

Gap fraction

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

- ATLAS
- - □ Herwig 7.2.0 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). It features three data series: ATLAS (black squares), Herwig 7.2.0 default (green dashed line with open squares), and Sherpa 1.4.1 default (red dotted line with filled diamonds). All series show a general downward trend as  $|\Delta y|$  increases, with ATLAS data points showing significant scatter and a sharp drop to zero at  $|\Delta y| \approx 5.8$ . The bottom panel shows the 'Ratio to ATLAS' on the y-axis (0.5 to 2.0). It uses the same color scheme for the data series. A horizontal line is drawn at a ratio of 1.0. The plot includes shaded regions: a light green region for the Herwig model and a light yellow region for the Sherpa model, both centered around a ratio of 1.0. The ATLAS data points are also plotted in this panel, showing a ratio that generally stays near 1.0 but has a notable outlier at  $|\Delta y| \approx 5.8$  where the ratio is 0.

$ \Delta y $	ATLAS Gap Fraction	Herwig 7.2.0 Gap Fraction	Sherpa 1.4.1 Gap Fraction	Herwig Ratio to ATLAS	Sherpa Ratio to ATLAS
0.3	1.0	1.0	1.0	1.0	1.0
0.8	1.0	1.0	1.0	1.0	1.0
1.3	0.95	0.95	0.95	1.0	1.0
1.8	0.95	0.95	0.95	1.0	1.0
2.3	0.9	0.85	0.9	0.9	1.0
2.8	0.85	0.85	0.85	1.0	1.0
3.3	0.8	0.75	0.7	0.9	0.9
3.8	0.8	0.6	0.8	0.8	1.0
4.3	0.7	0.65	0.85	1.0	1.3
4.8	0.45	0.4	0.55	0.9	1.3
5.3	0.3	-	1.0	-	-
5.8	0.0	-	-	-	-