

7000 GeV pp

Jets

Gap fraction

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

- ATLAS
- ▼ Herwig 7.2.0 softTune
- △ Pythia 6.428 370

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.

Top Panel: Gap fraction vs Δy (LJ) ($240 < p_T < 270$)
 This panel plots the gap fraction on the y-axis (0 to 2) against $|\Delta y|$. It includes three data series:

- ATLAS:** Black squares with error bars, showing a decreasing trend from ~0.95 at $|\Delta y| \approx 0.3$ to ~0.35 at $|\Delta y| \approx 4.8$.
- Herwig 7.2.0 softTune:** Teal inverted triangles with error bars, following a similar decreasing trend as ATLAS.
- Pythia 6.428 370:** Red open triangles with error bars, generally following the ATLAS data but with larger fluctuations at higher $|\Delta y|$.

 A single black square is also plotted at $|\Delta y| \approx 5.8$ with a gap fraction of 0.

Bottom Panel: Ratio to ATLAS vs Δy
 This panel plots the ratio of the model gap fractions to the ATLAS data on the y-axis (0.5 to 2) against $|\Delta y|$. A horizontal line is drawn at a ratio of 1.0.

- Herwig 7.2.0 softTune (teal):** The ratio starts near 1.0 and generally stays below 1.0, reaching ~0.75 at $|\Delta y| \approx 4.8$.
- Pythia 6.428 370 (red):** The ratio fluctuates around 1.0, with a notable peak of ~1.5 at $|\Delta y| \approx 4.3$.
- Uncertainty Bands:** Shaded regions represent uncertainty bands for the models. A yellow band is centered around a ratio of 1.0, and a green band is centered around a ratio of 1.0, both showing increasing width and vertical extent at higher $|\Delta y|$.