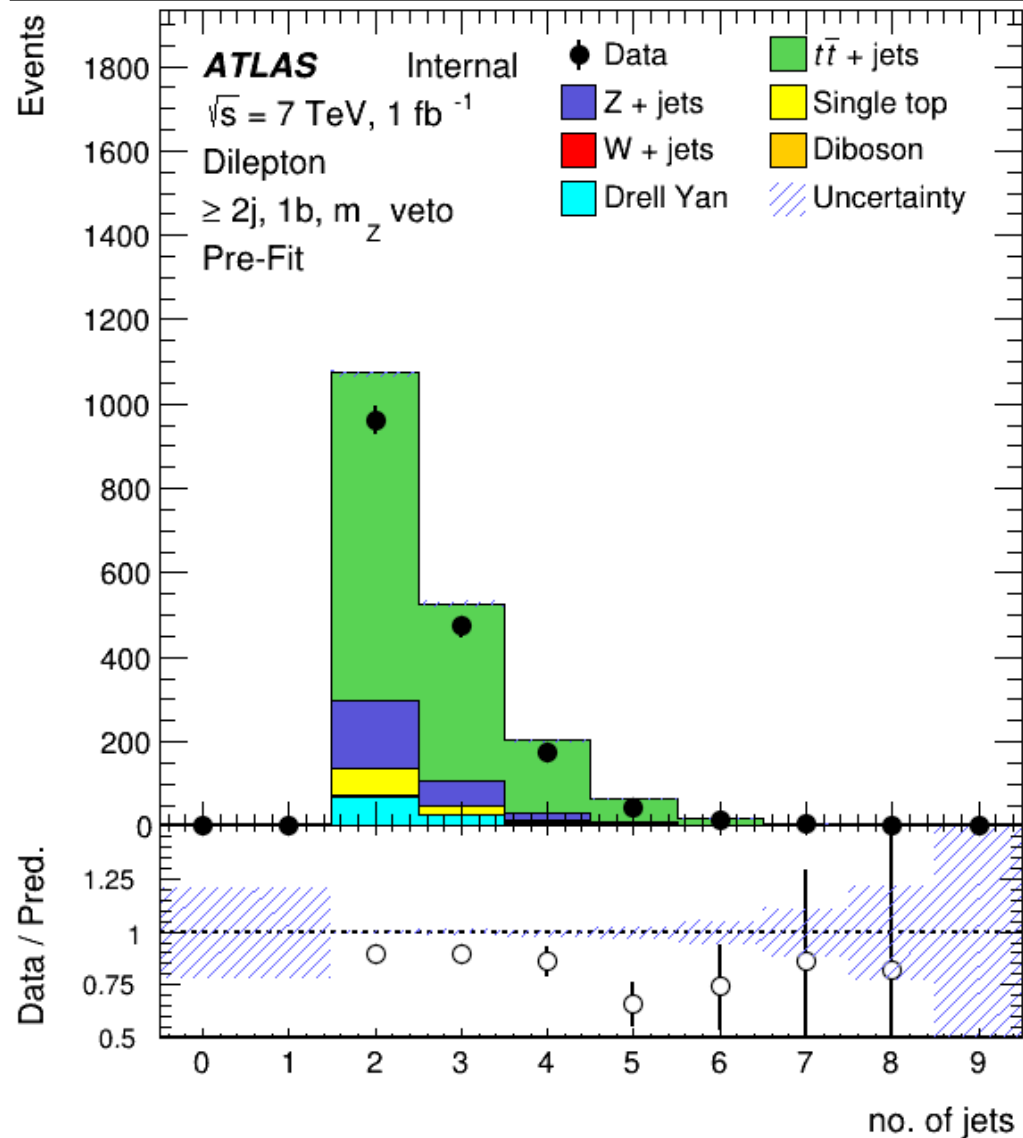


Fit – região sinal + single top + Z_1

