

Gap fraction

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

- ATLAS
- - □ Herwig 7.1.4 default
- - ▲ Pythia 8.212 default
- - ◆ Sherpa 2.2.8 default

2

1.5

1

0.5

0

Rivet 3.1.0, $\geq 100k$ events

mcplots.cern.ch [arXiv:1306.3436]

ATLAS_2011_S9126244

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. The top panel shows the 'Gap fraction' on the y-axis (0 to 2). It displays ATLAS data points (black squares) and three Monte Carlo model predictions: Herwig 7.1.4 default (green dashed line with open squares), Pythia 8.212 default (blue solid line with solid triangles), and Sherpa 2.2.8 default (red dotted line with solid diamonds). All series show a decreasing trend from approximately 0.9 at $|\Delta y| \approx 0.5$ to around 0.2 at $|\Delta y| \approx 5.5$. The bottom panel shows the 'Ratio to ATLAS' on the y-axis (0.5 to 2). It features the same three model lines as the top panel, overlaid with a histogram representing the ATLAS data distribution. The histogram is colored yellow and green, with a horizontal line at a ratio of 1.0. The Pythia model (blue) stays relatively close to the ratio of 1.0, while the Herwig (green) and Sherpa (red) models show significant deviations, especially at larger $|\Delta y|$.