

Gap fraction

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

- ATLAS
- Herwig 7.2.1 default
- ▲--- Pythia 8.308 default
- ◆--- Sherpa 2.2.9 default

2

1.5

1

0.5

0

ATLAS_2011_S9126244

Rivet 3.1.10, $\geq 100k$ 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 rapidity difference $|\Delta y|$ from 0 to 6.

Top Panel: Gap fraction vs Δy (LJ) ($240 < p_T < 270$)
 This panel displays the gap fraction for ATLAS data (black squares) and three Monte Carlo models: Herwig 7.2.1 default (green dashed line with open squares), Pythia 8.308 default (blue solid line with solid triangles), and Sherpa 2.2.9 default (red dotted line with solid diamonds). Error bars are shown for all data points. The gap fraction generally decreases from approximately 0.9 at $|\Delta y| \approx 0.5$ to a minimum of about 0.35 at $|\Delta y| \approx 4.5$, before rising slightly to 0.5 at $|\Delta y| \approx 5.5$. A single ATLAS data point is also shown at $|\Delta y| \approx 5.8$ with a gap fraction of 0.

Bottom Panel: Ratio to ATLAS vs Δy
 This panel shows the ratio of the Monte Carlo models to the ATLAS data. The y-axis ranges from 0.5 to 2.0. A horizontal line is drawn at a ratio of 1.0. Shaded regions represent uncertainty bands: green for Herwig, blue for Pythia, and yellow for Sherpa. The ratios are generally close to 1.0, with some deviations at larger $|\Delta y|$. For example, at $|\Delta y| \approx 4.5$, the Herwig ratio is significantly below 1.0 (around 0.45), while the Pythia and Sherpa ratios are around 1.0. At $|\Delta y| \approx 5.5$, the Pythia and Sherpa ratios are around 1.5, while the Herwig ratio is around 1.0.