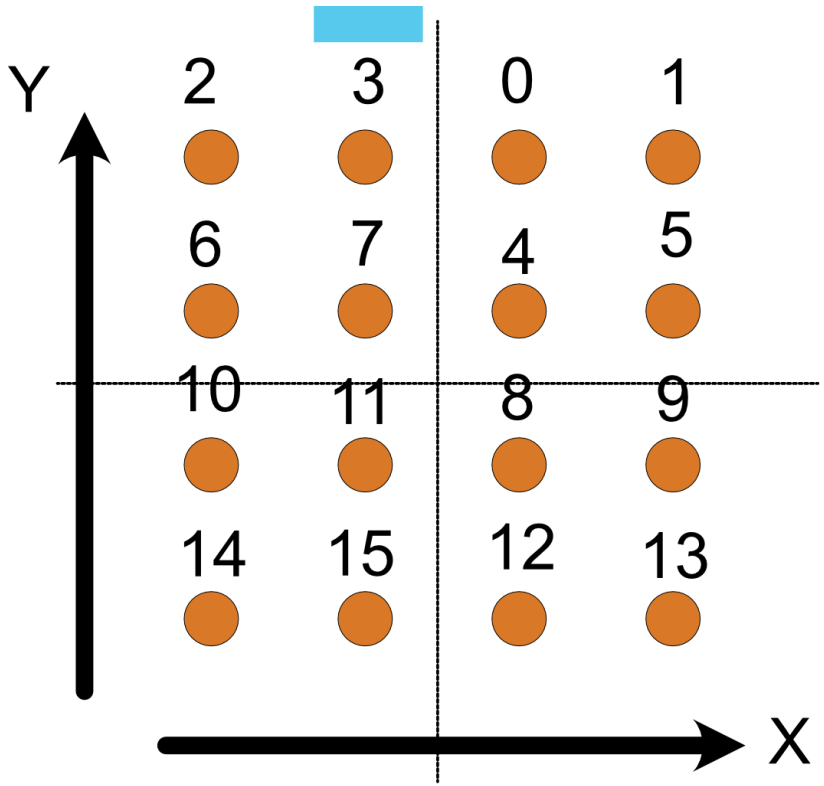
News

15/11/24

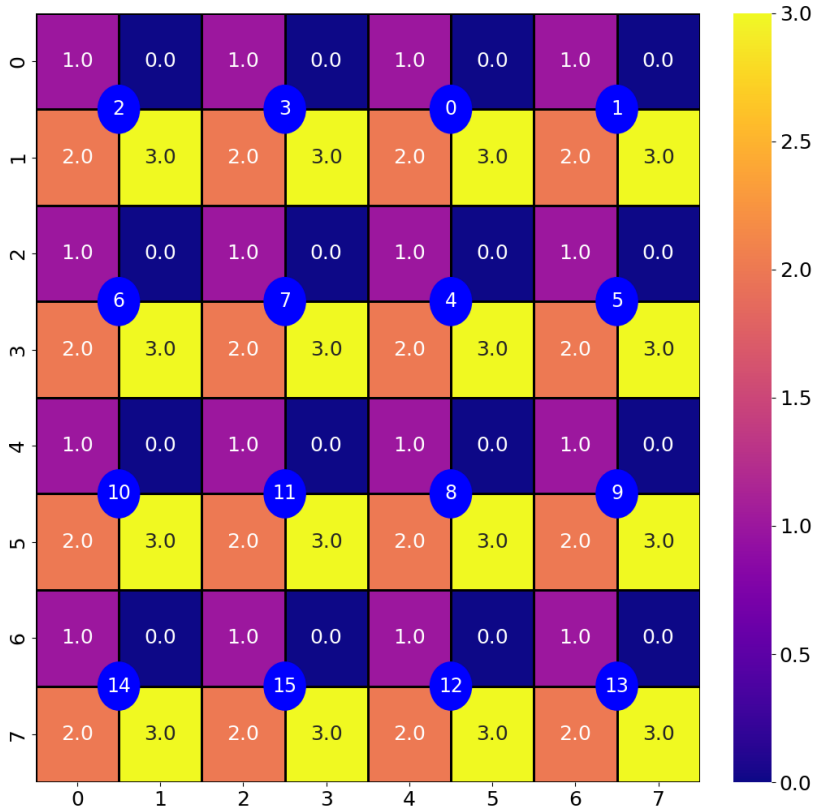
Reminder: Conventions



- X-Y convention derived from the drift chambers
- Propagated to the Xm-Ym variables
- Blue square is the drift chamber blind zone

Some news

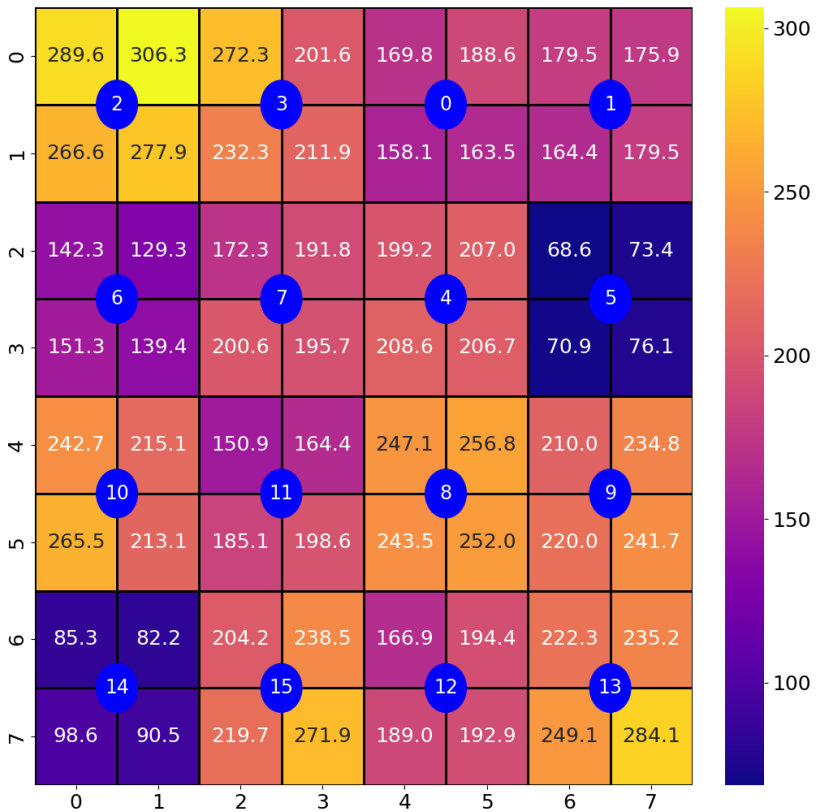
- I found a bug in my code for determining the homogenisation coefficients
- In the last step of the processing quadrant have been choose by their index instead of the fibre number
- Not a game changer but need to be corrected



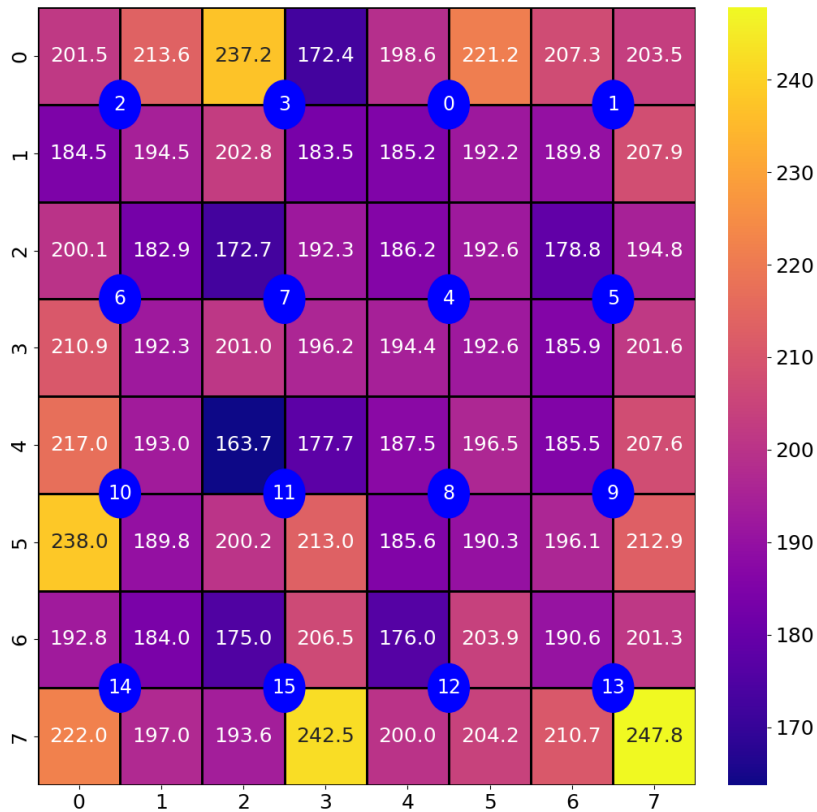
Correct quadrant and fibre numbering

Homogenisation 1/2

Fit performed on a quadrant basis (1 fibre). Only the Landau MPV is reported.



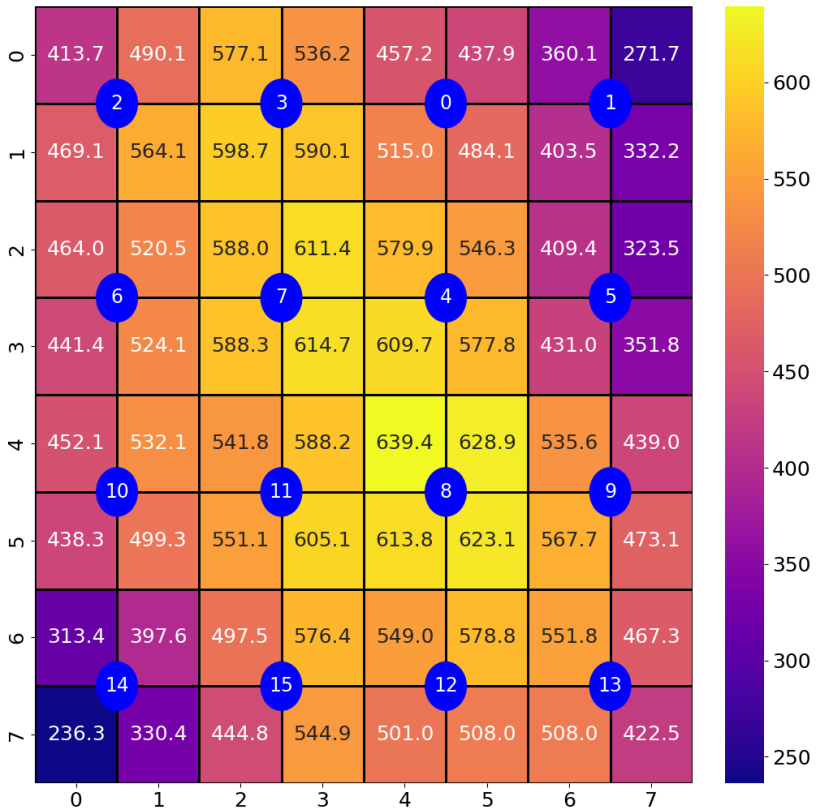
Before homogenisation



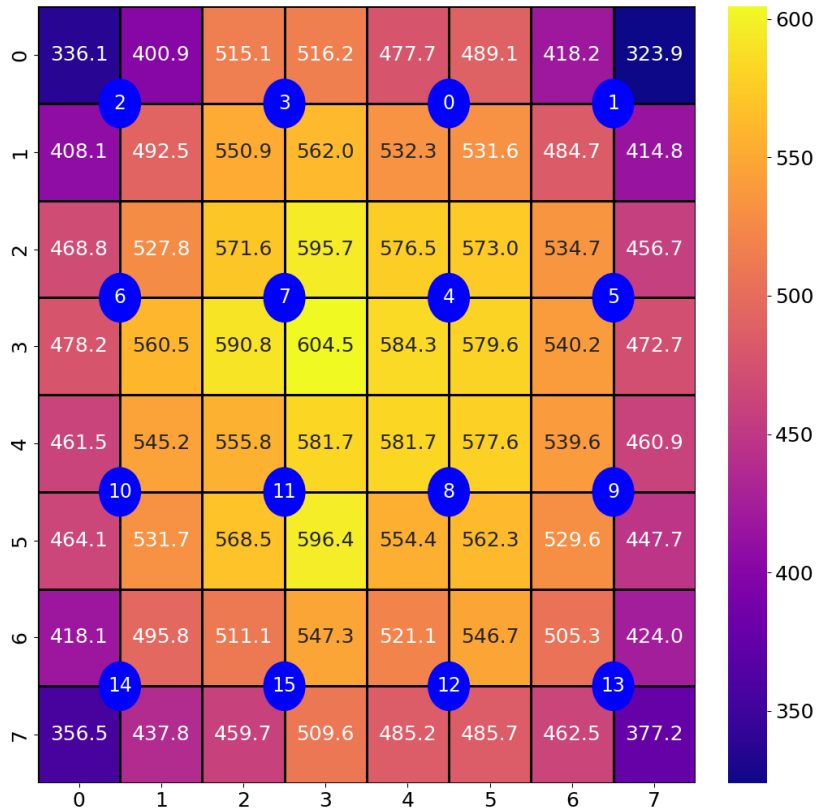
After homogenisation

Homogenisation 2/2

Fit performed on a quadrant basis (All fibres). Only the Landau MPV is reported.



Before homogenisation

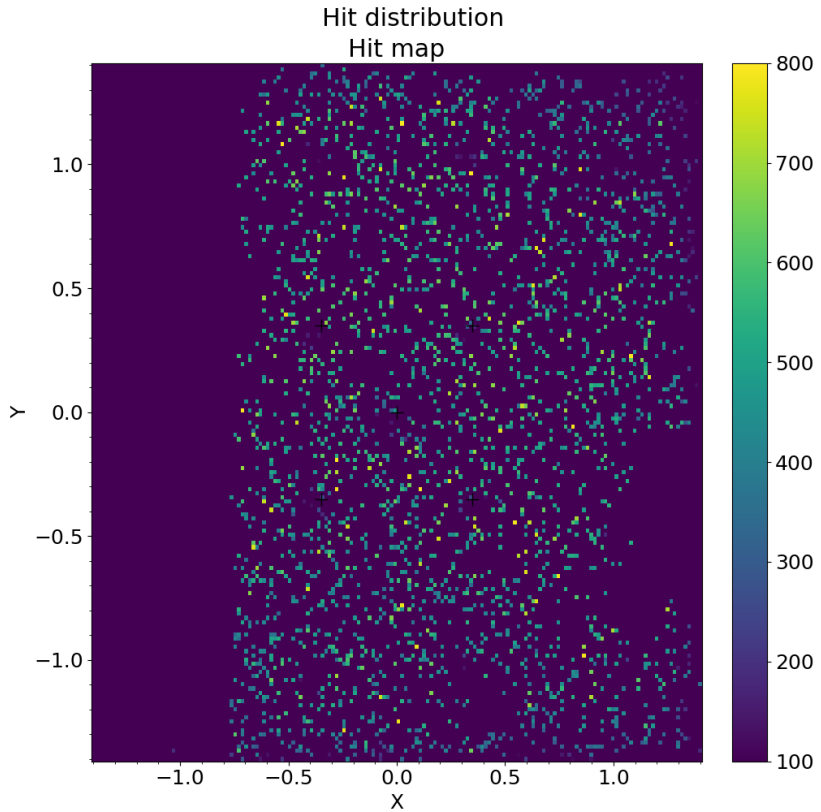


After homogenisation

- New maps have to be produced for next meeting

First look at muons data (Troll1 with water)

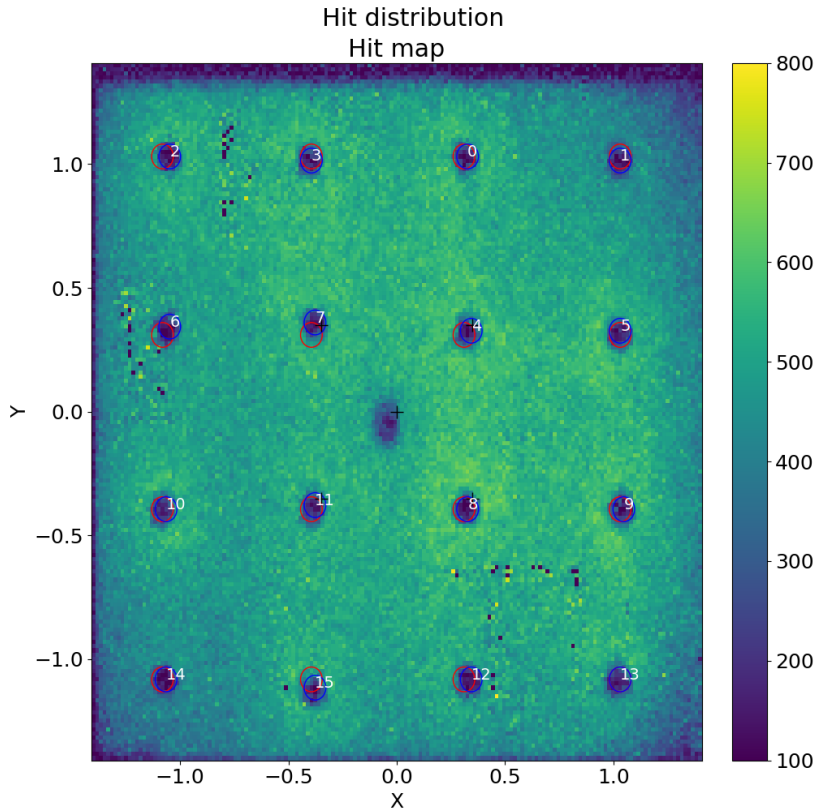
- Run 34
- Statistic not large enough to do something
- Move to pions runs



Troll 1 - Muons

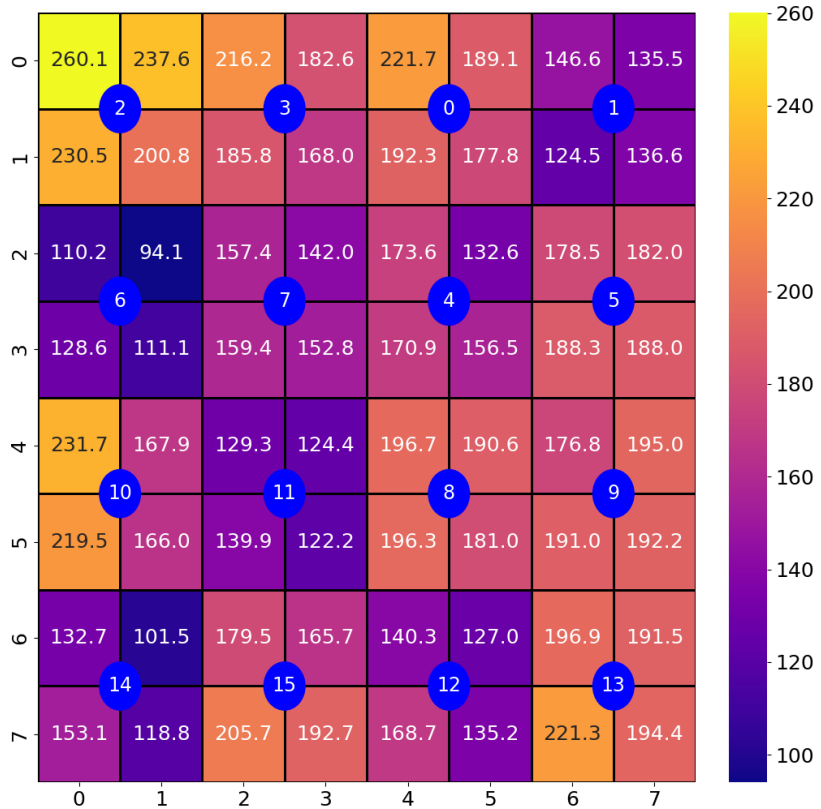
First look at pions data (Troll1 with water)

