

7000 GeV pp

Jets

Gap fraction

Gap fraction vs  $\Delta y$  (LJ) ( $240 < p_T < 270$ )

- ATLAS
- - □ Herwig 7.2.0 default
- - ▲ Pythia 8.130.p1 default

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). It features three data series: ATLAS experimental data (black squares), Herwig 7.2.0 default (green dashed line with open squares), and Pythia 8.130.p1 default (blue solid line with solid triangles). All series show a decreasing trend from  $|\Delta y| \approx 0.5$  to  $|\Delta y| \approx 4.5$ , with ATLAS data points generally lower than the Herwig model and higher than the Pythia model. A single ATLAS data point is shown at  $|\Delta y| \approx 5.7$  with a gap fraction of 0. The bottom panel shows the 'Ratio to ATLAS' on the y-axis (0.5 to 2). It features the same three data series. The Herwig model (green) and Pythia model (blue) are plotted as lines with error bars. The Herwig model is mostly above the ratio of 1, while the Pythia model is mostly below it. A horizontal line is drawn at a ratio of 1. Two shaded regions, yellow and green, are present in the background of the bottom panel, representing uncertainty bands or specific model predictions.

$ \Delta y $	ATLAS Gap Fraction	Herwig 7.2.0 Gap Fraction	Pythia 8.130.p1 Gap Fraction	Herwig 7.2.0 Ratio to ATLAS	Pythia 8.130.p1 Ratio to ATLAS
0.5	0.95	0.95	0.95	1.0	1.0
1.0	0.8	0.8	0.75	1.0	0.95
1.5	0.65	0.65	0.55	1.05	0.85
2.0	0.55	0.55	0.45	1.0	0.8
2.5	0.45	0.45	0.4	1.0	0.85
3.0	0.35	0.35	0.25	0.95	0.55
3.5	0.3	0.3	0.2	0.95	0.55
4.0	0.3	0.25	0.25	0.9	0.8
4.5	0.35	0.2	0.25	0.55	0.6
5.7	0.0	-	-	-	-