

Gap fraction

Gap fraction vs Δy (FB) ($240 < p_T < 270$)

- ATLAS
- - □ Herwig 7.0.3 default
- - ▲ Pythia 8.301 default
- - ◆ Sherpa 2.2.8 default

2

1.5

1

0.5

0

Rivet 3.1.0, $\geq 100k$ events

mcplots.cern.ch [arXiv:1306.3436]

ATLAS_2011_S9126244

Ratio to ATLAS

2

1

0.5

2

1

0.5

0

2

4

6

$|\Delta y|$

The figure displays two panels. The top panel shows the gap fraction as a function of the absolute rapidity difference $|\Delta y|$ for ATLAS data (black squares) and three Monte Carlo models: Herwig 7.0.3 (green dashed line with squares), Pythia 8.301 (blue solid line with triangles), and Sherpa 2.2.8 (red dotted line with diamonds). The gap fraction decreases from approximately 0.9 at $|\Delta y| \approx 0.5$ to about 0.2 at $|\Delta y| \approx 5.5$. The bottom panel shows the ratio of the Monte Carlo models to the ATLAS data. The Herwig model (green) and Sherpa model (red) are generally close to 1.0, while the Pythia model (blue) shows a significant increase to about 2.0 at $|\Delta y| \approx 4.5$. Shaded regions in the bottom panel indicate the uncertainty bands for the Herwig (green) and Sherpa (yellow) models.

$ \Delta y $	ATLAS Gap Fraction	Herwig 7.0.3 Gap Fraction	Pythia 8.301 Gap Fraction	Sherpa 2.2.8 Gap Fraction
0.5	0.95	0.95	0.95	0.95
1.0	0.80	0.75	0.80	0.75
1.5	0.65	0.60	0.65	0.55
2.0	0.50	0.45	0.50	0.50
2.5	0.40	0.35	0.40	0.35
3.0	0.35	0.35	0.35	0.35
3.5	0.25	0.20	0.30	0.25
4.0	0.20	0.15	0.35	0.20
4.5	0.20	0.20	0.30	0.20
5.5	0.15	-	-	-