- Run 51
- First step : determine the fibre position (V2 processing)



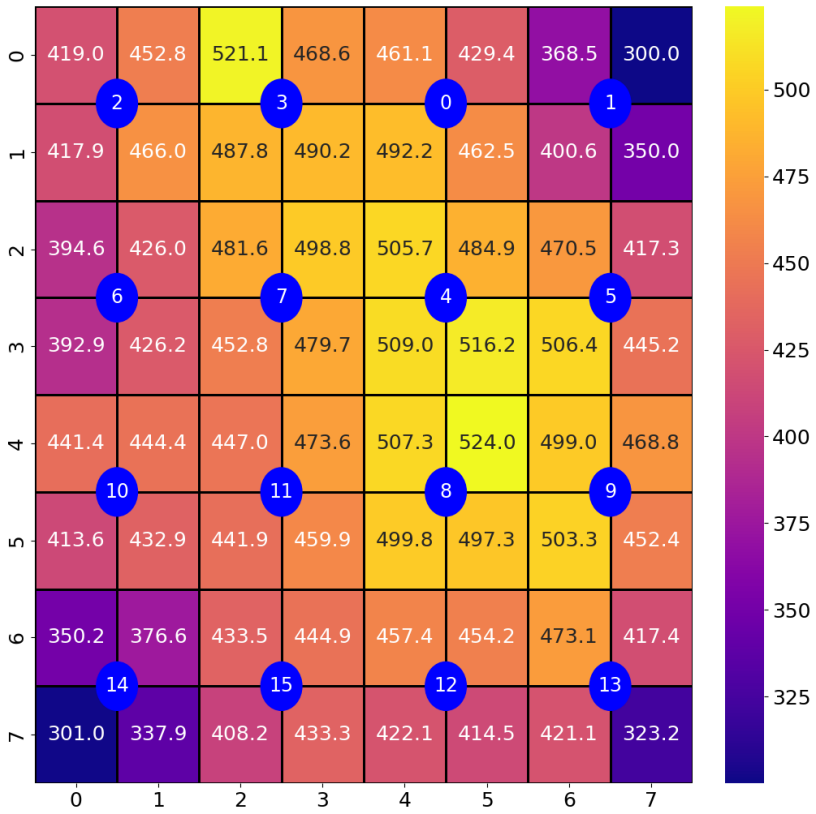
First look at pions data (Troll1 with water)

- Run 51
- Second step : find the homogenisation coefficients
- Use the mean value of the distribution instead of the Laudau MPV

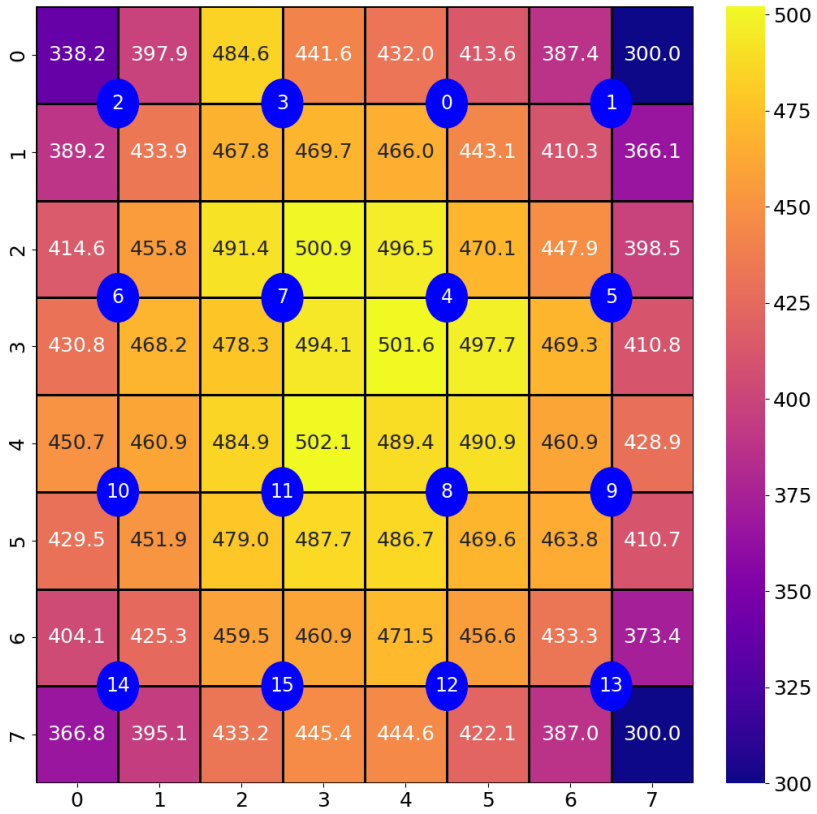


Homogenisation

- Fit performed on a quadrant basis (All fibres). Only the Landau MPV is reported.
- Opportunistic model using the parameters found in the muons/pions heavy liquid study (crystal ball) :
  - $\sigma_{CB} = \sigma_{gauss}$, $\mu_{CB} = \sqrt{2} MPV_{Landau}$
  - $\alpha_{CB} = -0.134$, fraction of signal = 0.80, $n_{CB} = 5$



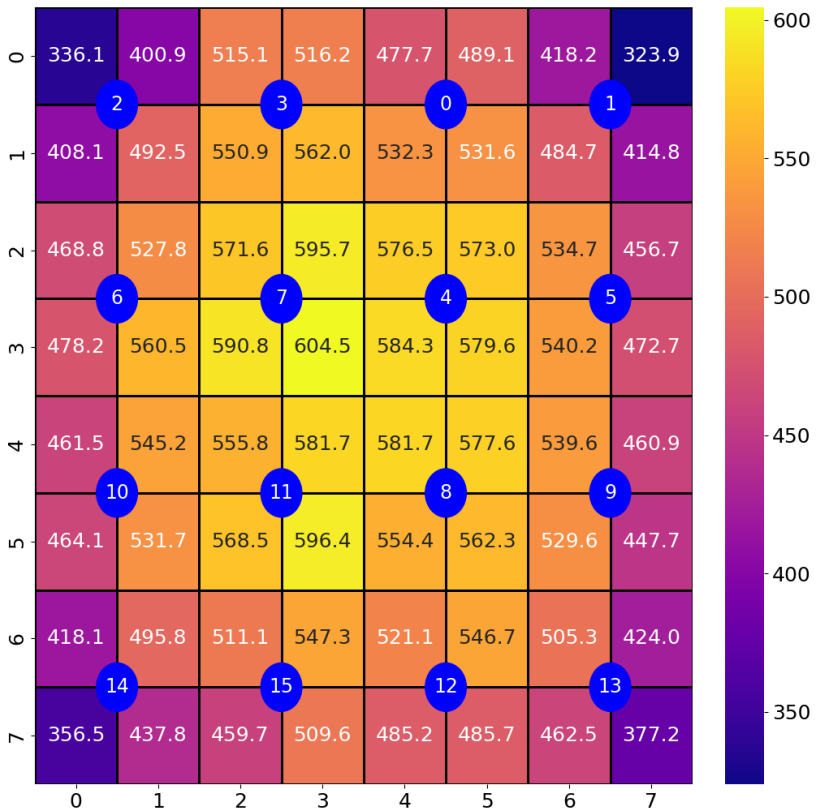
Before homogenisation



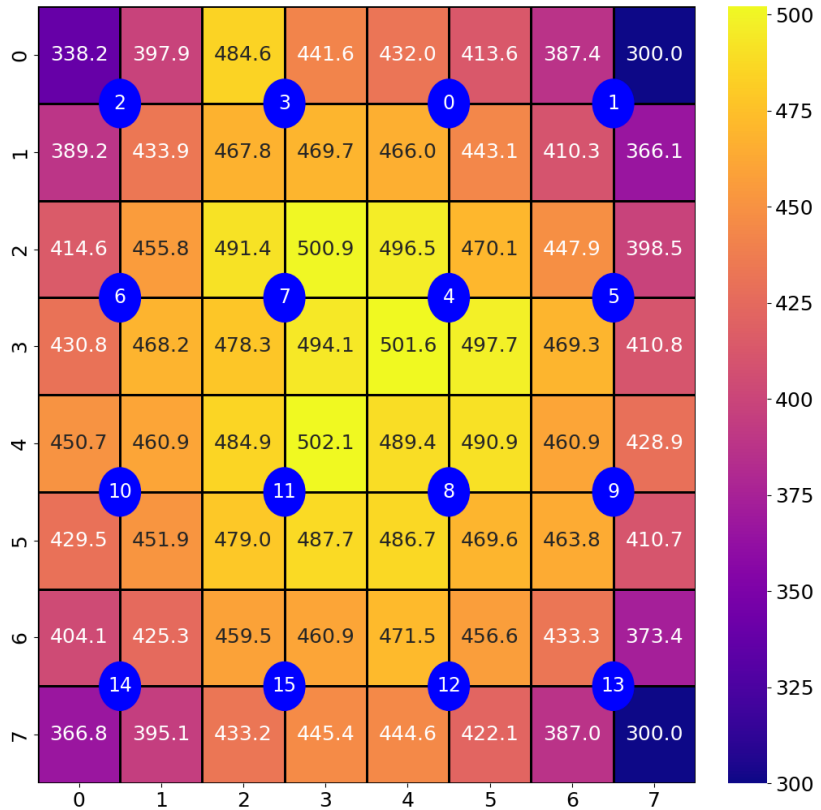
After homogenisation

Homogenisation

- Warning : The map can not be compared straightforwardly, not the same homogenisation procedure

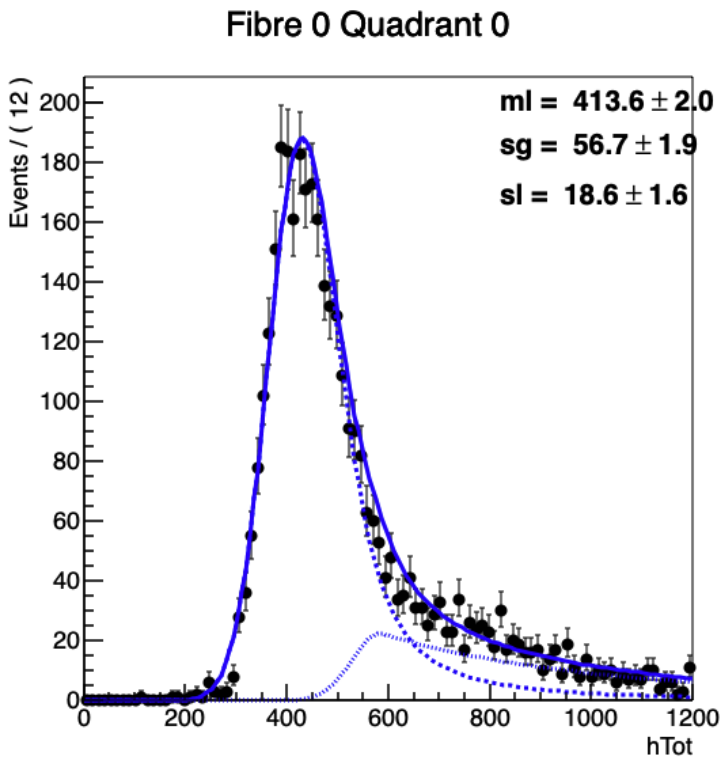


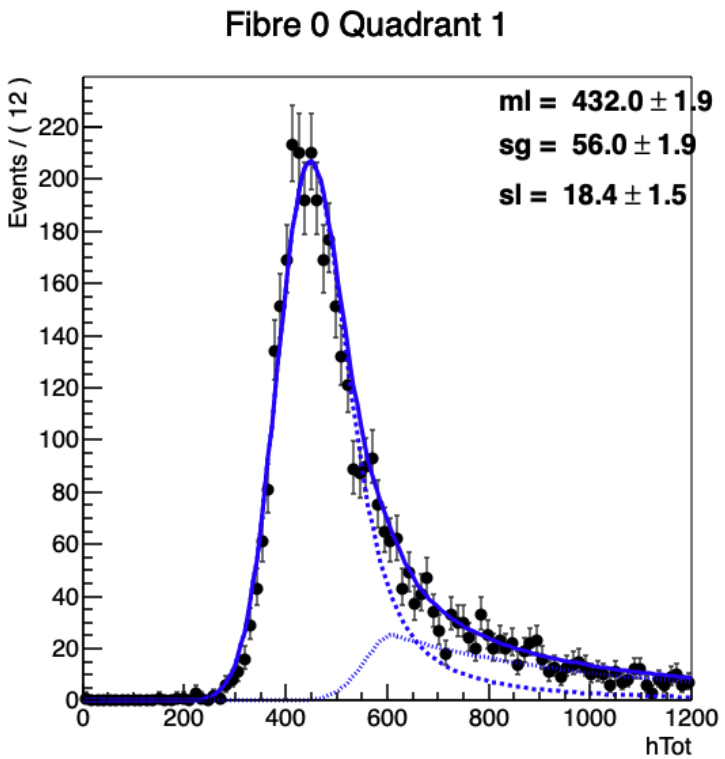
Heavy Liquid



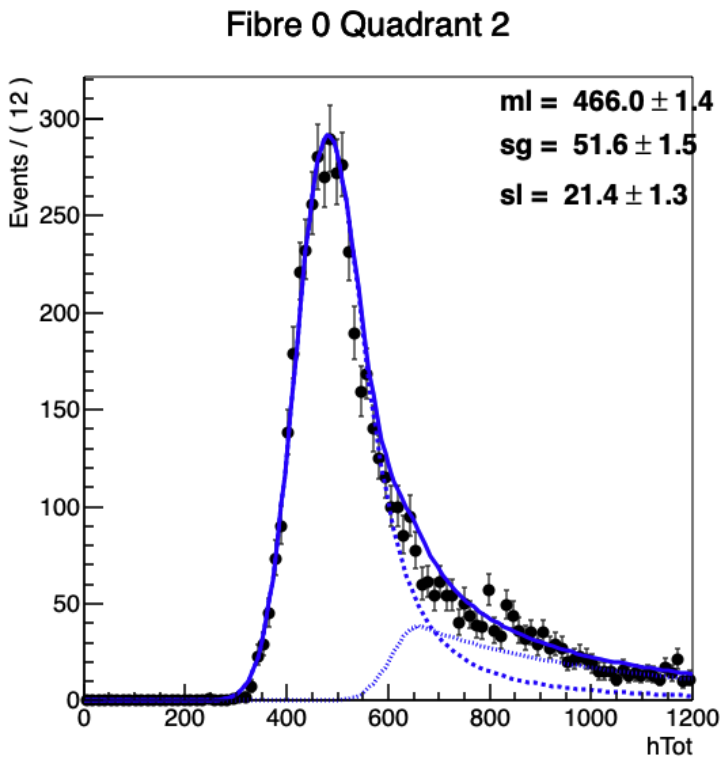
Water

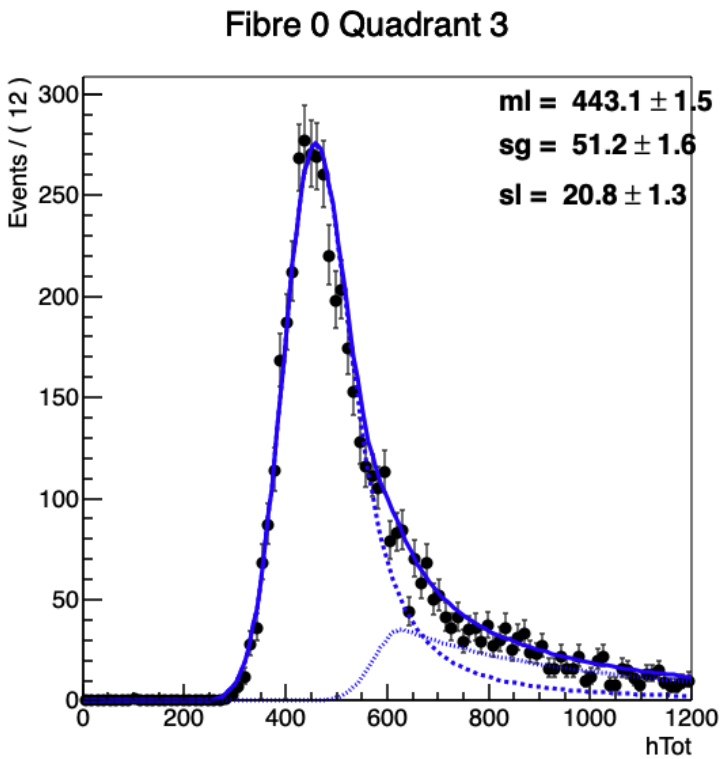
The fits


Fibre 0 Quadrant 0
ml = 413.6 ± 2.0
sg = 56.7 ± 1.9
sl = 18.6 ± 1.6
Events / (12)
hTot

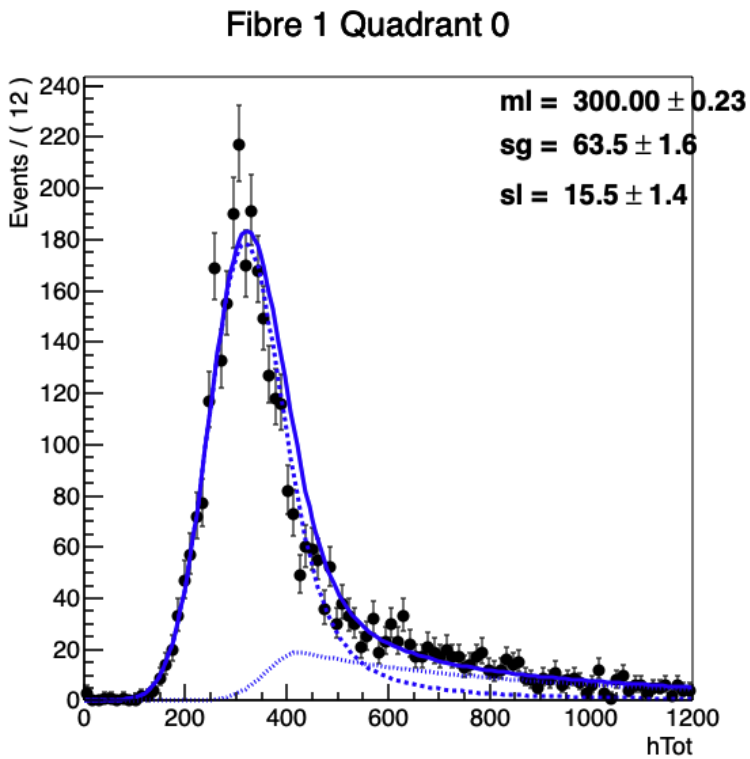

Fibre 0 Quadrant 1
ml = 432.0 ± 1.9
sg = 56.0 ± 1.9
sl = 18.4 ± 1.5
Events / (12)
hTot