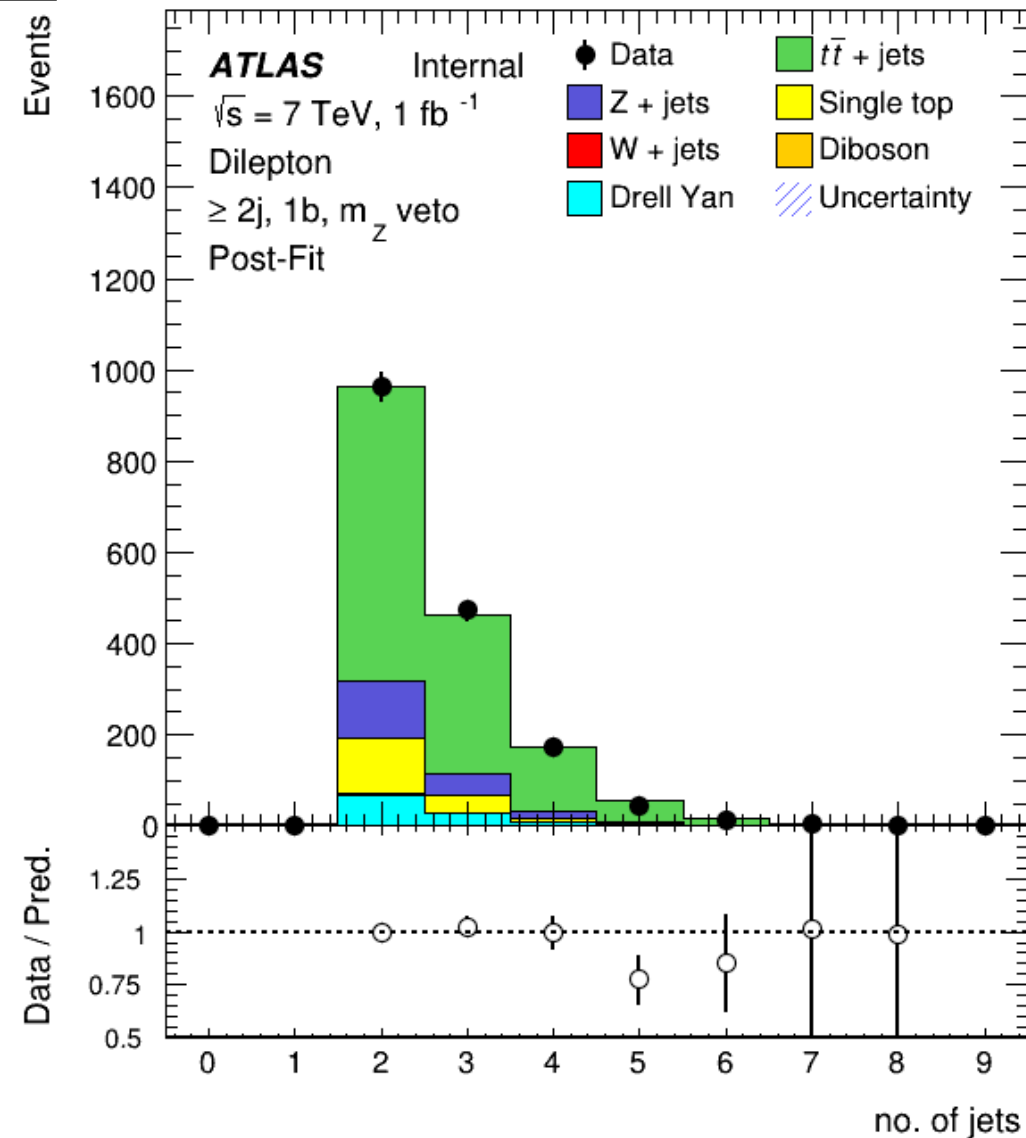
Mudanças nos gráficos de controlo de Z_1 (gráfico Et Miss)



