

The figure consists of two panels. The top panel shows the distribution of the charged-jet width, λ , for Z+jet events. The y-axis is the differential event rate $\frac{1}{\#} \frac{dN}{d\lambda dp_T}$ on a logarithmic scale from 10^{-2} to 10^2 . The x-axis is the charged-jet width λ from 0 to 1. The plot compares CMS data (black squares) with three Pythia 6.427 models: 370 (red triangles), default (orange squares), and pro-q2o (green stars). The CMS data and the 370 model show a peak around $\lambda \approx 0.1$ and a long tail extending to $\lambda = 1$. The default and pro-q2o models show a much narrower distribution, peaking around $\lambda \approx 0.1$ and dropping off sharply. The bottom panel shows the ratio of the charged-jet width distribution to the CMS distribution, Ratio to CMS , on a linear scale from 0.5 to 2. The x-axis is the same as the top panel. The ratio is shown for the same four models. The 370 model is consistently close to 1.0, while the default and pro-q2o models are significantly lower, around 0.7-0.8. The plot also includes a horizontal line at 1.0 and a shaded region representing the uncertainty of the CMS data.

CMS, 13 TeV, AK4 jets, Z+jet region, $88 < p_T^{\text{jet}} < 120$ GeV

Y-axis (top): $\frac{1}{\#} \frac{dN}{d\lambda dp_T}$

Y-axis (bottom): Ratio to CMS

X-axis (both): width (charged-only)

Legend:

- CMS
- △ Pythia 6.427 370
- Pythia 6.427 default
- ☆ Pythia 6.427 pro-q2o

(CMS_2021_I1920187)

mcplots.cern.ch [arXiv:1306.3436]

Rivet 4.1.0, $\geq 100k$ events

mcplots.cern.ch [arXiv:1306.3436]

2

1

0.5