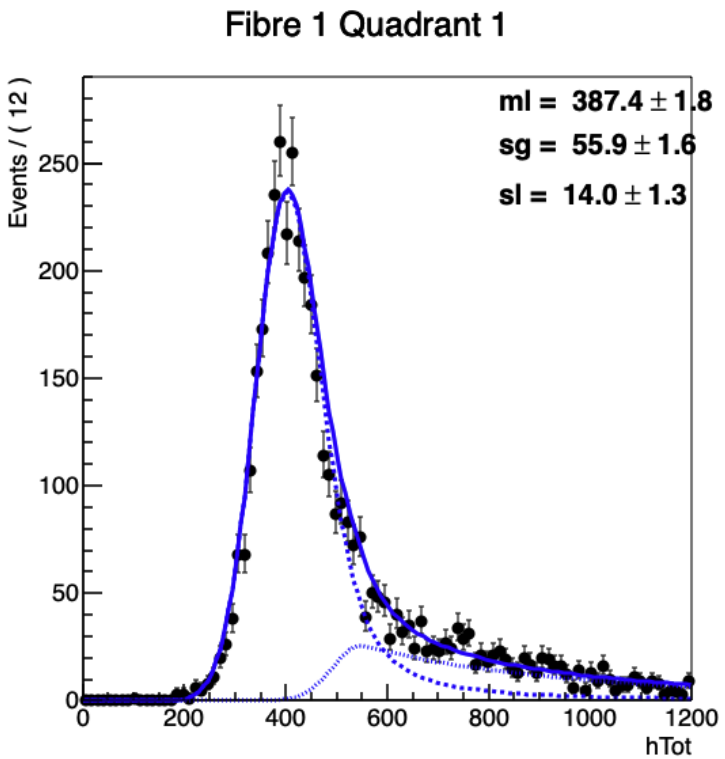
The fits


Fibre 0 Quadrant 2
ml = 466.0 ± 1.4
sg = 51.6 ± 1.5
sl = 21.4 ± 1.3
Events / (12)
hTot

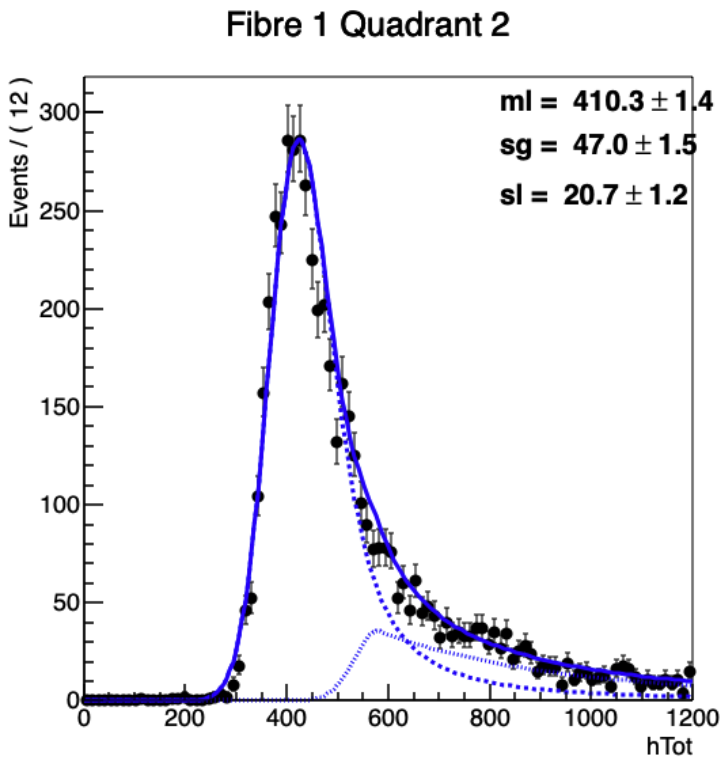

Fibre 0 Quadrant 3
ml = 443.1 ± 1.5
sg = 51.2 ± 1.6
sl = 20.8 ± 1.3
Events / (12)
hTot

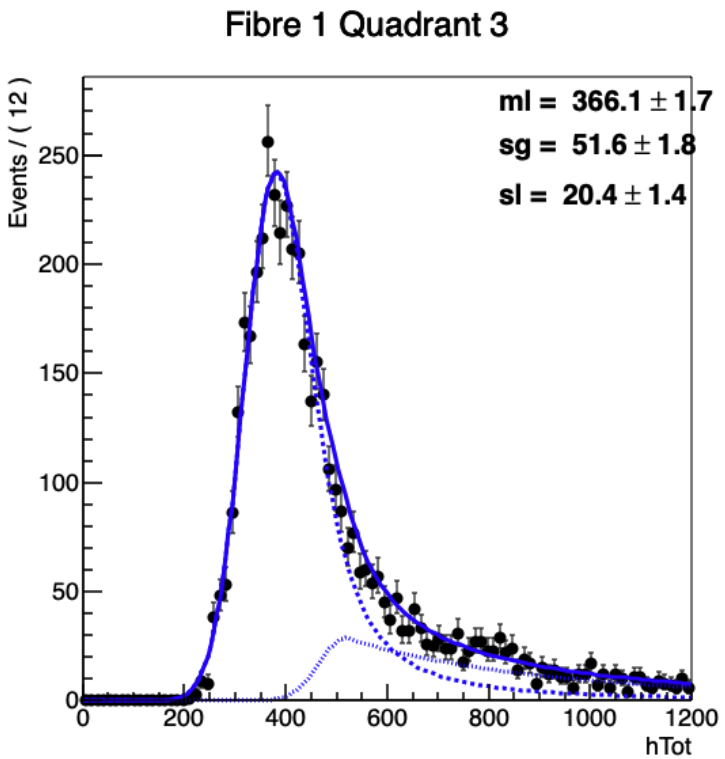
The fits


Fibre 1 Quadrant 0
Events / (12)
hTot
ml = 300.00 ± 0.23
sg = 63.5 ± 1.6
sl = 15.5 ± 1.4

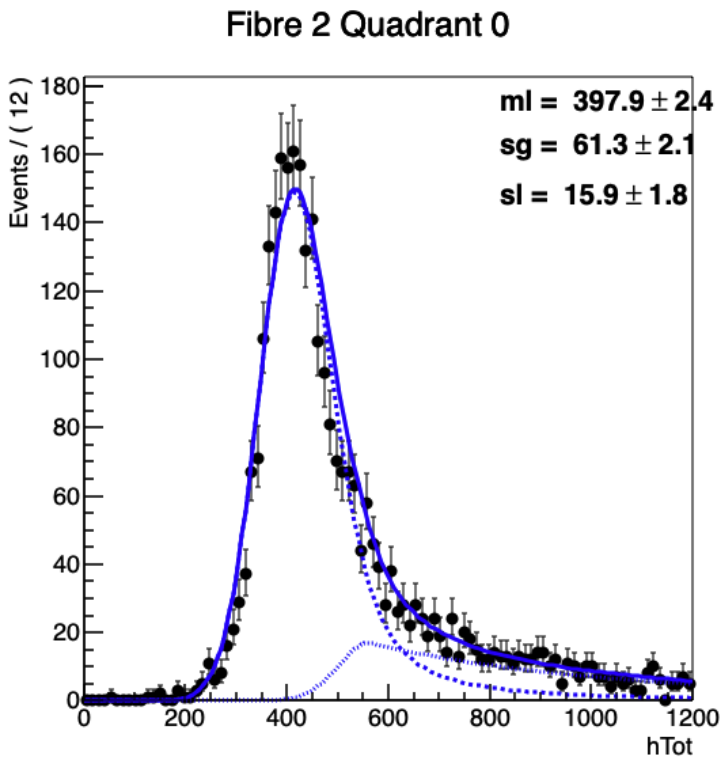

Fibre 1 Quadrant 1
Events / (12)
hTot
ml = 387.4 ± 1.8
sg = 55.9 ± 1.6
sl = 14.0 ± 1.3

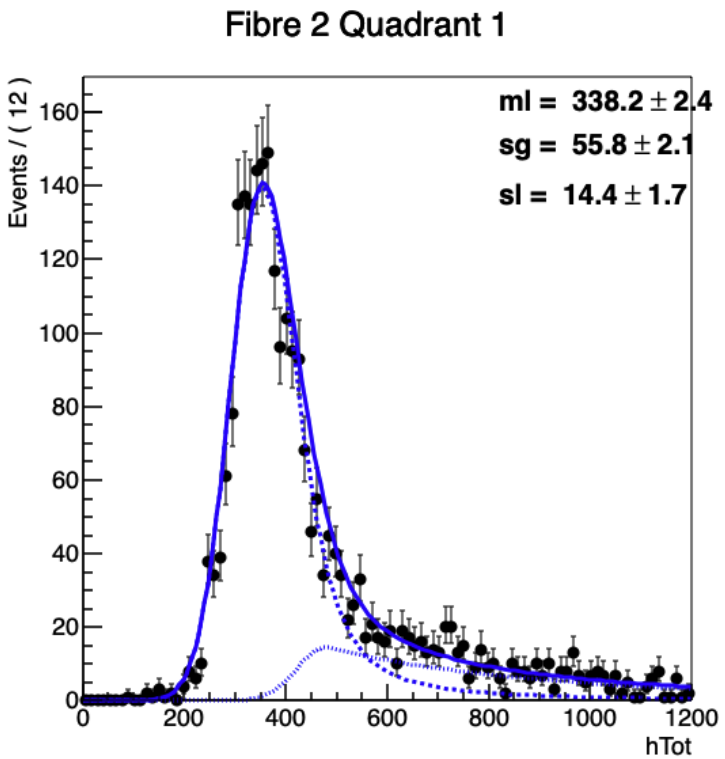
The fits


Fibre 1 Quadrant 2
ml = 410.3 ± 1.4
sg = 47.0 ± 1.5
sl = 20.7 ± 1.2
Events / (12)
hTot

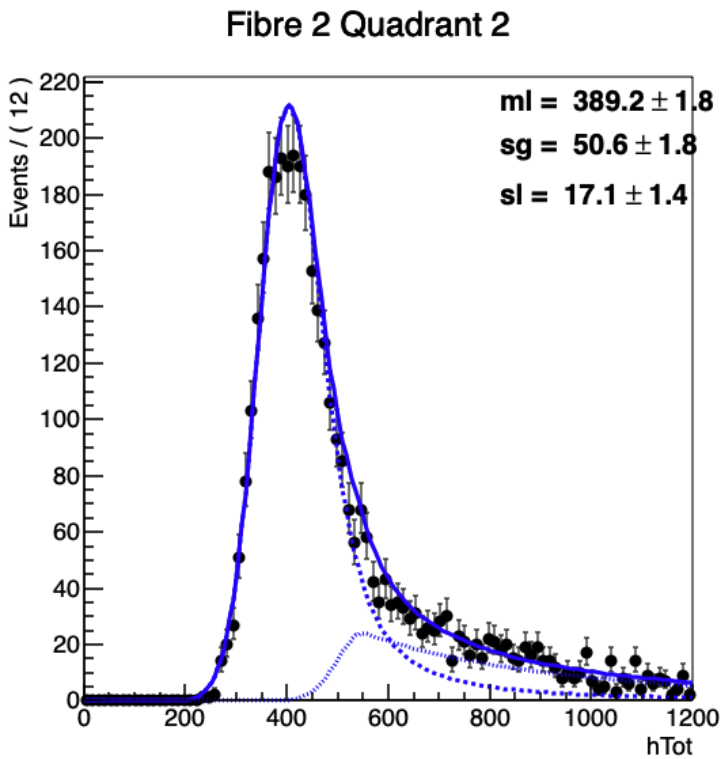

Fibre 1 Quadrant 3
ml = 366.1 ± 1.7
sg = 51.6 ± 1.8
sl = 20.4 ± 1.4
Events / (12)
hTot

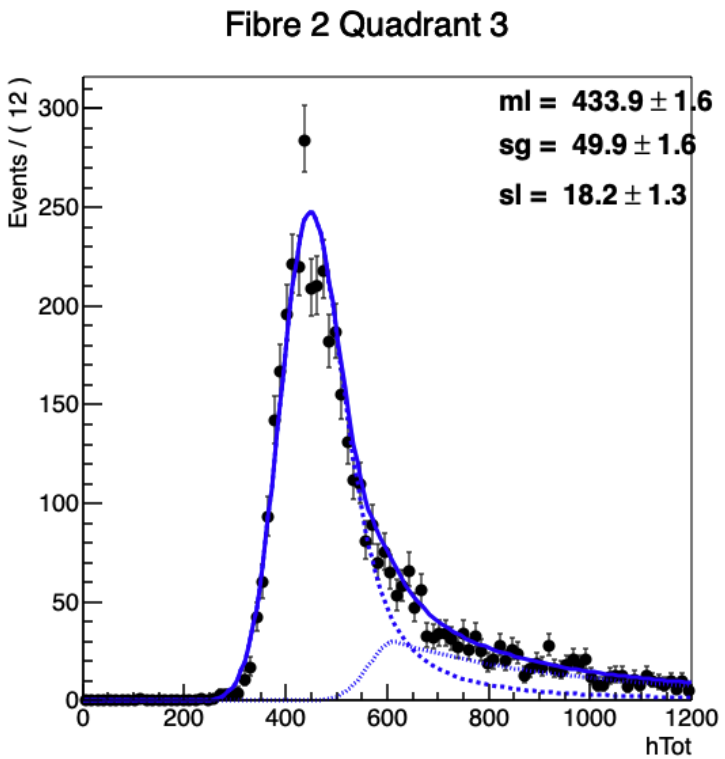
The fits


Fibre 2 Quadrant 0
ml = 397.9 ± 2.4
sg = 61.3 ± 2.1
sl = 15.9 ± 1.8
Events / (12)
hTot

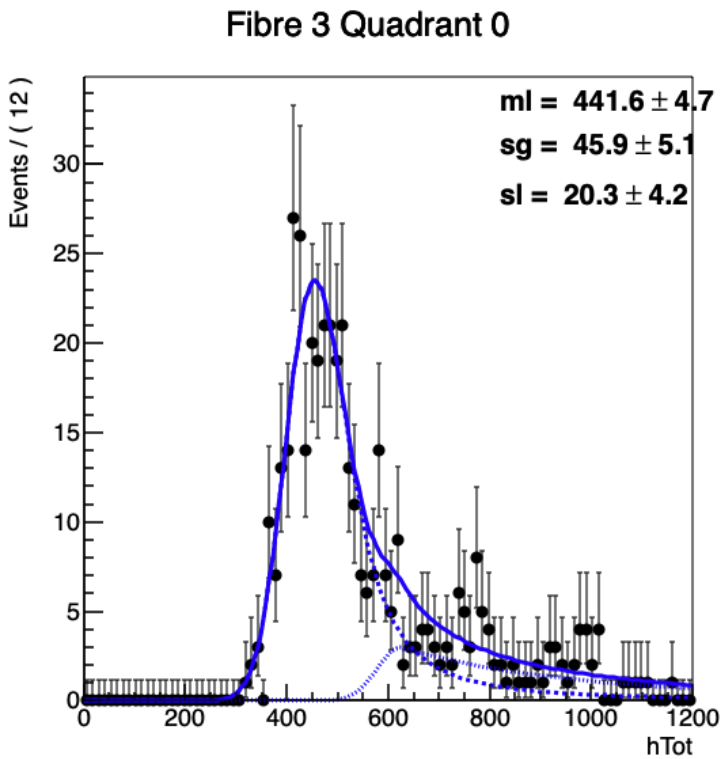

Fibre 2 Quadrant 1
ml = 338.2 ± 2.4
sg = 55.8 ± 2.1
sl = 14.4 ± 1.7
Events / (12)
hTot

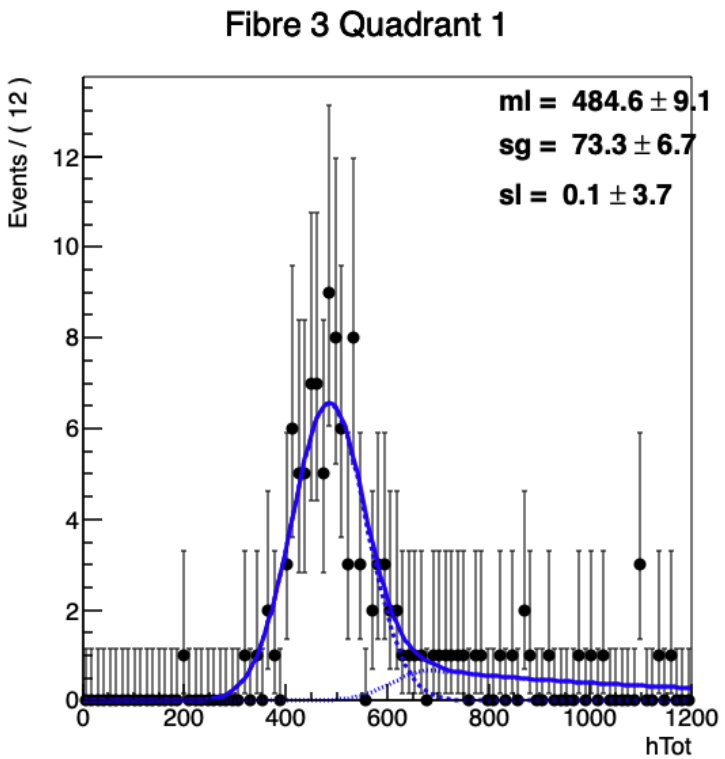
The fits


Fibre 2 Quadrant 2
ml = 389.2 ± 1.8
sg = 50.6 ± 1.8
sl = 17.1 ± 1.4
Events / (12)
hTot

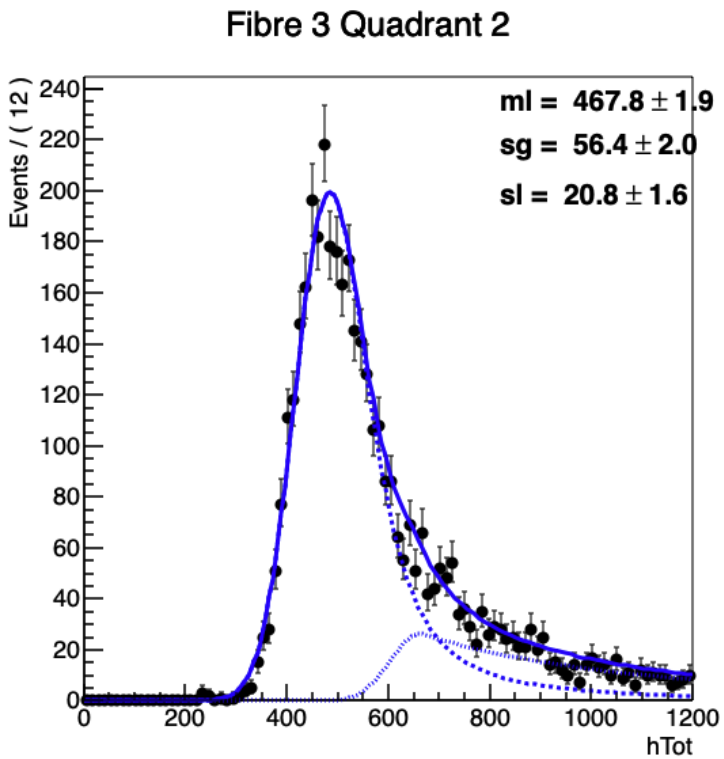

Fibre 2 Quadrant 3
ml = 433.9 ± 1.6
sg = 49.9 ± 1.6
sl = 18.2 ± 1.3
Events / (12)
hTot

