

Gap fraction

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

- ATLAS
- - □ Herwig 7.2.0 default
- - ▲ Pythia 8.210 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

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 displays the 'Gap fraction' on the y-axis (0 to 2), comparing ATLAS data (black squares) with three Monte Carlo models: Herwig 7.2.0 (green dashed line with squares), Pythia 8.210 (blue solid line with triangles), and Sherpa 1.4.2 (red dotted line with diamonds). All models show a gap fraction near 1.0 for $|\Delta y| < 4$, which then decreases as $|\Delta y|$ increases. The bottom panel shows the 'Ratio to ATLAS' on the y-axis (0.5 to 2), where the same models are plotted. A horizontal line is drawn at a ratio of 1.0. The Pythia 8.210 model shows a significant increase in ratio above 4, reaching approximately 1.7 at $|\Delta y| = 5.5$. The Herwig 7.2.0 model shows a slight decrease in ratio above 4. The Sherpa 1.4.2 model remains close to 1.0. A 2D histogram in the bottom right of the second panel shows the distribution of the ratio to ATLAS, with yellow and green shaded regions indicating the spread of the data points.