Fit – região sinal + single top + Z_1

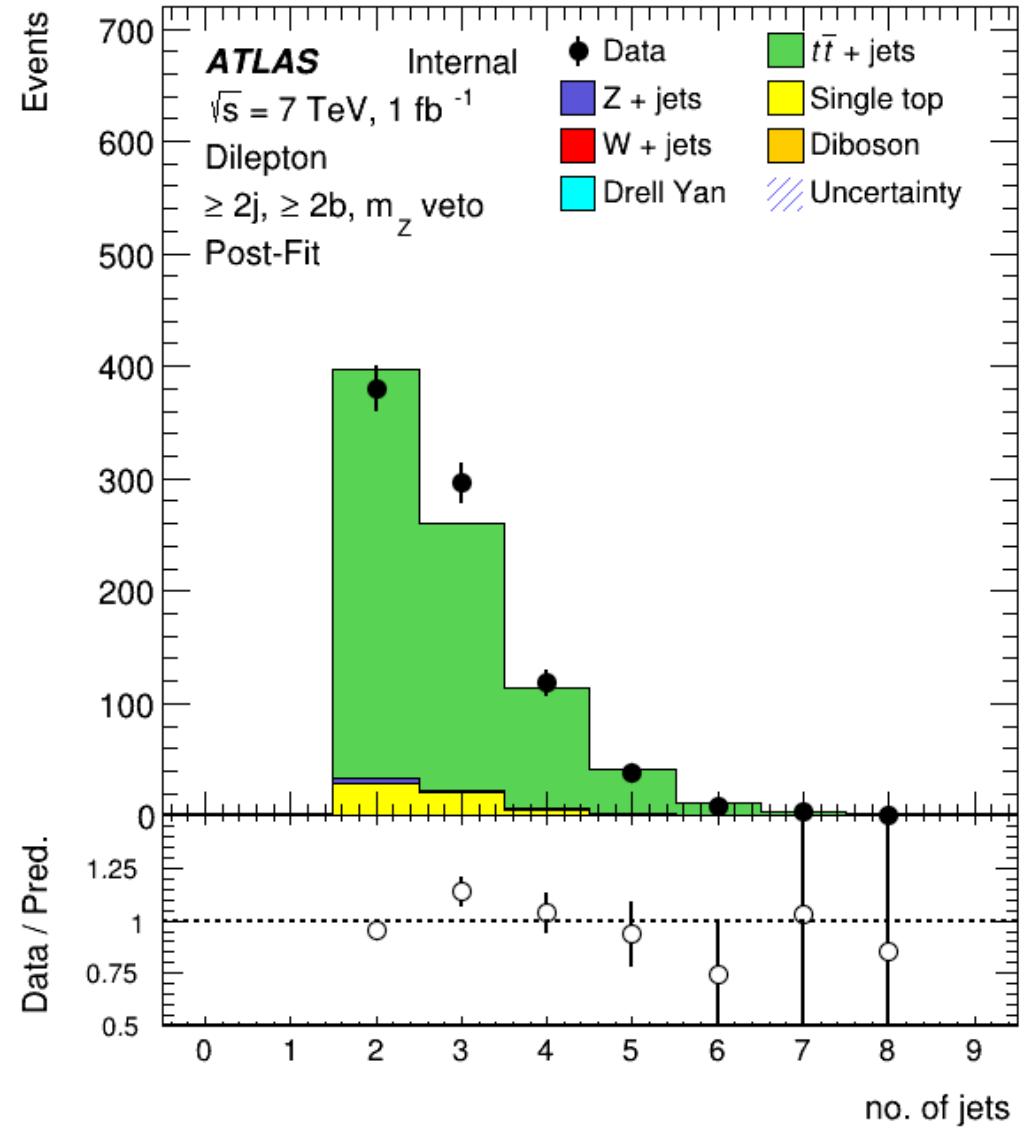