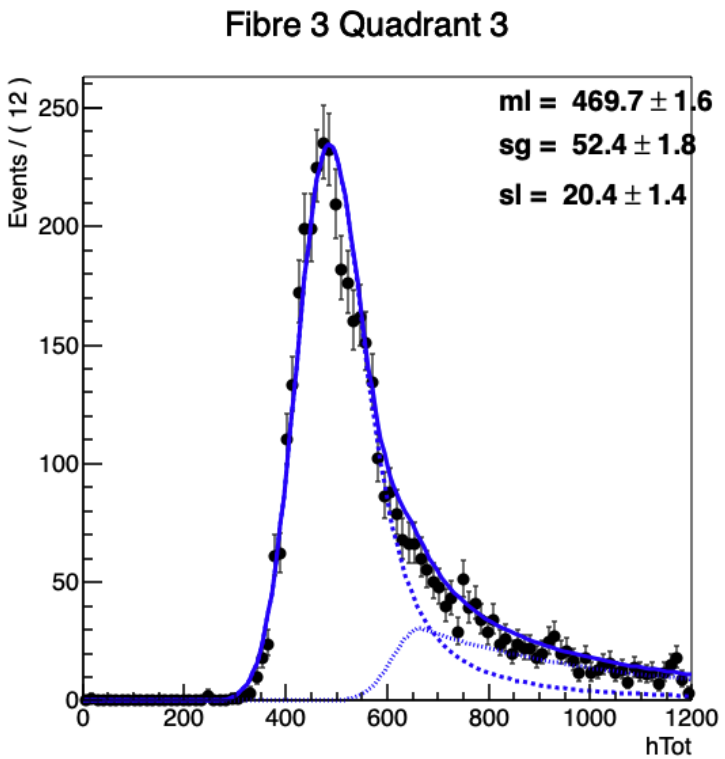
The fits


Fibre 3 Quadrant 0
ml = 441.6 ± 4.7
sg = 45.9 ± 5.1
sl = 20.3 ± 4.2
Events / (12)
hTot

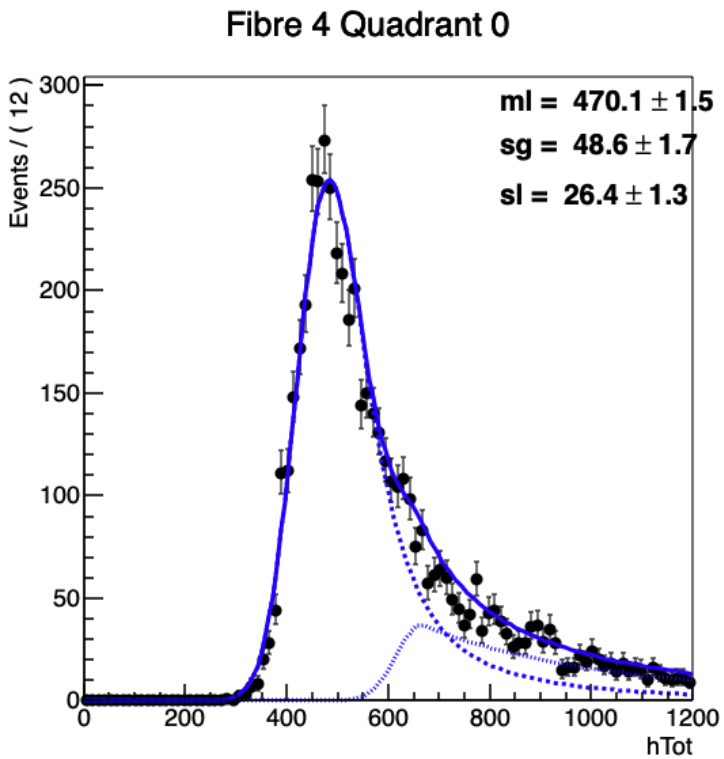

Fibre 3 Quadrant 1
ml = 484.6 ± 9.1
sg = 73.3 ± 6.7
sl = 0.1 ± 3.7
Events / (12)
hTot

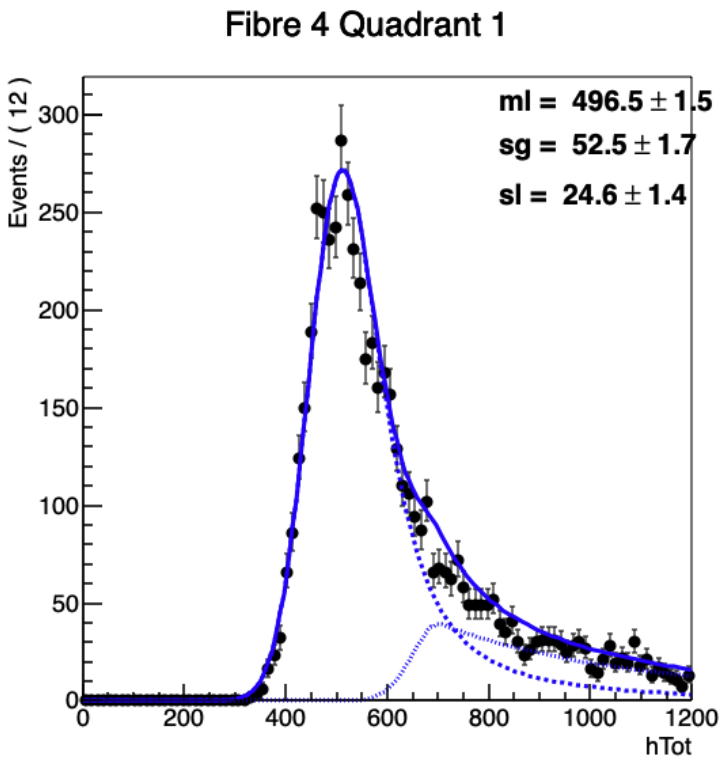
The fits


Fibre 3 Quadrant 2
ml = 467.8 ± 1.9
sg = 56.4 ± 2.0
sl = 20.8 ± 1.6
Events / (12)
hTot

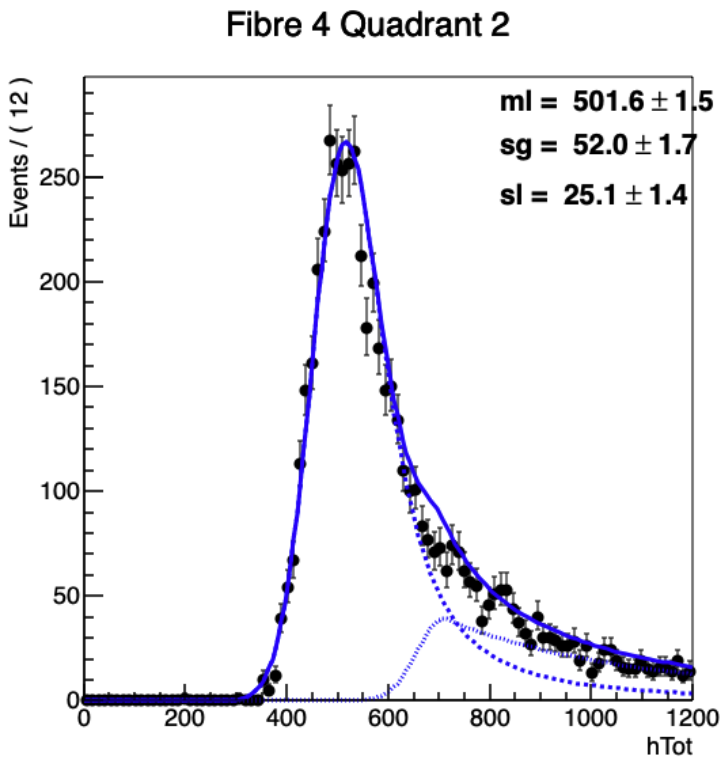

Fibre 3 Quadrant 3
ml = 469.7 ± 1.6
sg = 52.4 ± 1.8
sl = 20.4 ± 1.4
Events / (12)
hTot

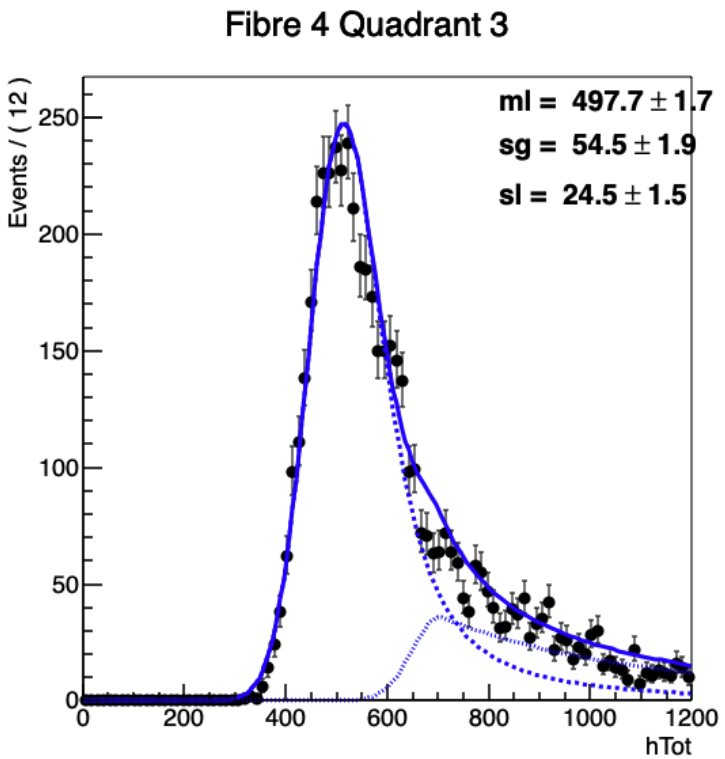
The fits


Fibre 4 Quadrant 0
ml = 470.1 ± 1.5
sg = 48.6 ± 1.7
sl = 26.4 ± 1.3
Events / (12)
hTot

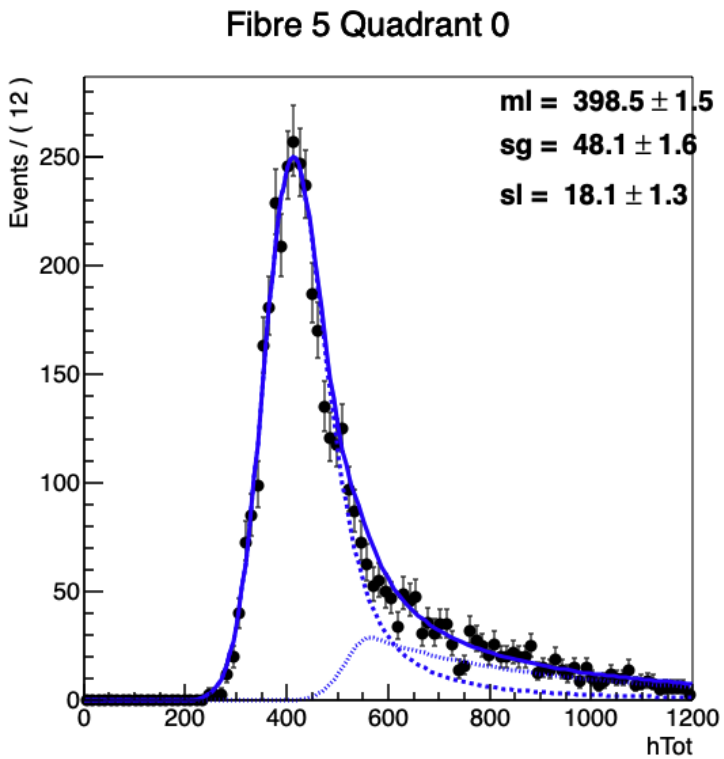

Fibre 4 Quadrant 1
ml = 496.5 ± 1.5
sg = 52.5 ± 1.7
sl = 24.6 ± 1.4
Events / (12)
hTot

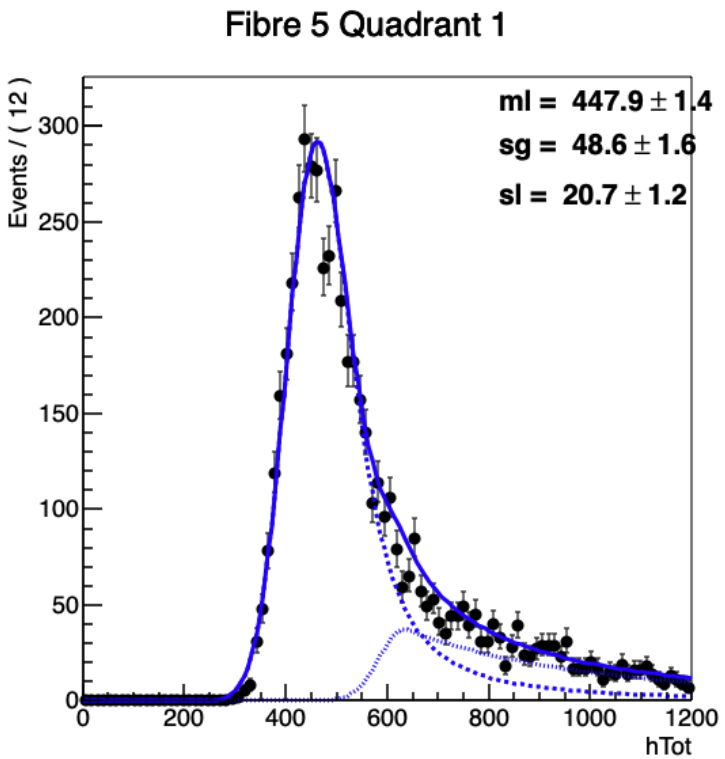
The fits


Fibre 4 Quadrant 2
ml = 501.6 ± 1.5
sg = 52.0 ± 1.7
sl = 25.1 ± 1.4
Events / (12)
hTot
0
50
100
150
200
250
0
200
400
600
800
1000
1200

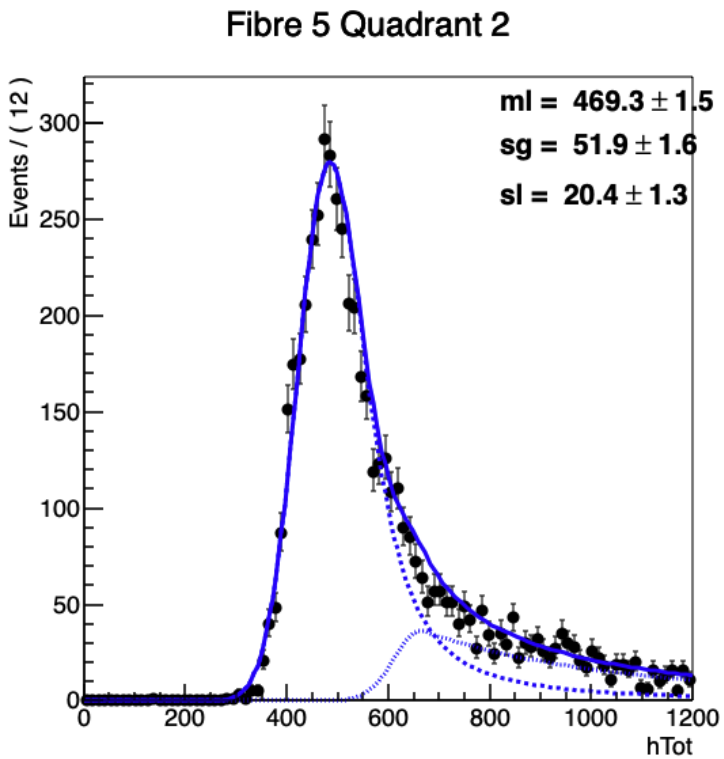

Fibre 4 Quadrant 3
ml = 497.7 ± 1.7
sg = 54.5 ± 1.9
sl = 24.5 ± 1.5
Events / (12)
hTot
0
50
100
150
200
250
0
200
400
600
800
1000
1200

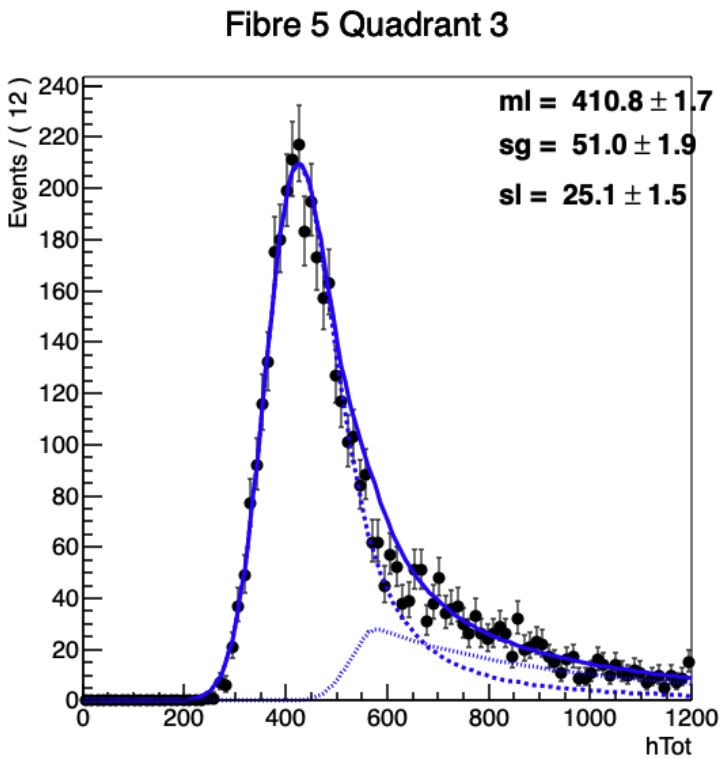
The fits


Fibre 5 Quadrant 0
ml = 398.5 ± 1.5
sg = 48.1 ± 1.6
sl = 18.1 ± 1.3
Events / (12)
hTot

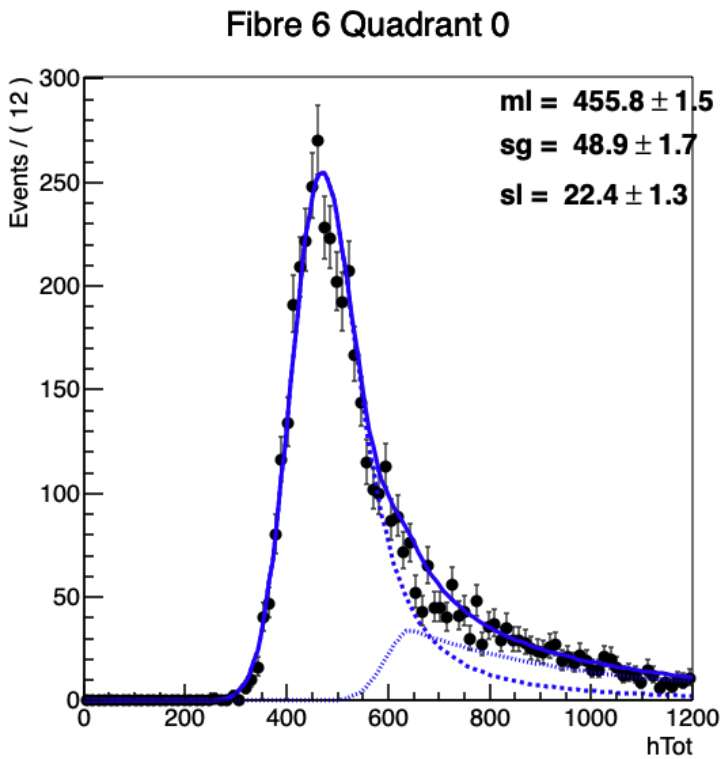

Fibre 5 Quadrant 1
ml = 447.9 ± 1.4
sg = 48.6 ± 1.6
sl = 20.7 ± 1.2
Events / (12)
hTot

