

Gap fraction

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

- ATLAS
- - □ Herwig 7.2.0 default
- - ◆ Sherpa 2.2.1 default

2

1.5

1

0.5

0

Rivet 3.1.0, ≥ 100 k events

mcplots.cern.ch [arXiv:1306.3436]

ATLAS_2011_S9126244

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 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 the number of events on the right y-axis (100k to 1000k). It displays ATLAS data points (black squares) and two Monte Carlo model predictions: Herwig 7.2.0 (green dashed line with open squares) and Sherpa 2.2.1 (red dotted line with filled diamonds). Both models show a decreasing trend in gap fraction as $|\Delta y|$ increases, starting near 1.0 and dropping to approximately 0.4-0.5 at $|\Delta y| = 4.5$. The ATLAS data points generally follow this trend but show significant uncertainty at larger $|\Delta y|$. The bottom panel shows the 'Ratio to ATLAS' on the left y-axis (0.5 to 2) and the same event count on the right y-axis. It features a horizontal line at a ratio of 1.0. The Herwig and Sherpa models are overlaid as semi-transparent green and yellow regions, respectively, showing their deviation from the ATLAS data. The Herwig model is generally closer to the ATLAS data than the Sherpa model, especially at larger $|\Delta y|$.