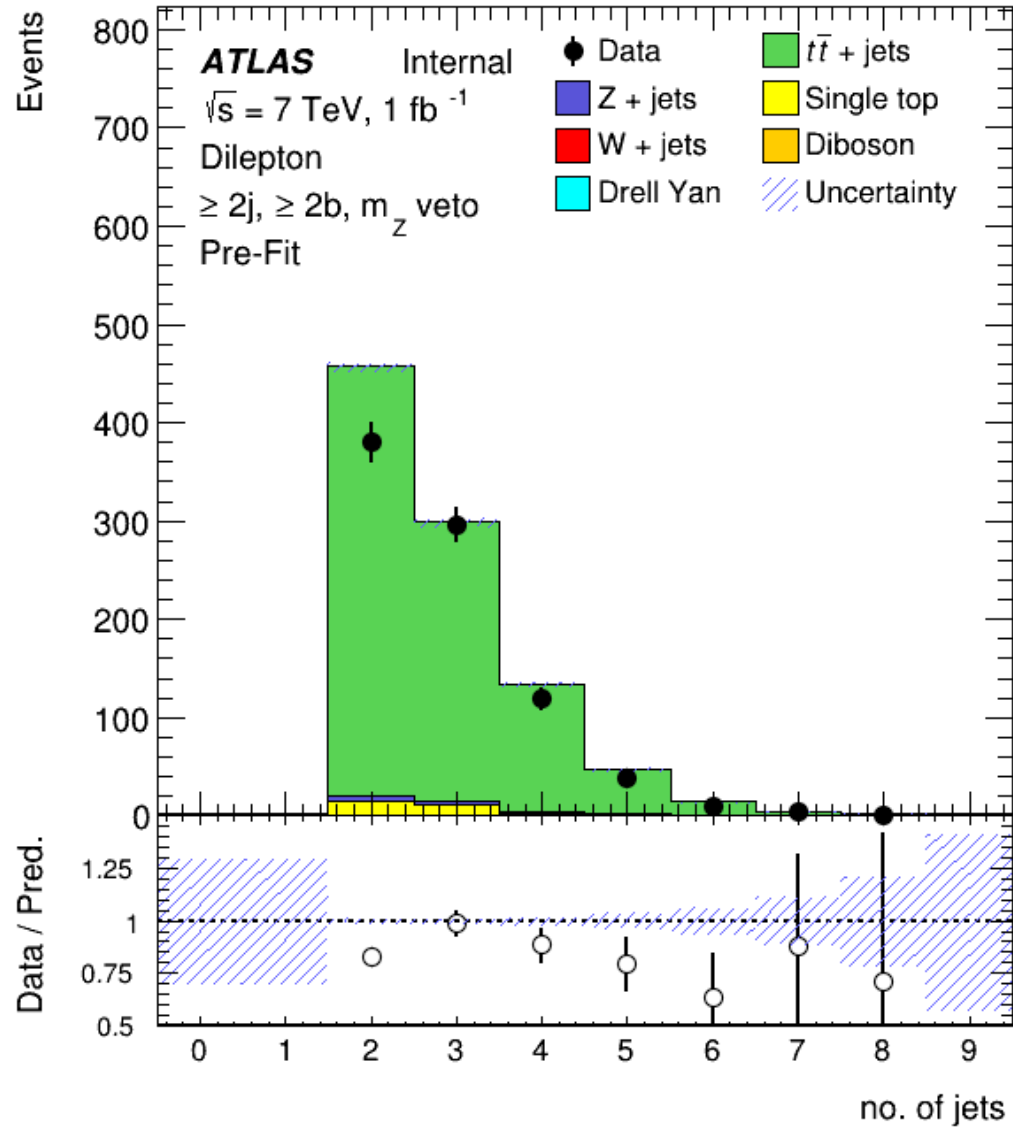