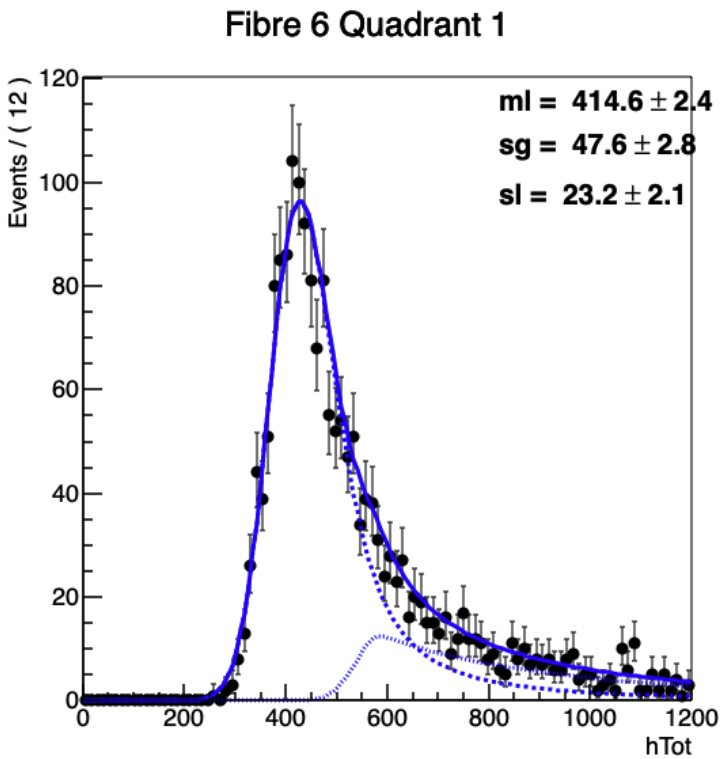
The fits


Fibre 5 Quadrant 2
ml = 469.3 ± 1.5
sg = 51.9 ± 1.6
sl = 20.4 ± 1.3
Events / (12)
hTot

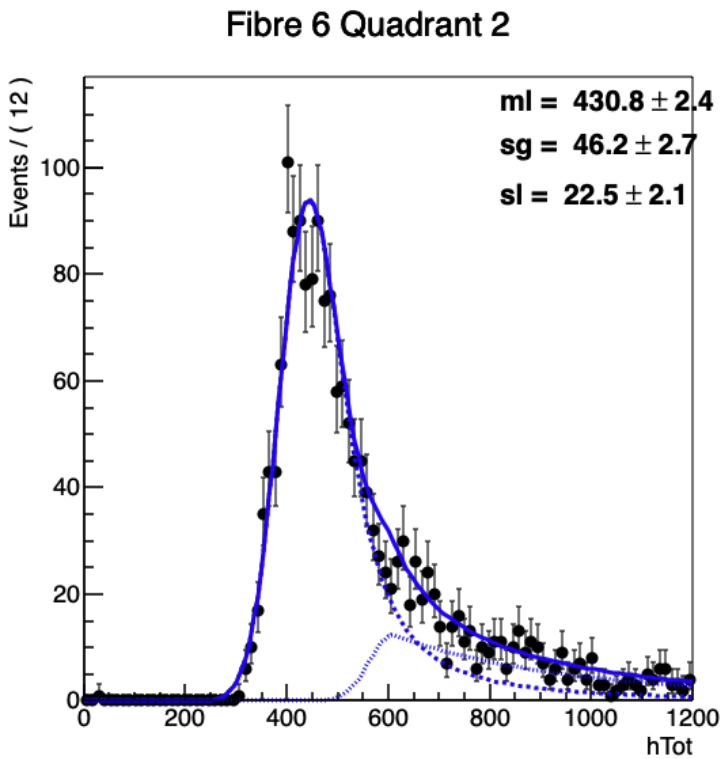

Fibre 5 Quadrant 3
ml = 410.8 ± 1.7
sg = 51.0 ± 1.9
sl = 25.1 ± 1.5
Events / (12)
hTot

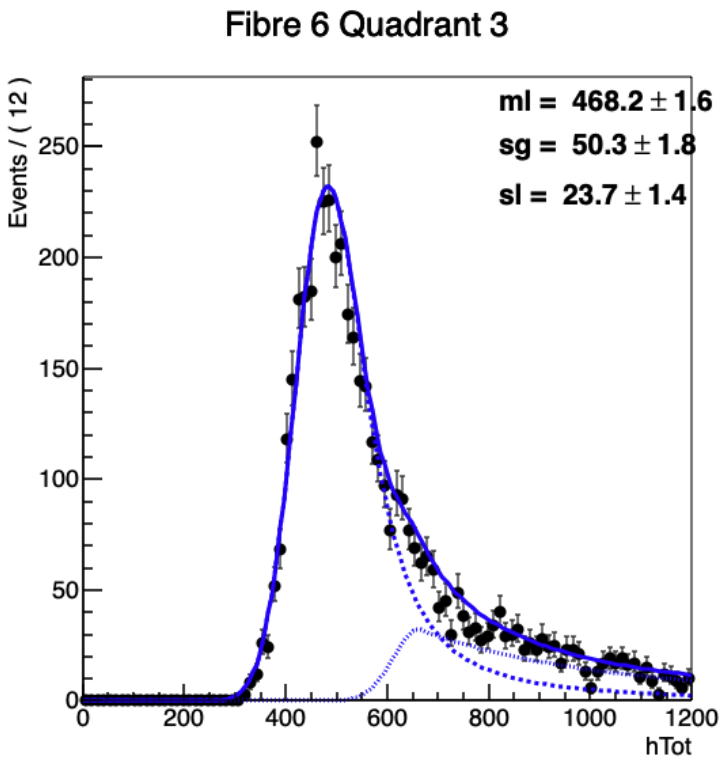
The fits


Fibre 6 Quadrant 0
ml = 455.8 ± 1.5
sg = 48.9 ± 1.7
sl = 22.4 ± 1.3
Events / (12)
hTot
0
50
100
150
200
250
300
0
200
400
600
800
1000
1200

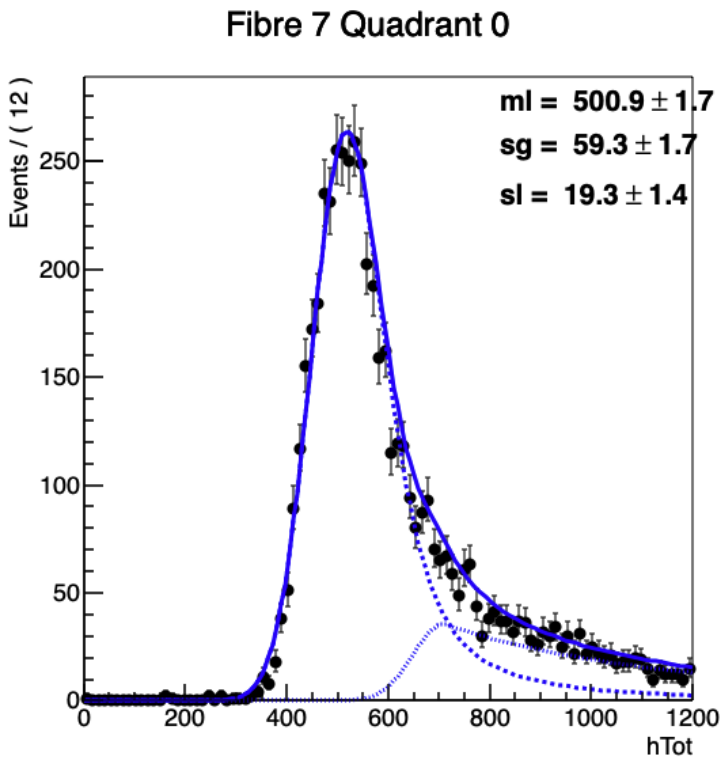

Fibre 6 Quadrant 1
ml = 414.6 ± 2.4
sg = 47.6 ± 2.8
sl = 23.2 ± 2.1
Events / (12)
hTot
0
20
40
60
80
100
120
0
200
400
600
800
1000
1200

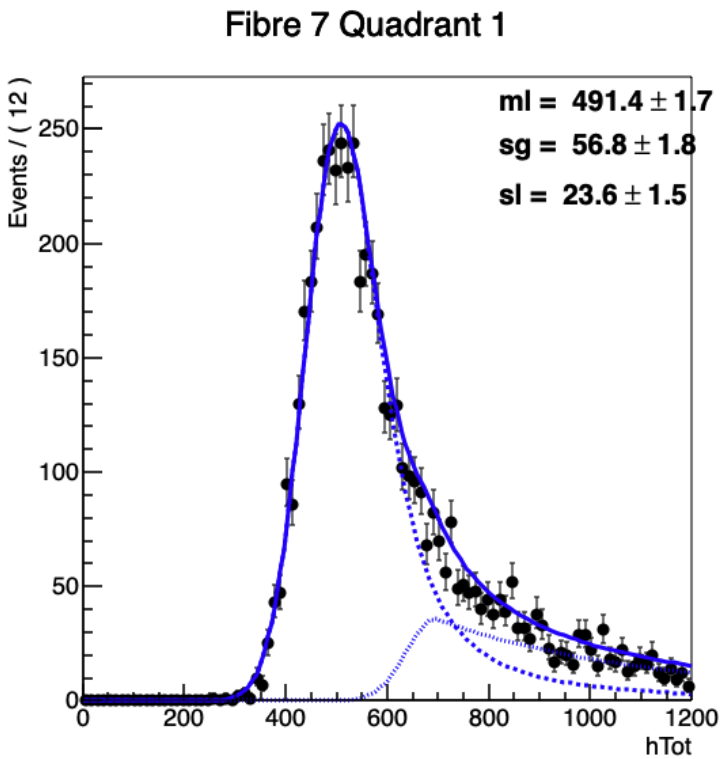
The fits


Fibre 6 Quadrant 2
ml = 430.8 ± 2.4
sg = 46.2 ± 2.7
sl = 22.5 ± 2.1
Events / (12)
hTot

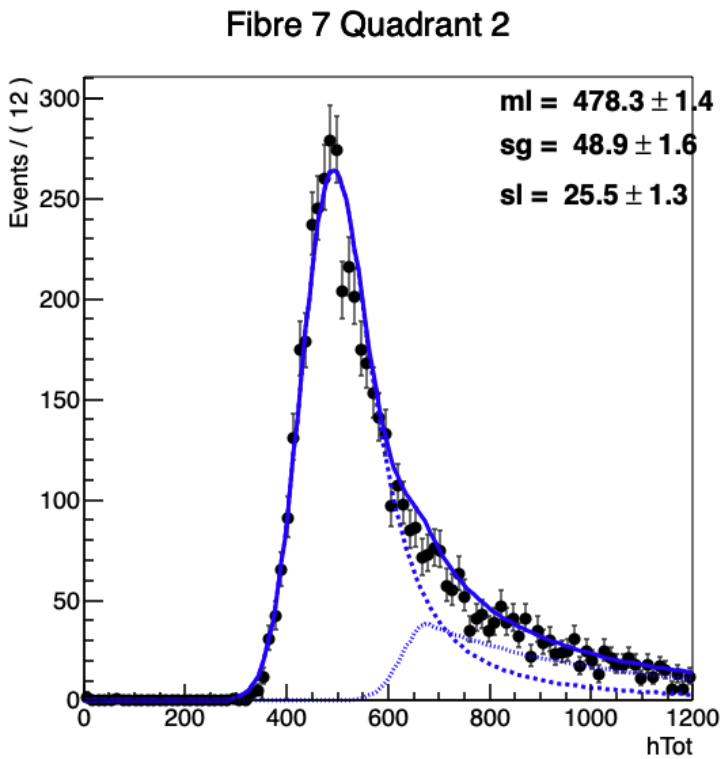

Fibre 6 Quadrant 3
ml = 468.2 ± 1.6
sg = 50.3 ± 1.8
sl = 23.7 ± 1.4
Events / (12)
hTot

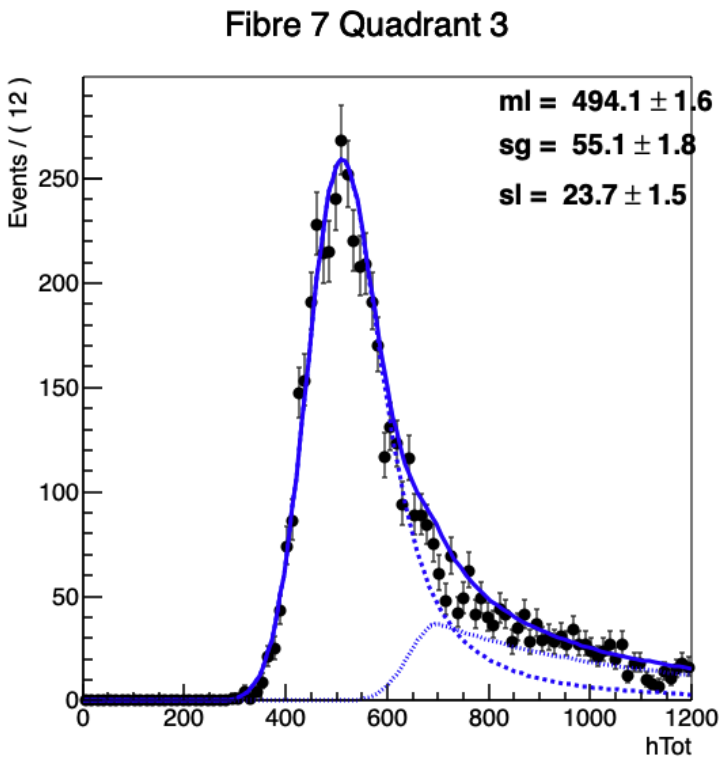
The fits


Fibre 7 Quadrant 0
ml = 500.9 ± 1.7
sg = 59.3 ± 1.7
sl = 19.3 ± 1.4
Events / (12)
hTot
0
50
100
150
200
250
0
200
400
600
800
1000
1200

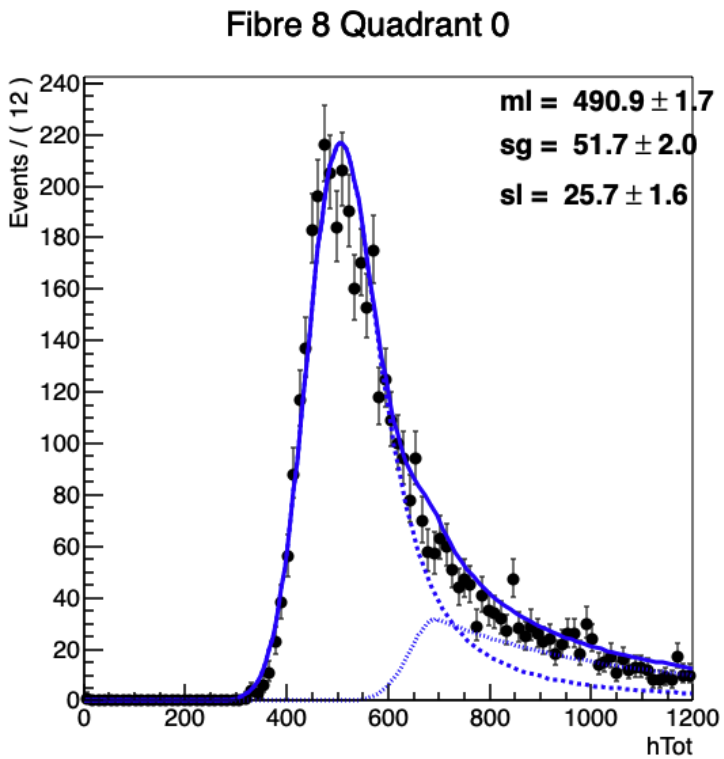

Fibre 7 Quadrant 1
ml = 491.4 ± 1.7
sg = 56.8 ± 1.8
sl = 23.6 ± 1.5
Events / (12)
hTot
0
50
100
150
200
250
0
200
400
600
800
1000
1200

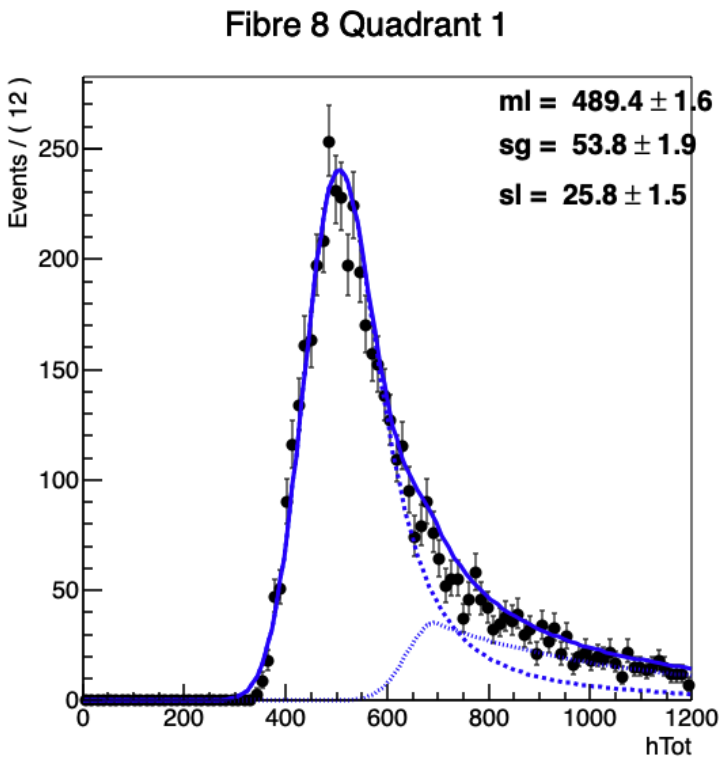
The fits


Fibre 7 Quadrant 2
ml = 478.3 ± 1.4
sg = 48.9 ± 1.6
sl = 25.5 ± 1.3
Events / (12)
hTot

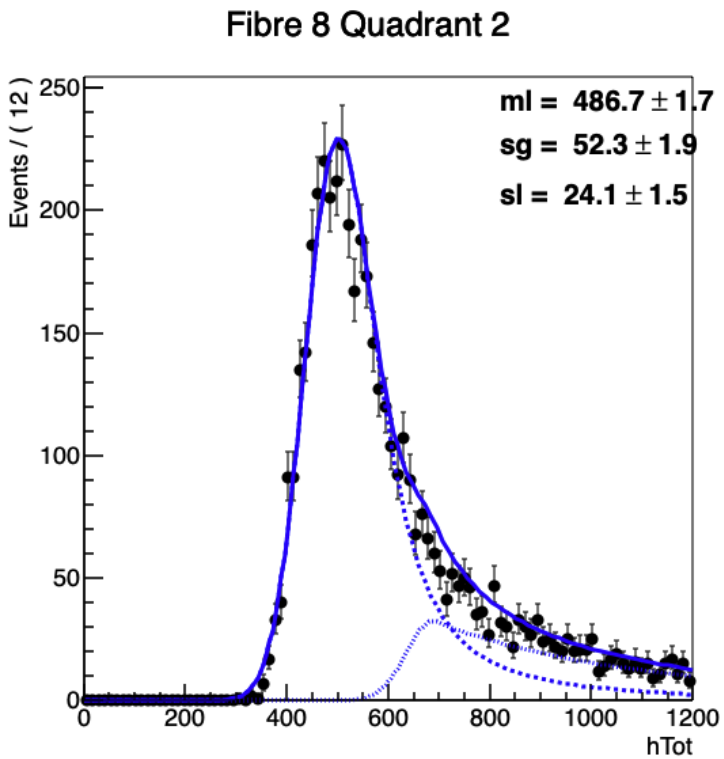

Fibre 7 Quadrant 3
ml = 494.1 ± 1.6
sg = 55.1 ± 1.8
sl = 23.7 ± 1.5
Events / (12)
hTot

