

Gap fraction

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

- ATLAS
- - □ Herwig 7.2.0 default
- - ▲ Pythia 8.180 default

2

1.5

1

0.5

0

ATLAS_2011_S9126244

Rivet 3.1.0, ≥ 100 k 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 with error bars), Herwig 7.2.0 default (green dashed line with open squares), and Pythia 8.180 default (blue solid line with solid triangles). The gap fraction starts at approximately 1.0 for $|\Delta y| < 2$ and generally decreases as $|\Delta y|$ increases, with some fluctuations. The bottom panel shows the 'Ratio to ATLAS' on the y-axis (0.5 to 2). It uses the same data series as the top panel. A horizontal line is drawn at a ratio of 1.0. The Herwig model (green) stays near 1.0 until $|\Delta y| \approx 4.5$, then drops below 1.0. The Pythia model (blue) fluctuates around 1.0. A yellow and green shaded region is present in the bottom panel for $|\Delta y| > 4$, indicating a specific range of values.

$ \Delta y $	ATLAS Gap Fraction	Herwig 7.2.0 Gap Fraction	Pythia 8.180 Gap Fraction	Ratio to ATLAS (Herwig)	Ratio to ATLAS (Pythia)
0.5	1.0	1.0	1.0	1.0	1.0
1.0	0.95	1.0	0.95	1.0	1.0
1.5	0.95	0.95	0.95	1.0	1.0
2.0	0.85	0.85	0.85	1.0	1.0
2.5	0.85	0.85	0.85	1.0	1.0
3.0	0.8	0.75	0.95	0.9	1.2
3.5	0.8	0.65	0.7	0.8	0.85
4.0	0.7	0.7	0.6	1.0	0.85
4.5	0.45	0.4	-	0.85	-
5.0	0.35	-	-	-	-
5.5	0.0	-	-	-	-