Mudanças nos gráficos de controlo de single top (gráfico do número de jatos)



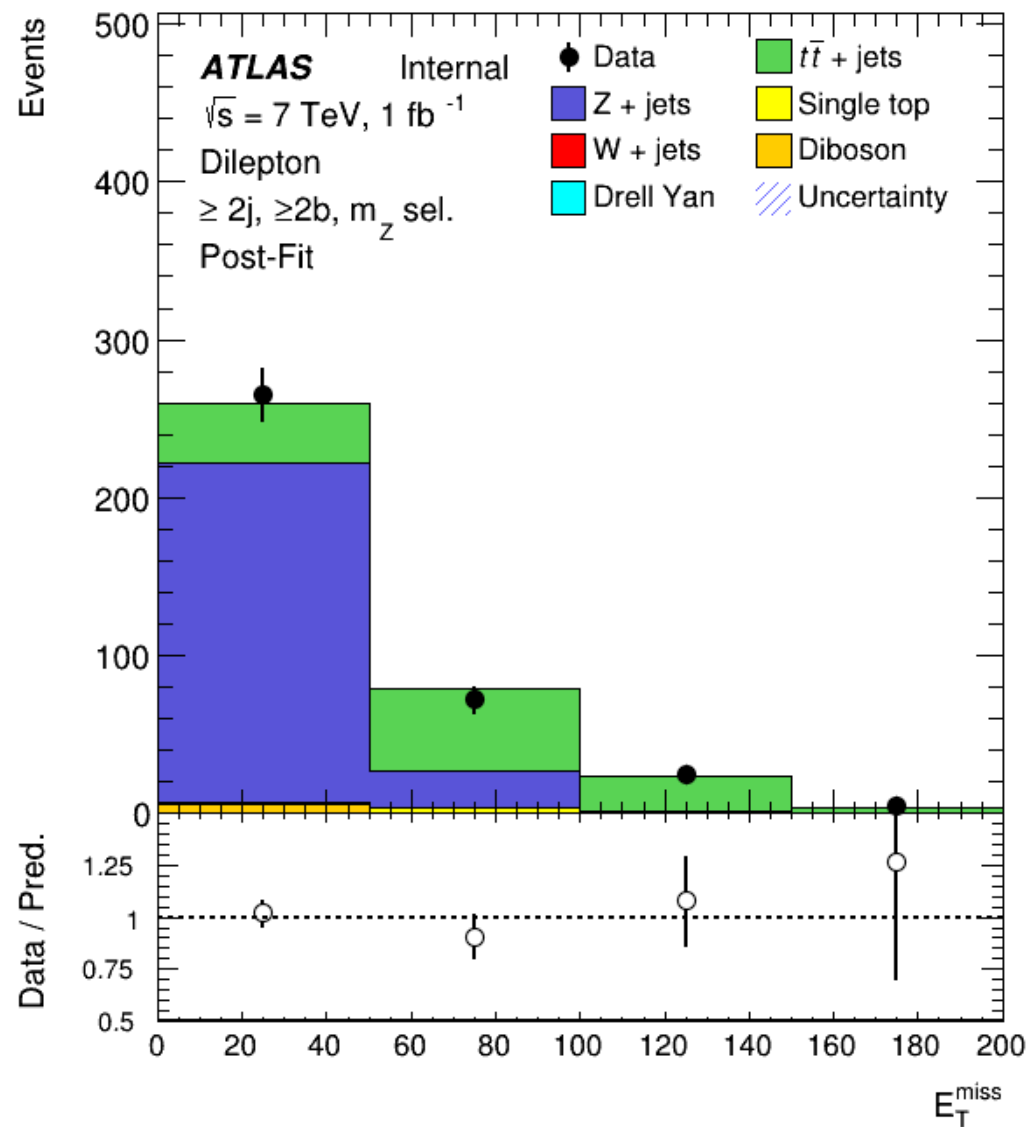
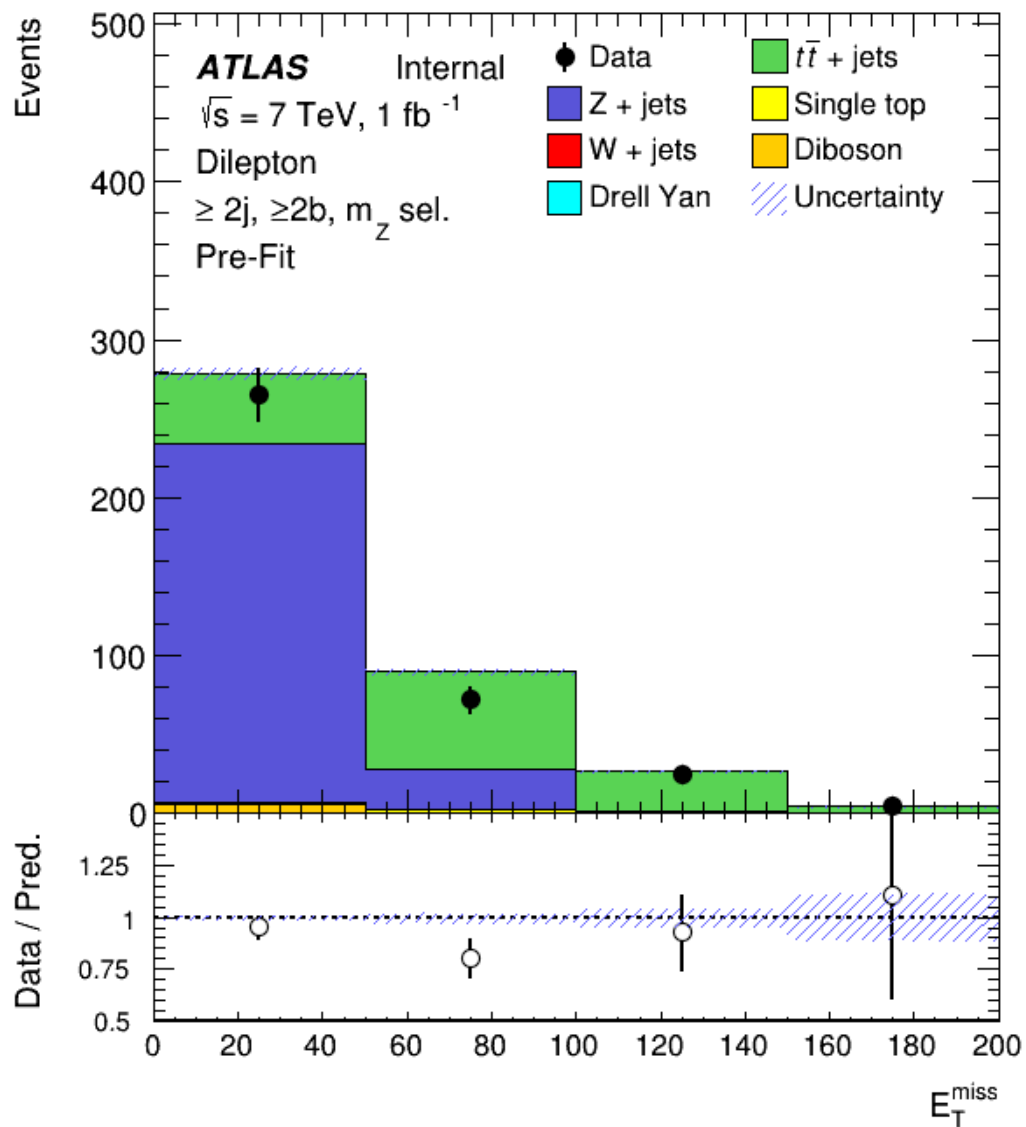
Fit – região sinal + single top + Z_1