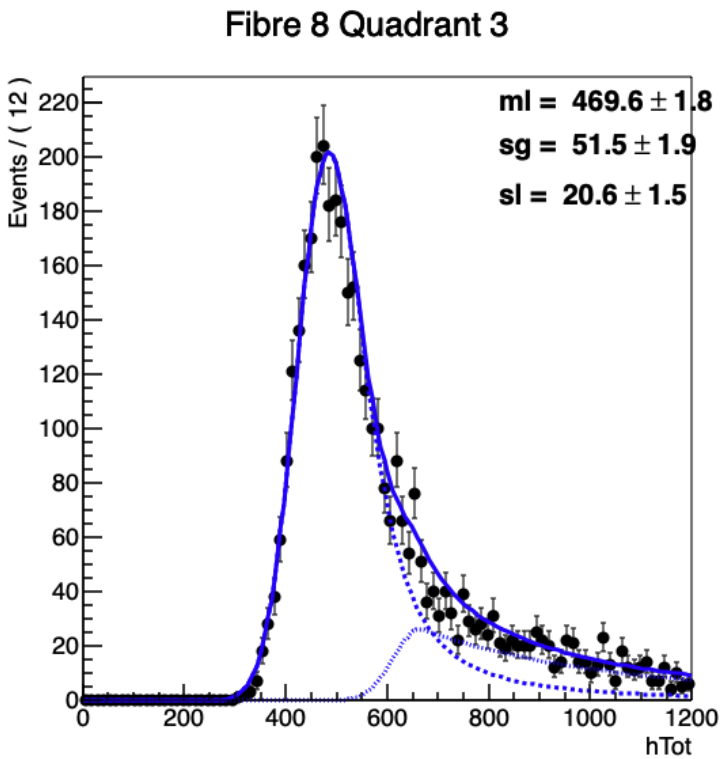
The fits


Fibre 8 Quadrant 0
ml = 490.9 ± 1.7
sg = 51.7 ± 2.0
sl = 25.7 ± 1.6
Events / (12)
hTot

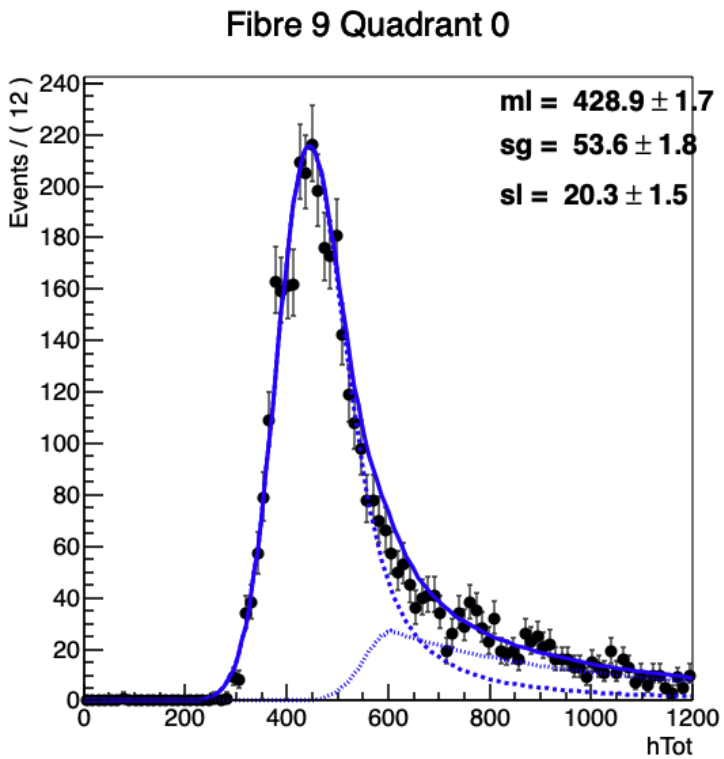

Fibre 8 Quadrant 1
ml = 489.4 ± 1.6
sg = 53.8 ± 1.9
sl = 25.8 ± 1.5
Events / (12)
hTot

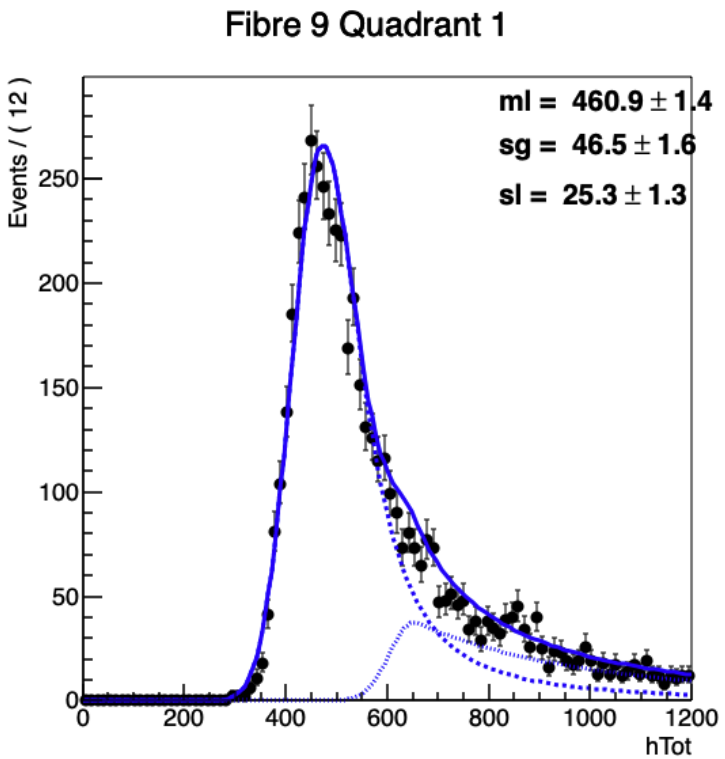
The fits


Fibre 8 Quadrant 2
ml = 486.7 ± 1.7
sg = 52.3 ± 1.9
sl = 24.1 ± 1.5
Events / (12)
hTot

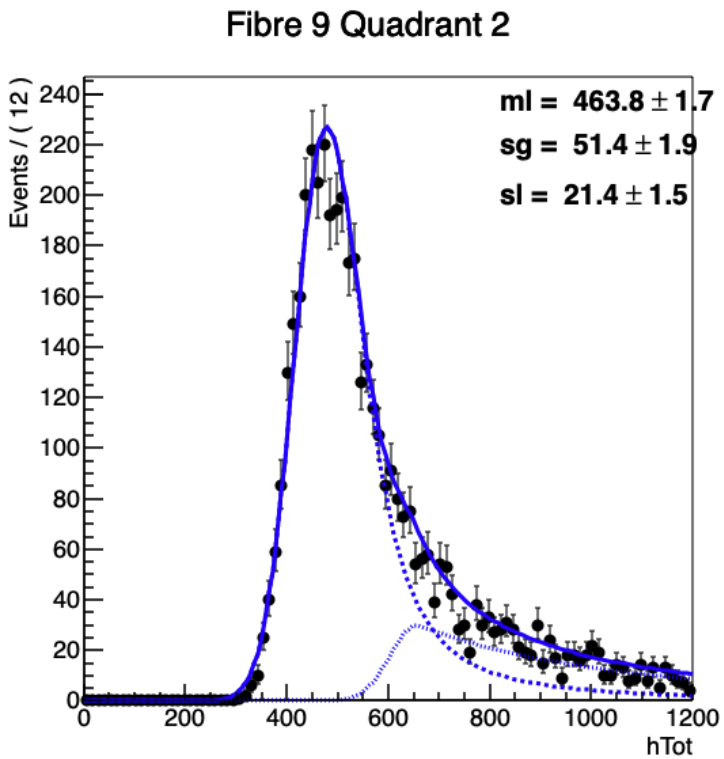

Fibre 8 Quadrant 3
ml = 469.6 ± 1.8
sg = 51.5 ± 1.9
sl = 20.6 ± 1.5
Events / (12)
hTot

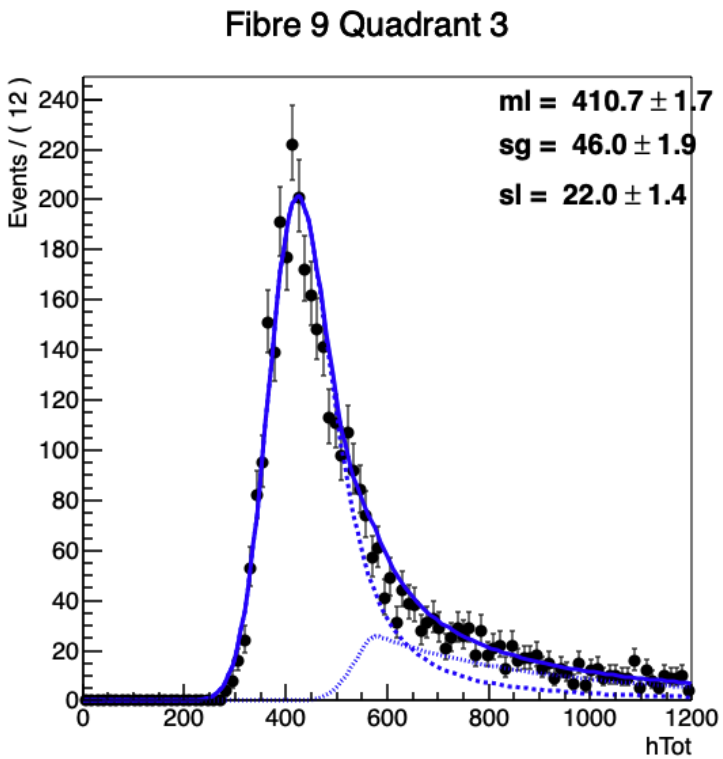
The fits


Fibre 9 Quadrant 0
ml = 428.9 ± 1.7
sg = 53.6 ± 1.8
sl = 20.3 ± 1.5
Events / (12)
hTot

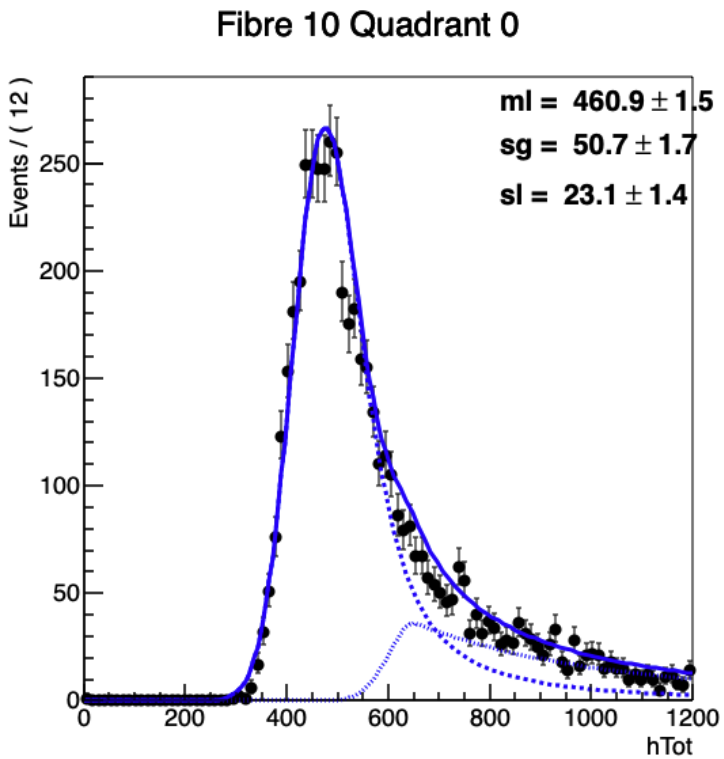

Fibre 9 Quadrant 1
ml = 460.9 ± 1.4
sg = 46.5 ± 1.6
sl = 25.3 ± 1.3
Events / (12)
hTot

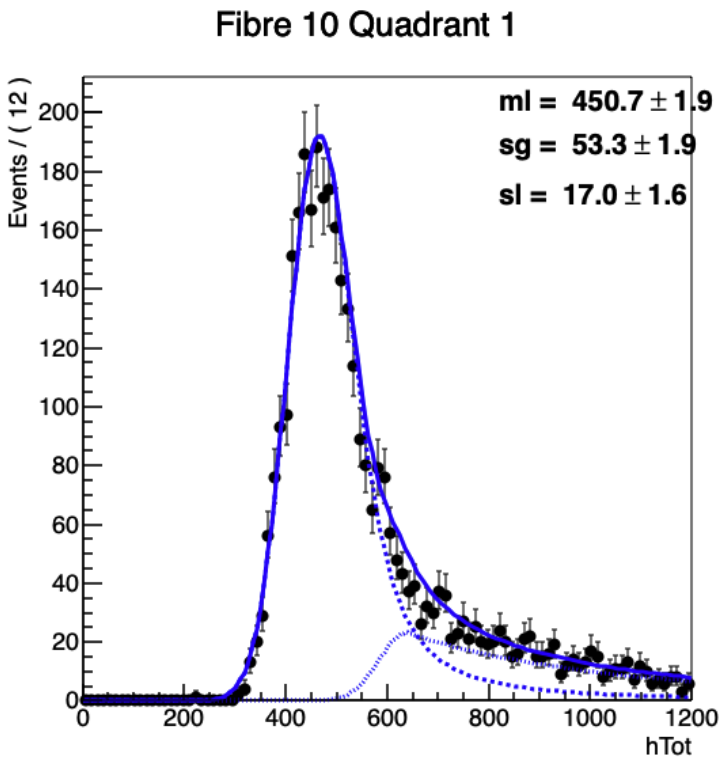
The fits


Fibre 9 Quadrant 2
ml = 463.8 ± 1.7
sg = 51.4 ± 1.9
sl = 21.4 ± 1.5
Events / (12)
hTot

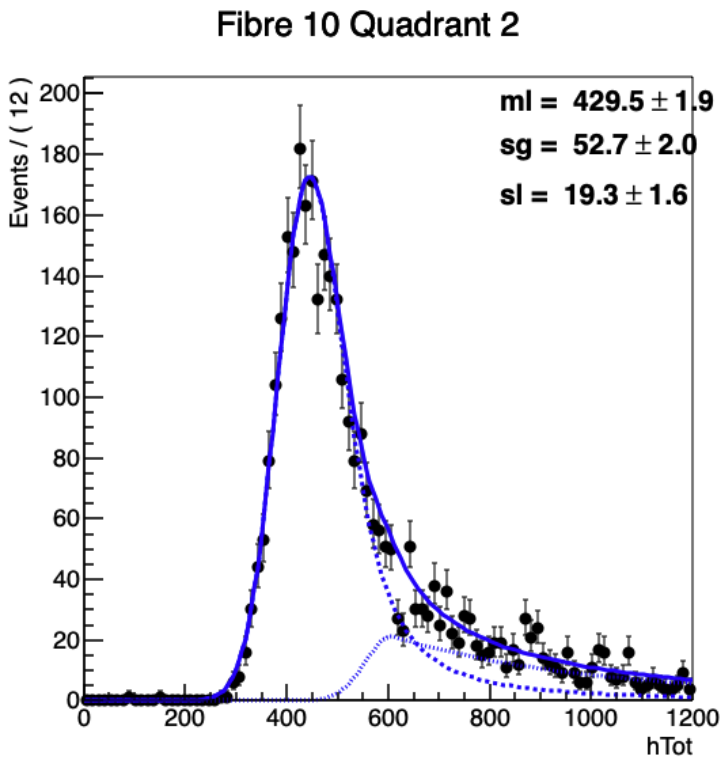

Fibre 9 Quadrant 3
ml = 410.7 ± 1.7
sg = 46.0 ± 1.9
sl = 22.0 ± 1.4
Events / (12)
hTot

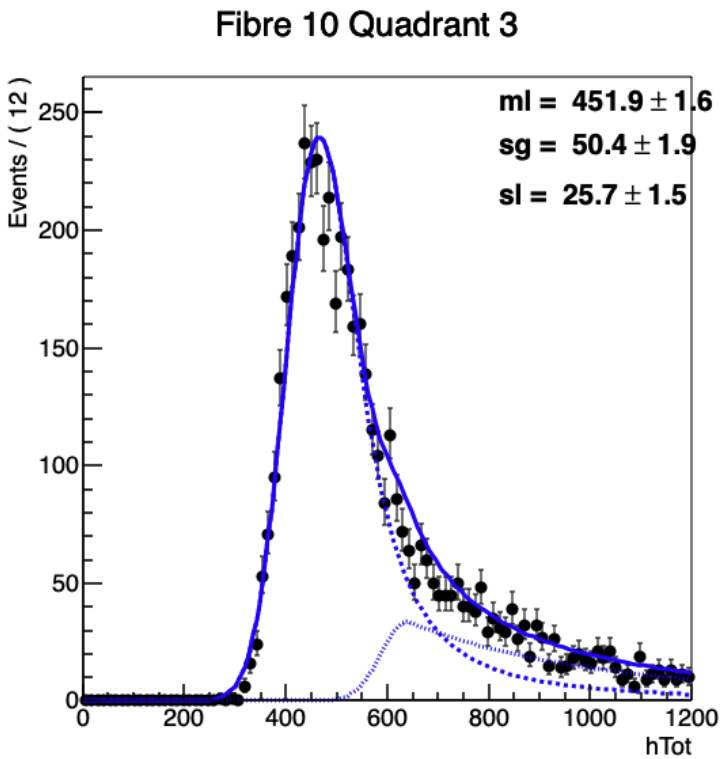
The fits


Fibre 10 Quadrant 0
ml = 460.9 ± 1.5
sg = 50.7 ± 1.7
sl = 23.1 ± 1.4
Events / (12)
hTot

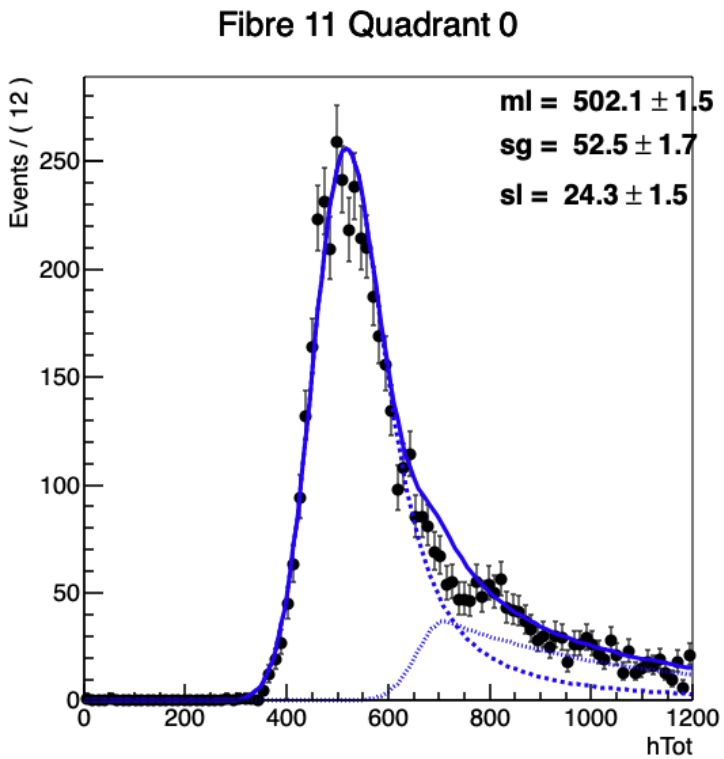

Fibre 10 Quadrant 1
ml = 450.7 ± 1.9
sg = 53.3 ± 1.9
sl = 17.0 ± 1.6
Events / (12)
hTot

