

Gap fraction

Gap fraction vs  $\Delta y$  (FB) ( $240 < p_T < 270$ )

- ATLAS
- - □ Herwig 7.2.0 default
- - ◆ Sherpa 2.2.6 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) with error bars, and two Monte Carlo model predictions: Herwig 7.2.0 default (green dashed line with open squares) and Sherpa 2.2.6 default (red dotted line with filled diamonds). The gap fraction generally decreases from approximately 0.95 at  $|\Delta y| \approx 0.5$  to about 0.15 at  $|\Delta y| \approx 5.8$ . The bottom panel shows the 'Ratio to ATLAS' on the y-axis (0.5 to 2). It features a horizontal line at 1.0, a green shaded band representing the Herwig model's ratio, and a yellow shaded band representing the Sherpa model's ratio. The Sherpa model shows a significant peak in its ratio to ATLAS at  $|\Delta y| \approx 3.7$ , reaching a value of 2.0. The Herwig model's ratio is mostly between 0.7 and 1.2. The ATLAS data points from the top panel are also plotted in the bottom panel for comparison.