Mudanças nos gráficos de sinal (gráfico do número de jatos)



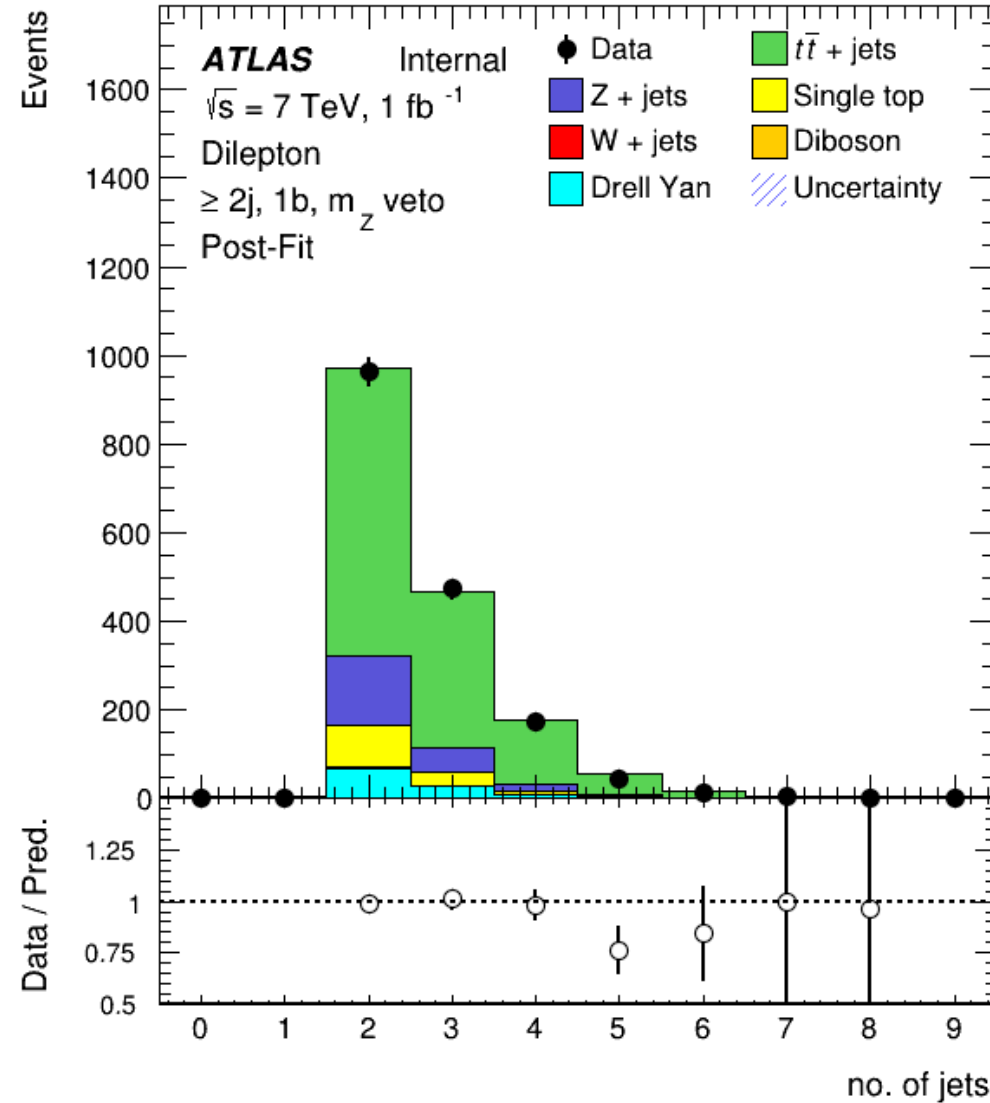
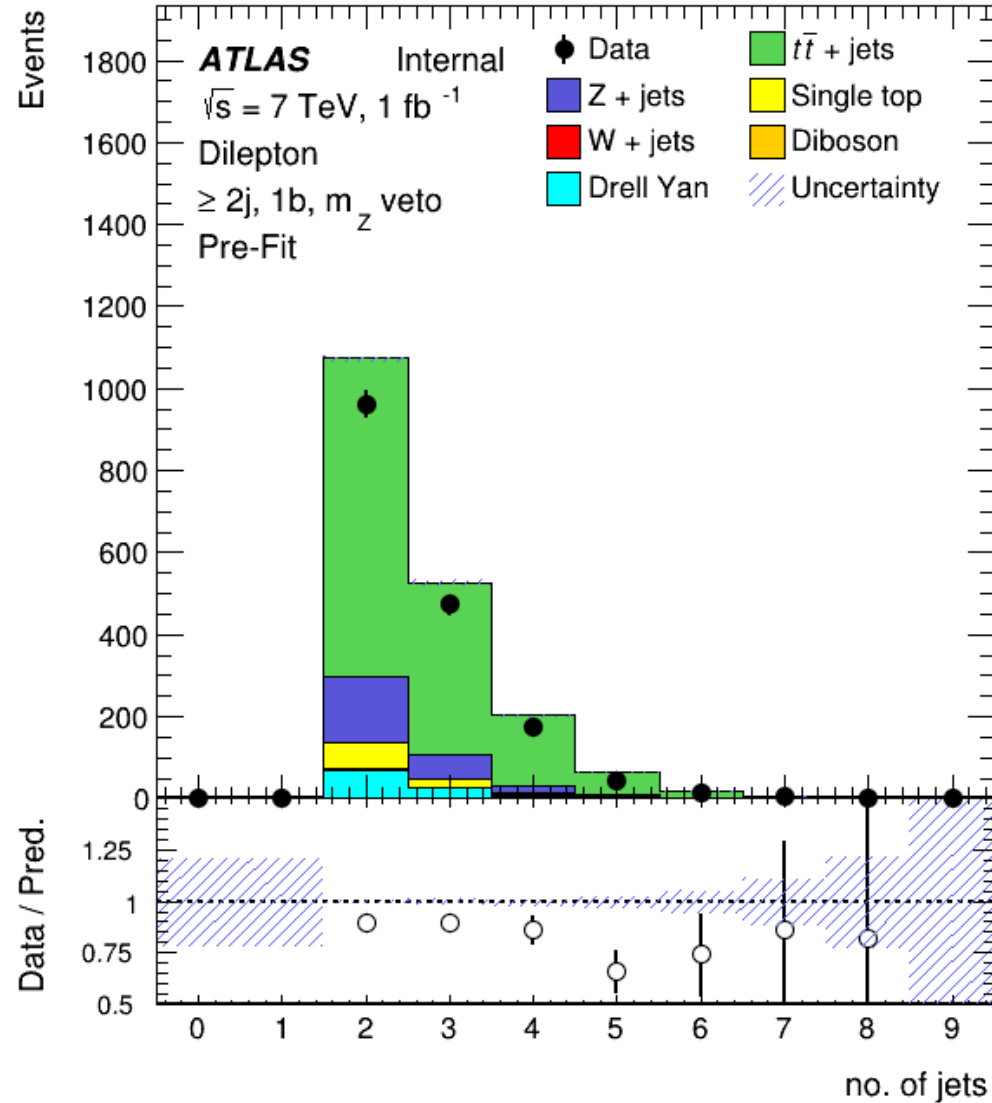
Fit – região sinal + single top + Z_2

Mudanças nos gráficos de controle de Z_2 (Et Miss)



Fit – região sinal + single top + Z_2

Mudanças nos gráficos de controle de single top (gráfico do número de jatos)



Fit – região sinal + single top + Z_2

Mudanças nos gráficos de sinal (gráfico do número de jatos)