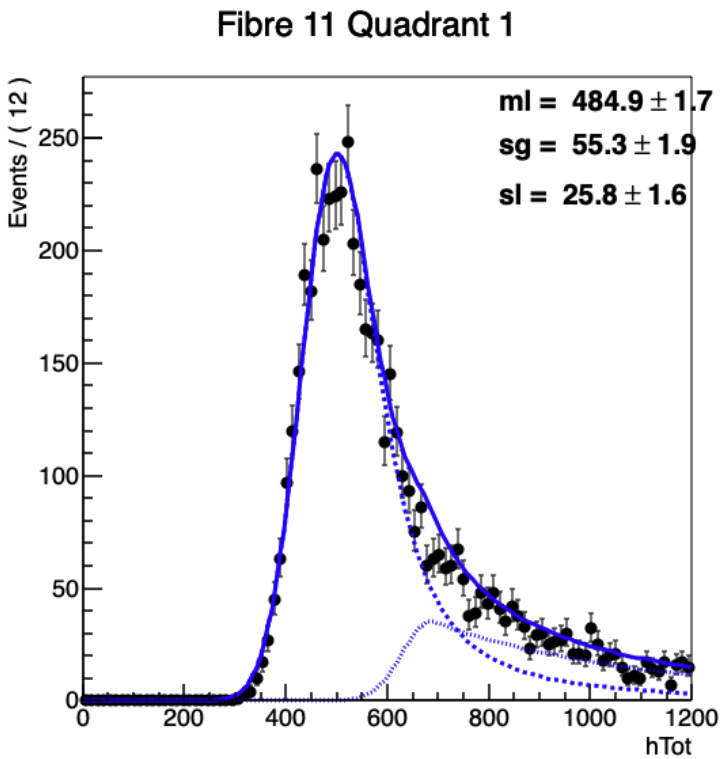
The fits


Fibre 10 Quadrant 2
Events / (12)
hTot
ml = 429.5 ± 1.9
sg = 52.7 ± 2.0
sl = 19.3 ± 1.6

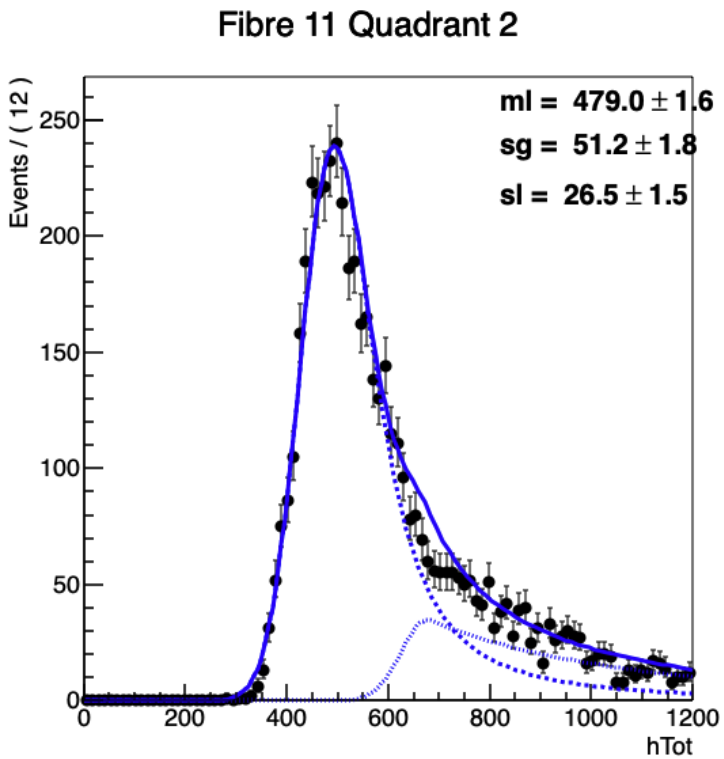

Fibre 10 Quadrant 3
Events / (12)
hTot
ml = 451.9 ± 1.6
sg = 50.4 ± 1.9
sl = 25.7 ± 1.5

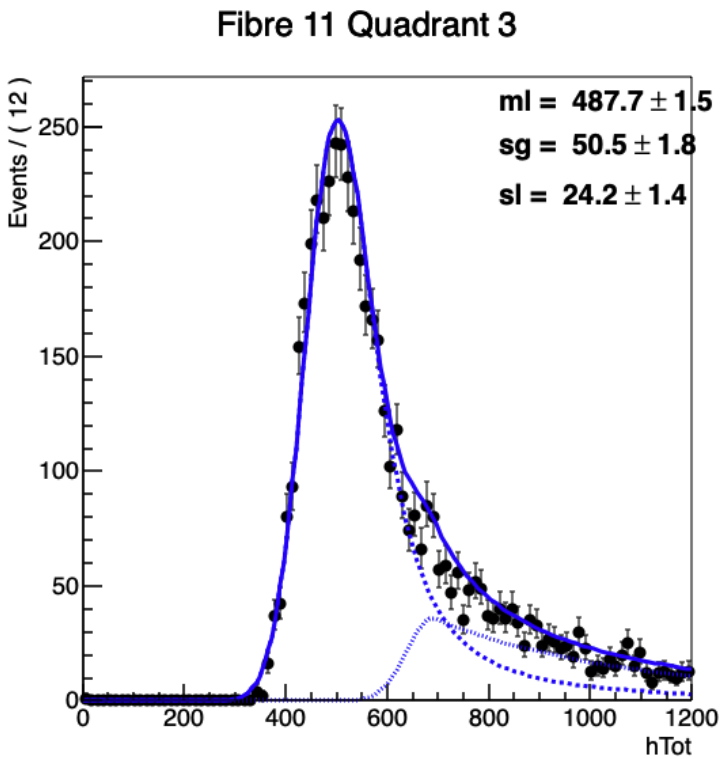
The fits


Fibre 11 Quadrant 0
ml = 502.1 ± 1.5
sg = 52.5 ± 1.7
sl = 24.3 ± 1.5
Events / (12)
hTot

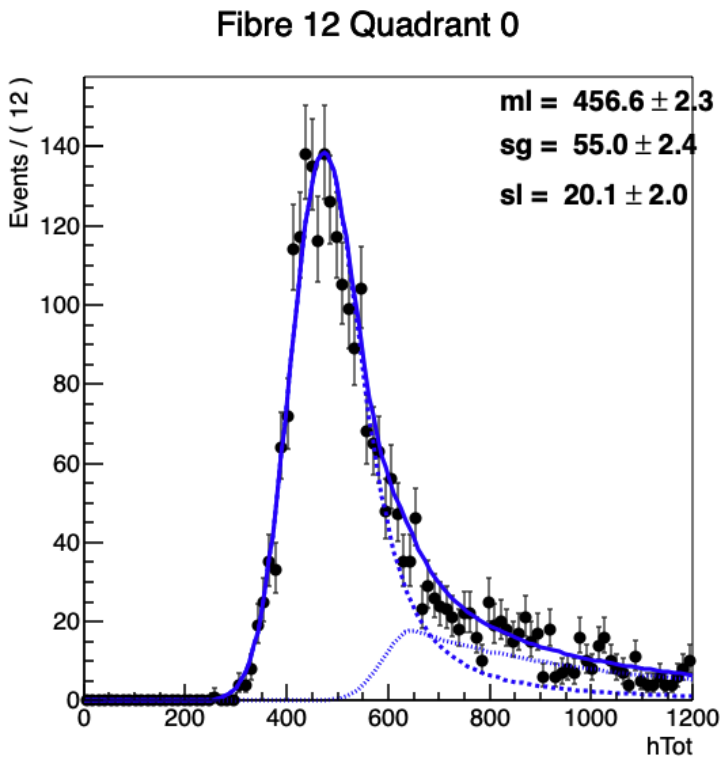

Fibre 11 Quadrant 1
ml = 484.9 ± 1.7
sg = 55.3 ± 1.9
sl = 25.8 ± 1.6
Events / (12)
hTot

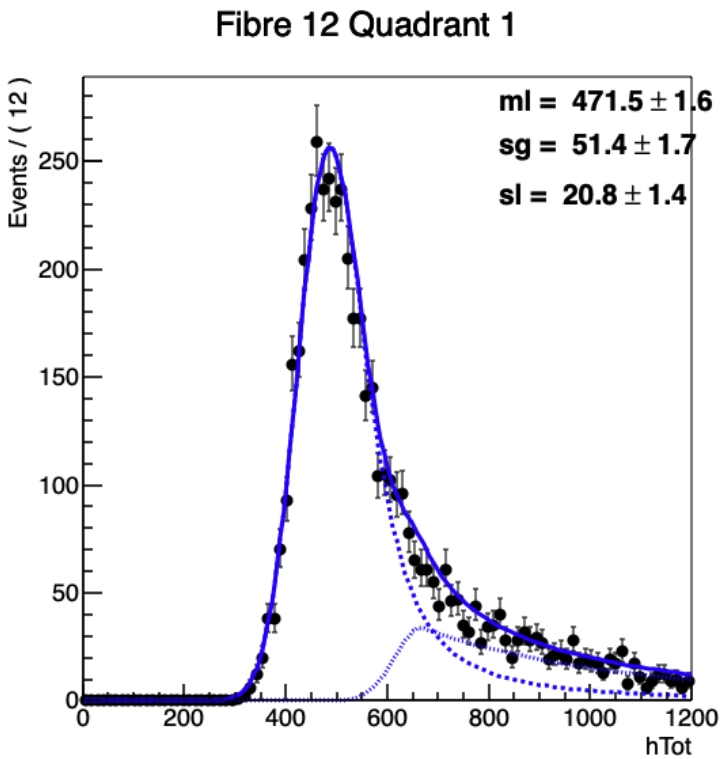
The fits


Fibre 11 Quadrant 2
ml = 479.0 ± 1.6
sg = 51.2 ± 1.8
sl = 26.5 ± 1.5
Events / (12)
hTot
0
50
100
150
200
250
0
200
400
600
800
1000
1200

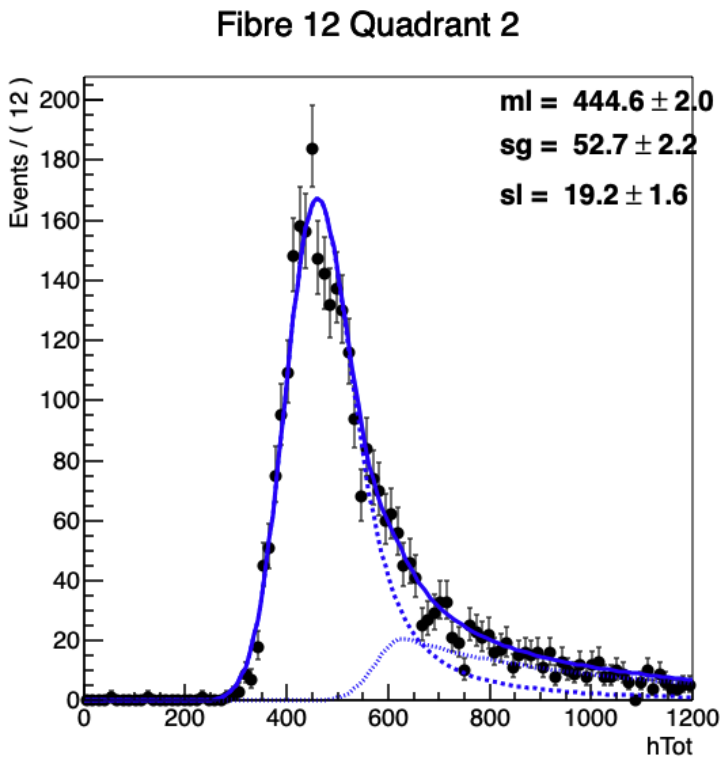

Fibre 11 Quadrant 3
ml = 487.7 ± 1.5
sg = 50.5 ± 1.8
sl = 24.2 ± 1.4
Events / (12)
hTot
0
50
100
150
200
250
0
200
400
600
800
1000
1200

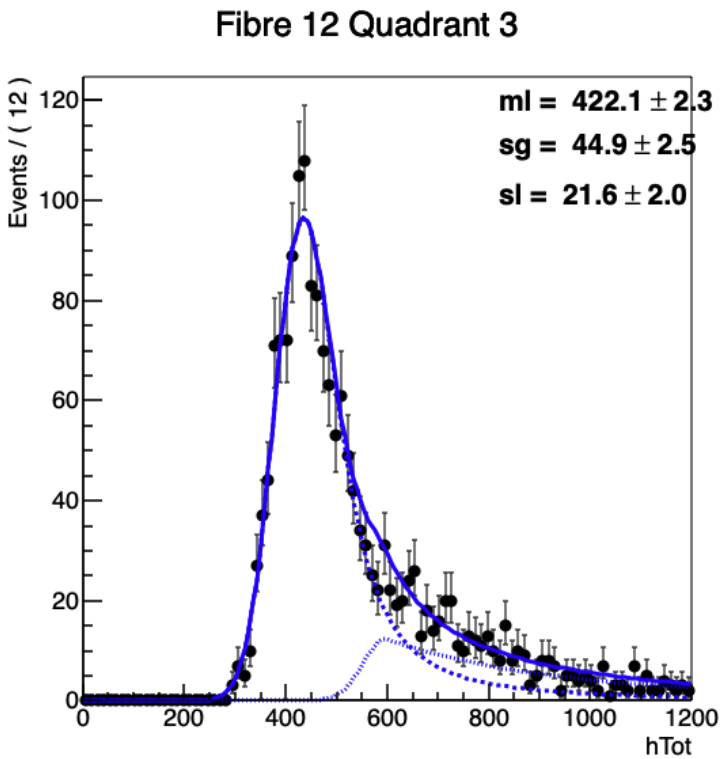
The fits


Fibre 12 Quadrant 0
ml = 456.6 ± 2.3
sg = 55.0 ± 2.4
sl = 20.1 ± 2.0
Events / (12)
hTot

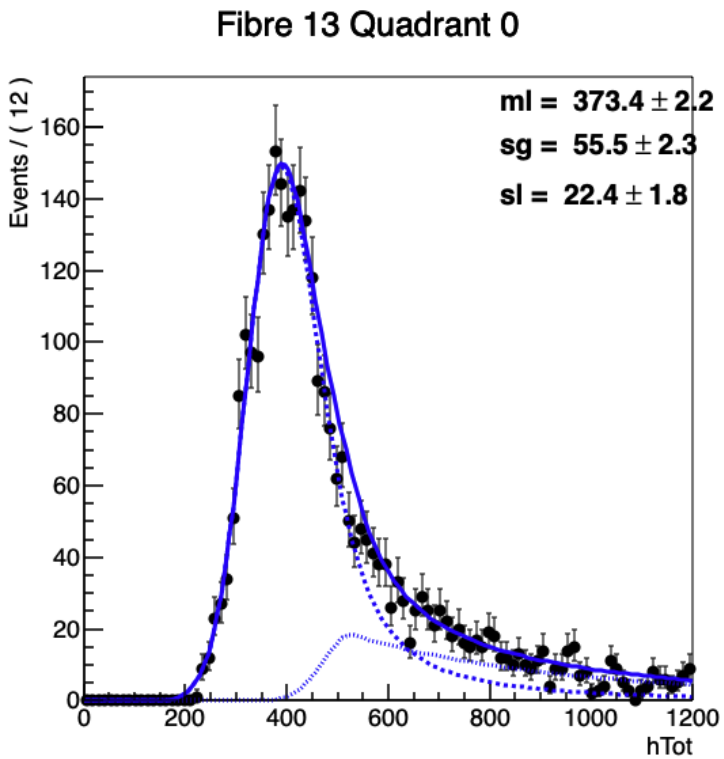

Fibre 12 Quadrant 1
ml = 471.5 ± 1.6
sg = 51.4 ± 1.7
sl = 20.8 ± 1.4
Events / (12)
hTot

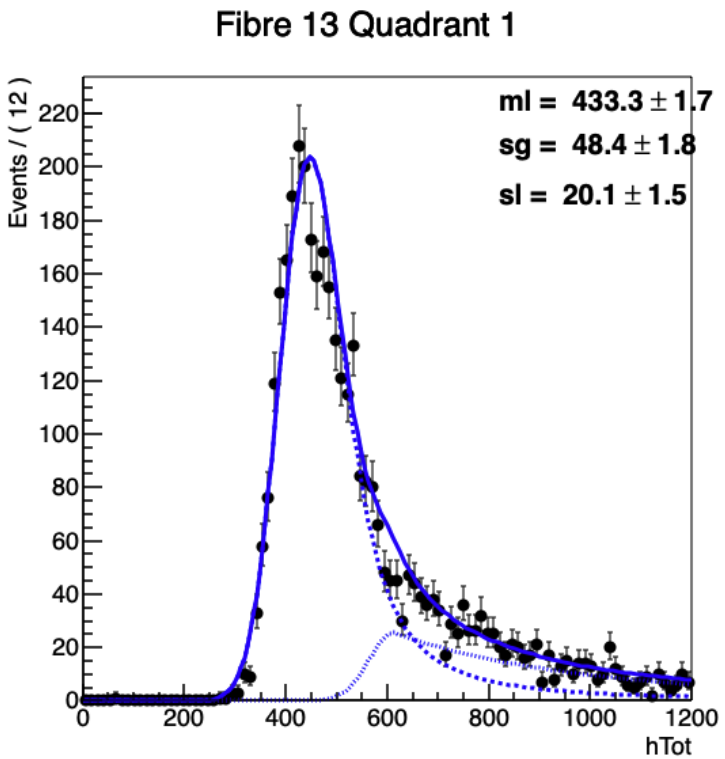
The fits


Fibre 12 Quadrant 2
Events / (12)
ml = 444.6 ± 2.0
sg = 52.7 ± 2.2
sl = 19.2 ± 1.6
hTot

