

Gap fraction

Gap fraction vs Δy (FB) ($70 < p_T < 90$ ($Q_0 = \bar{p}_T$))

- ATLAS
- - □ Herwig 7.2.0 default
- - ▲ Pythia 8.209 default

2

1.8

1.6

1.4

1.2

1.0

0.8

0.6

0.4

0.2

0

2

1

0.5

0

0 2 4 6

$|\Delta y|$

Rivet 3.1.0, $\geq 100k$ events

mcplots.cern.ch [arXiv:1306.3436]

ATLAS_2011_S9126244

Ratio to ATLAS

2

1

0.5

The figure consists of two vertically stacked panels sharing a common x-axis representing the absolute rapidity difference $|\Delta y|$ from 0 to 6. The top panel shows the 'Gap fraction' on the left y-axis (0 to 2) and 'Rivet 3.1.0, $\geq 100k$ events' on the right y-axis (0 to 2). It displays three data series: ATLAS experimental data (black squares), Herwig 7.2.0 default (green dashed line with open squares), and Pythia 8.209 default (blue solid line with solid triangles). All series show a general downward trend from a gap fraction of approximately 1.0 at $|\Delta y| \approx 0.5$ to around 0.6 at $|\Delta y| \approx 5.8$. The bottom panel shows the 'Ratio to ATLAS' on the left y-axis (0.5 to 2) and 'mcplots.cern.ch [arXiv:1306.3436]' on the right y-axis (0.5 to 2). It displays the same three series, but the Herwig and Pythia models are normalized to the ATLAS data. The Herwig model (green) stays very close to a ratio of 1.0, while the Pythia model (blue) shows more variation, dipping below 1.0 at $|\Delta y| \approx 5.3$ and $|\Delta y| \approx 5.8$. A yellow shaded band is visible around the ratio of 1.0 in the bottom panel.

$ \Delta y $	ATLAS Gap Fraction	Herwig 7.2.0 Gap Fraction	Pythia 8.209 Gap Fraction	Herwig 7.2.0 Ratio to ATLAS	Pythia 8.209 Ratio to ATLAS
0.5	1.00	1.00	1.00	1.00	1.00
1.0	0.98	0.98	0.98	1.00	1.00
1.5	0.95	0.95	0.95	1.00	1.00
2.0	0.92	0.92	0.92	1.00	1.00
2.5	0.88	0.85	0.88	0.95	1.00
3.0	0.85	0.85	0.85	1.00	1.00
3.5	0.80	0.78	0.78	0.95	0.95
4.0	0.78	0.78	0.78	1.00	1.00
4.5	0.75	0.75	0.75	1.00	1.00
5.0	0.70	0.70	0.68	1.00	0.95
5.5	0.65	0.70	0.55	1.05	0.85
6.0	0.60	0.68	0.60	1.15	0.95