

Gap fraction

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

- ATLAS
- - □ Herwig 7.2.0 default
- - ◆ Sherpa 2.1.0 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 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 displays the gap fraction, with the y-axis ranging from 0 to 2. It shows ATLAS data points (black squares) and two Monte Carlo model predictions: Herwig 7.2.0 default (green dashed line with open squares) and Sherpa 2.1.0 default (red dotted line with open diamonds). Both models show a decreasing trend in gap fraction as $|\Delta y|$ increases, starting near 1.0 at $|\Delta y| \approx 0.5$ and reaching approximately 0.15 at $|\Delta y| \approx 5.8$. The bottom panel displays the ratio of the gap fraction to the ATLAS data, with the y-axis ranging from 0.5 to 2.0. A horizontal line is drawn at a ratio of 1.0. The Herwig model (green) stays near 1.0 until $|\Delta y| \approx 3.5$, then drops below 1.0. The Sherpa model (red) stays near 1.0 until $|\Delta y| \approx 3.5$, then rises above 1.0, peaking at approximately 2.1 around $|\Delta y| \approx 4.5$. Shaded regions in the bottom panel indicate the uncertainty bands for the Herwig (green) and Sherpa (yellow) models. The ATLAS data point at $|\Delta y| \approx 5.8$ is shown as a single black square at a ratio of 1.0.