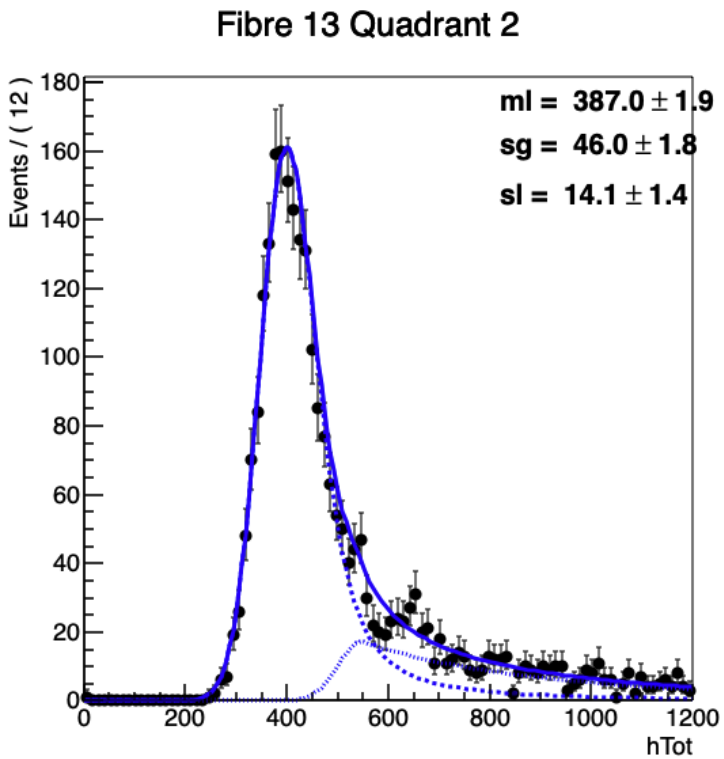

Fibre 12 Quadrant 3
Events / (12)
ml = 422.1 ± 2.3
sg = 44.9 ± 2.5
sl = 21.6 ± 2.0
hTot

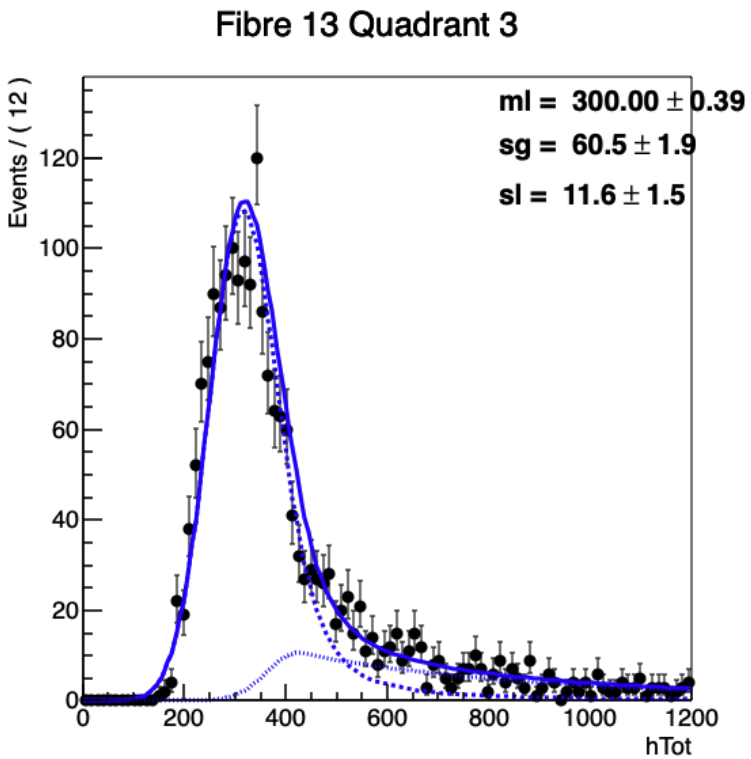
The fits


Fibre 13 Quadrant 0
ml = 373.4 ± 2.2
sg = 55.5 ± 2.3
sl = 22.4 ± 1.8
Events / (12)
hTot

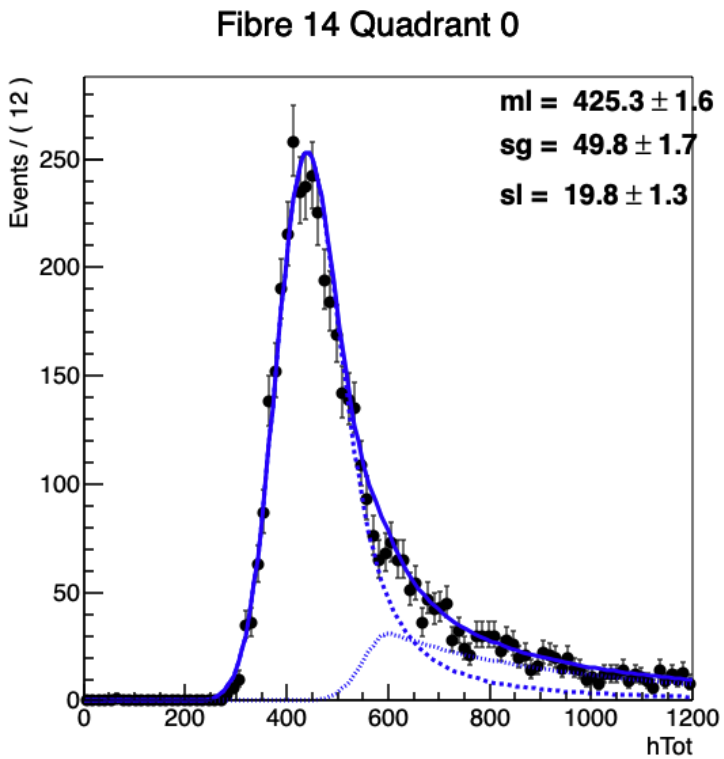

Fibre 13 Quadrant 1
ml = 433.3 ± 1.7
sg = 48.4 ± 1.8
sl = 20.1 ± 1.5
Events / (12)
hTot

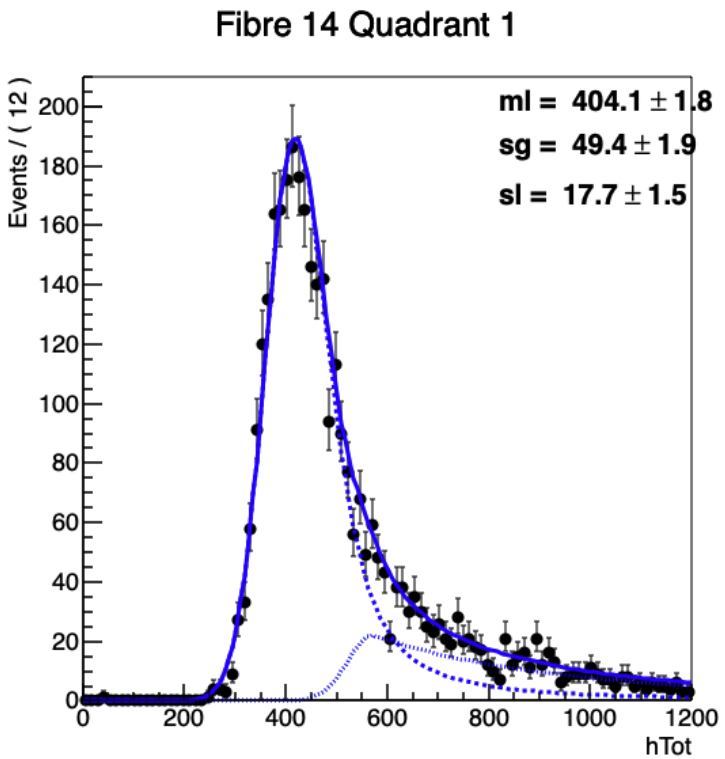
The fits


Fibre 13 Quadrant 2
ml = 387.0 ± 1.9
sg = 46.0 ± 1.8
sl = 14.1 ± 1.4
Events / (12)
hTot

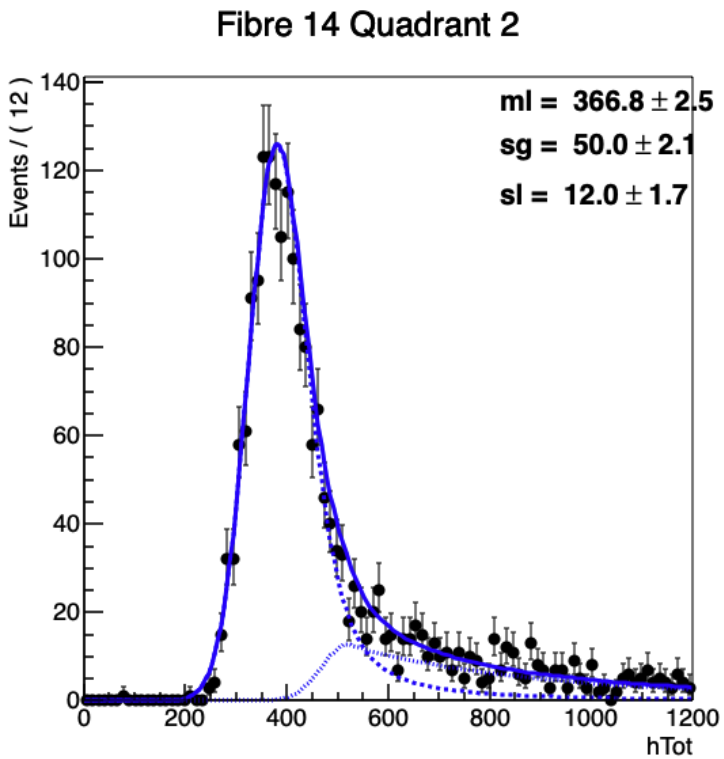

Fibre 13 Quadrant 3
ml = 300.00 ± 0.39
sg = 60.5 ± 1.9
sl = 11.6 ± 1.5
Events / (12)
hTot

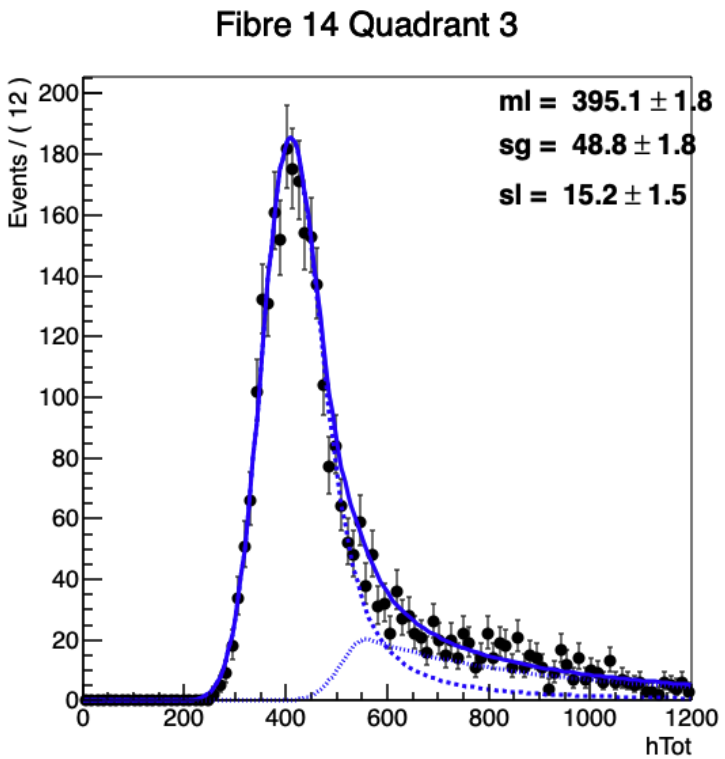
The fits


Fibre 14 Quadrant 0
ml = 425.3 ± 1.6
sg = 49.8 ± 1.7
sl = 19.8 ± 1.3
Events / (12)
hTot

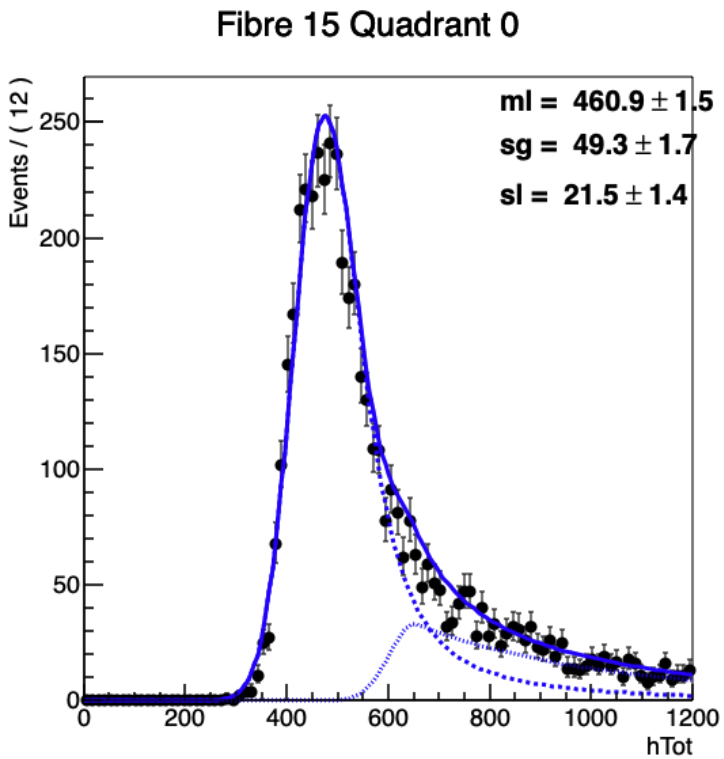

Fibre 14 Quadrant 1
ml = 404.1 ± 1.8
sg = 49.4 ± 1.9
sl = 17.7 ± 1.5
Events / (12)
hTot

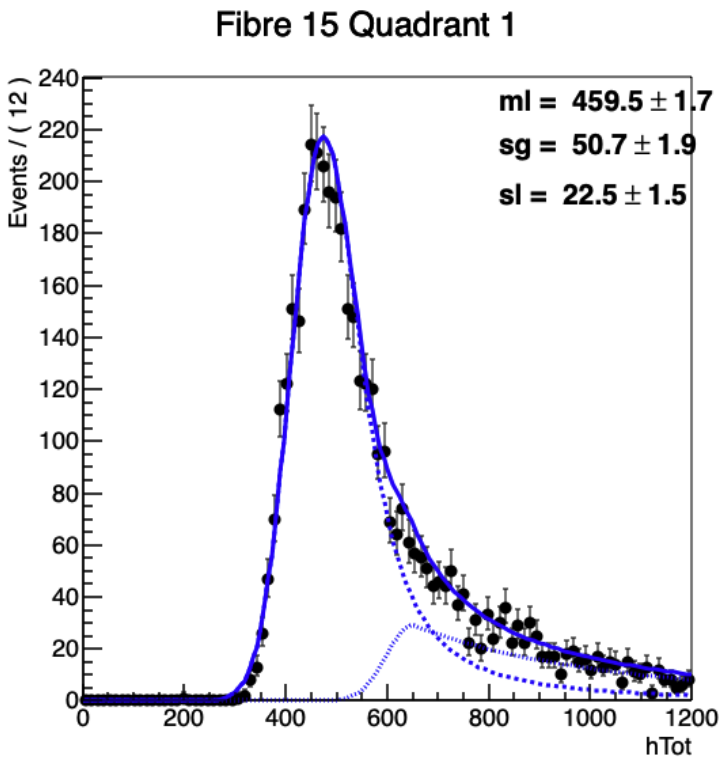
The fits


Fibre 14 Quadrant 2
ml = 366.8 ± 2.5
sg = 50.0 ± 2.1
sl = 12.0 ± 1.7
Events / (12)
hTot

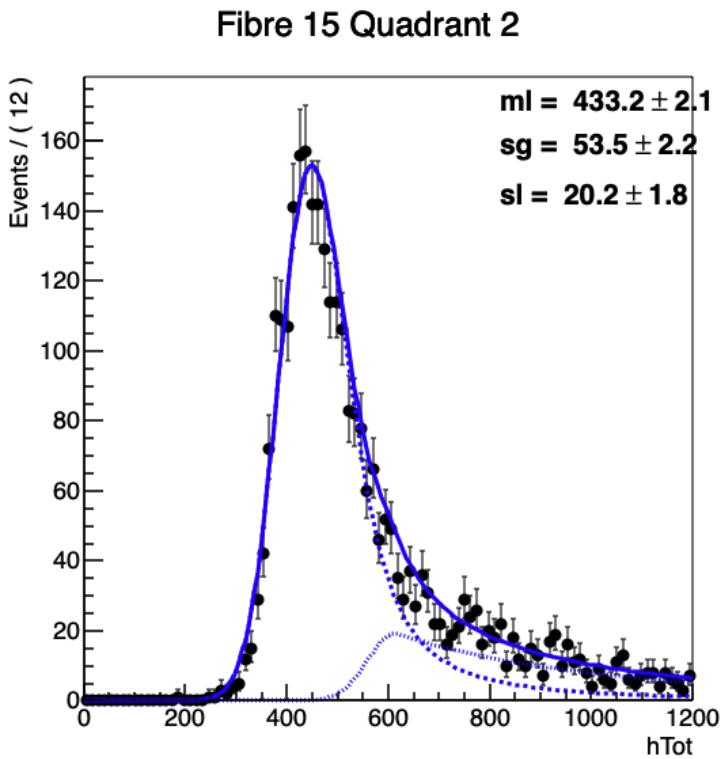

Fibre 14 Quadrant 3
ml = 395.1 ± 1.8
sg = 48.8 ± 1.8
sl = 15.2 ± 1.5
Events / (12)
hTot

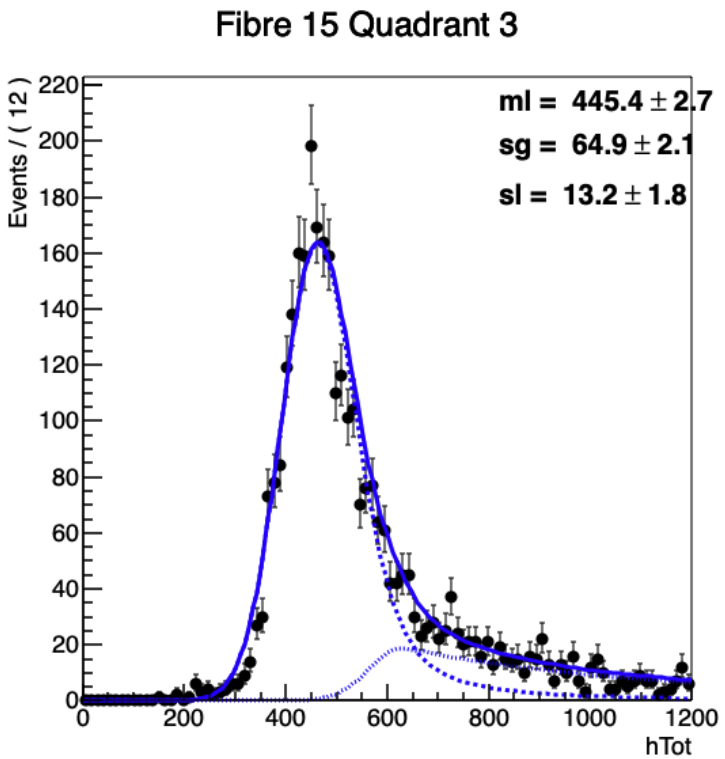
The fits


Fibre 15 Quadrant 0
ml = 460.9 ± 1.5
sg = 49.3 ± 1.7
sl = 21.5 ± 1.4
Events / (12)
hTot


Fibre 15 Quadrant 1
ml = 459.5 ± 1.7
sg = 50.7 ± 1.9
sl = 22.5 ± 1.5
Events / (12)
hTot

The fits


Fibre 15 Quadrant 2
ml = 433.2 ± 2.1
sg = 53.5 ± 2.2
sl = 20.2 ± 1.8
Events / (12)
hTot


Fibre 15 Quadrant 3
ml = 445.4 ± 2.7
sg = 64.9 ± 2.1
sl = 13.2 ± 1.8
Events / (12)
hTot