

Jets

The figure displays the thrust distribution and its ratio to CMS for different Pythia 8.308 models. The top panel shows the differential event rate $\frac{dN}{d\ln(\lambda_2^1)}$ versus thrust, and the bottom panel shows the ratio of these rates to the CMS data.

Top Panel: Thrust λ_2^1 (CMS jet substructure)

The x-axis represents thrust, ranging from 0 to 1. The y-axis represents the differential event rate $\frac{dN}{d\ln(\lambda_2^1)}$, ranging from 0 to 10,000. The plot compares four models:

- CMS (Black squares)
- Pythia 8.308 default (Blue triangles)
- Pythia 8.308 default-noFsr (Purple triangles)
- Pythia 8.308 default-noRap (Cyan triangles)

The CMS data points are shown as black squares. The Pythia 8.308 default model (blue triangles) shows a significant deviation from the CMS data at low thrust values, peaking around $\lambda_2^1 \approx 0.1$. The Pythia 8.308 default-noFsr (purple triangles) and default-noRap (cyan triangles) models show a much better agreement with the CMS data across the entire thrust range.

Bottom Panel: Ratio to CMS

The y-axis represents the ratio of the model's differential event rate to the CMS data, ranging from 0.5 to 2.0. The x-axis represents thrust, ranging from 0 to 1. The ratio is shown as a green line with a yellow shaded uncertainty band. The ratio is consistently close to 1.0, indicating a good agreement between the models and the CMS data.

mcplots.cern.ch [arXiv:1306.3436]

0.5

thrust