

Gap fraction

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

- ATLAS
- Herwig 7.1.0 default
- ▲ Pythia 8.186 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 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 uncertainty bands for the Herwig (green) and Pythia (yellow) models. The ATLAS data points are shown as black squares with error bars. The Monte Carlo models are shown as lines with markers: Herwig 7.1.0 (green dashed line with squares), Pythia 8.186 (blue solid line with triangles), and Sherpa 1.4.2 (red dotted line with diamonds). The gap fraction generally decreases as $|\Delta y|$ increases, and the ratio to ATLAS is generally close to 1, indicating good agreement between the models and the data.

$ \Delta y $	ATLAS Gap Fraction	Herwig 7.1.0 Gap Fraction	Pythia 8.186 Gap Fraction	Sherpa 1.4.2 Gap Fraction
0.2	0.95	0.95	0.95	0.95
0.7	0.78	0.82	0.78	0.78
1.2	0.65	0.68	0.65	0.58
1.7	0.55	0.52	0.55	0.52
2.2	0.48	0.50	0.48	0.45
2.7	0.40	0.38	0.40	0.30
3.2	0.35	0.25	0.40	0.25
3.7	0.32	0.18	0.35	0.40
4.2	0.33	0.15	0.33	0.35
4.7	0.35	-	0.50	-