

Gap fraction

Gap fraction vs  $\Delta y$  (FB) ( $210 < p_T < 240$  ( $Q_0 = \bar{p}_T$ ))

- ATLAS
- - □ Herwig 7.2.0 default
- - ▲ Pythia 8.235 default
- - ◆ Sherpa 1.4.1 default

2.5

2

1.5

1

0.5

0

ATLAS\_2011\_S9126244

Rivet 3.1.0,  $\geq 100k$  events

mcplots.cern.ch [arXiv:1306.3436]

Ratio to ATLAS

2

1

0.5

2

0.5

0

2

4

6

$|\Delta y|$

The figure consists of two vertically stacked panels sharing a common x-axis representing the rapidity difference  $|\Delta y|$  from 0 to 6. The top panel shows the 'Gap fraction' on the y-axis (0 to 2.5). The bottom panel shows the 'Ratio to ATLAS' on the y-axis (0.5 to 2). Both panels include data points with error bars for ATLAS (black squares), Herwig 7.2.0 (green dashed line with squares), Pythia 8.235 (blue solid line with triangles), and Sherpa 1.4.1 (red dotted line with diamonds). The top panel also features a horizontal line at a gap fraction of 1.0. The bottom panel includes a horizontal line at a ratio of 1.0 and a shaded region (yellow and green) representing the uncertainty or spread of the MC models. The ATLAS data points in the top panel show a general decrease in gap fraction as  $|\Delta y|$  increases, with a notable dip around  $|\Delta y| \approx 4.5$ . The MC models generally follow the ATLAS data but show significant deviations at larger  $|\Delta y|$ .

$ \Delta y $	ATLAS Gap Fraction	Herwig 7.2.0 Gap Fraction	Pythia 8.235 Gap Fraction	Sherpa 1.4.1 Gap Fraction
0.5	1.0	1.0	1.0	1.0
1.0	0.95	1.0	0.95	1.0
1.5	0.95	0.95	0.95	0.95
2.0	0.95	0.9	0.95	0.95
2.5	0.9	0.85	0.9	0.9
3.0	0.85	0.8	0.9	0.85
3.5	0.8	0.75	0.8	0.8
4.0	0.7	0.65	0.7	0.85
4.5	0.45	0.4	0.4	0.6
5.0	0.3	-	-	1.0