

Gap fraction

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

- ATLAS
- - □ Herwig 7.2.0 default
- - ▲ Pythia 8.150 default
- - ◆ Sherpa 1.4.2 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

1

0.5

0

2

4

6

$|\Delta y|$

The figure displays two panels comparing ATLAS experimental data with Monte Carlo (MC) models for gap fractions in 7000 GeV pp collisions. The top panel shows the gap fraction as a function of the rapidity separation $|\Delta y|$ (ranging from 0 to 6). The bottom panel shows the ratio of the gap fraction to the ATLAS data, with shaded regions indicating the uncertainty bands for the Herwig (yellow) and Pythia (green) models. The ATLAS data points are shown as black squares with error bars. The MC models are shown as lines with markers: Herwig 7.2.0 (green dashed line with squares), Pythia 8.150 (blue solid line with triangles), and Sherpa 1.4.2 (red dotted line with diamonds). The gap fraction generally decreases as $|\Delta y|$ increases, starting around 0.95 at $|\Delta y| \approx 0.5$ and reaching approximately 0.35 at $|\Delta y| \approx 4.8$. The ratio to ATLAS is mostly close to 1, with some deviations at larger $|\Delta y|$.

$ \Delta y $	ATLAS (Gap Fraction)	Herwig 7.2.0 (Gap Fraction)	Pythia 8.150 (Gap Fraction)	Sherpa 1.4.2 (Gap Fraction)
0.5	0.95	0.95	0.95	0.95
1.0	0.80	0.80	0.80	0.80
1.5	0.68	0.68	0.68	0.60
2.0	0.55	0.55	0.55	0.52
2.5	0.48	0.48	0.48	0.45
3.0	0.40	0.40	0.40	0.35
3.5	0.38	0.38	0.38	0.30
4.0	0.32	0.32	0.32	0.40
4.5	0.35	0.20	0.35	0.35
5.0	0.35	-	-	0.35