

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) ($240 < p_T < 270$)

- Y-axis:** Gap fraction, ranging from 0 to 2.
- Data Series:**
 - ATLAS:** Black solid squares with vertical error bars.
 - Herwig 7.2.1 default:** Green dashed line with open square markers and vertical error bars.
 - Pythia 8.308 default:** Blue solid line with solid triangle markers and vertical error bars.
 - Sherpa 2.2.9 default:** Red dotted line with solid diamond markers and vertical error bars.
- Observation:** The gap fraction decreases from approximately 0.95 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 $|\Delta y| \approx 5.5$. The ATLAS data points are generally well-reproduced by the Monte Carlo models.

Bottom Panel: Ratio to ATLAS vs Δy

- Y-axis:** Ratio to ATLAS, ranging from 0.5 to 2.
- Reference Line:** A horizontal line is drawn at a ratio of 1.0.
- Shaded Regions:**
 - Green:** Represents the ratio of Herwig 7.2.1 to ATLAS.
 - Yellow:** Represents the ratio of Pythia 8.308 to ATLAS.
 - Blue:** Represents the ratio of Sherpa 2.2.9 to ATLAS.
- Observation:** The ratios are mostly close to 1.0, indicating good agreement with ATLAS. There is a notable deviation for the Herwig model at $|\Delta y| \approx 4.5$, where the ratio drops to approximately 0.45.