

Gap fraction

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

- ATLAS
- - □ Herwig 7.2.0 default
- - ▲ Pythia 8.176 default
- - ◆ Sherpa 1.2.2p 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 displays two panels comparing ATLAS experimental data with Monte Carlo models for gap production in 7000 GeV pp collisions. The top panel shows the gap fraction as a function of the rapidity gap $|\Delta y|$ (ranging from 0 to 6). The bottom panel shows the ratio of the gap fraction to the ATLAS data, with shaded regions indicating uncertainty bands for the Herwig (green) and Pythia (yellow) models. The ATLAS data points are shown as black squares, Herwig 7.2.0 as green dashed lines with squares, Pythia 8.176 as blue solid lines with triangles, and Sherpa 1.2.2p as red dotted lines with diamonds. The gap fraction decreases from approximately 0.95 at $|\Delta y| = 0.5$ to about 0.35 at $|\Delta y| = 4.8$. The ratio to ATLAS is generally close to 1, with some deviations at larger $|\Delta y|$.

$ \Delta y $	ATLAS (Gap Fraction)	Herwig 7.2.0 (Gap Fraction)	Pythia 8.176 (Gap Fraction)	Sherpa 1.2.2p (Gap Fraction)
0.5	0.95	0.95	0.95	0.95
1.0	0.80	0.80	0.80	0.80
1.5	0.65	0.65	0.65	0.65
2.0	0.55	0.55	0.50	0.55
2.5	0.48	0.48	0.45	0.48
3.0	0.40	0.40	0.35	0.40
3.5	0.35	0.35	0.30	0.35
4.0	0.32	0.32	0.35	0.35
4.5	0.35	0.20	0.30	0.40
4.8	0.35	-	0.40	-