

Z+Jet

Figure 1 displays the multiplicity distribution of jets in CMS and Pythia models. The top panel shows the distribution of the number of jets, N , as a function of multiplicity. The bottom panel shows the ratio of the Pythia models to the CMS data, $R = N_{\text{Pythia}} / N_{\text{CMS}}$.

The top panel is a plot of $\frac{1}{N} \frac{dN}{d\lambda_0}$ versus multiplicity. The x-axis ranges from 0 to 40, and the y-axis ranges from 0 to 220. The data points are shown for CMS (black squares) and three Pythia models (Pythia 6.428 370, Pythia 6.428 378, and Pythia 6.428 379). The Pythia models show a peak around multiplicity 12, while the CMS data shows a peak around multiplicity 10. The Pythia models are generally higher than the CMS data for multiplicities between 10 and 20.

The bottom panel is a plot of the ratio $R = N_{\text{Pythia}} / N_{\text{CMS}}$ versus multiplicity. The x-axis ranges from 0 to 40, and the y-axis ranges from 0.5 to 2. The ratio is shown for the three Pythia models. The ratio is generally higher than 1 for multiplicities between 10 and 20, indicating that the Pythia models predict a higher multiplicity than the CMS data in this region. The ratio is lower than 1 for multiplicities below 10 and above 20.

Multiplicity	CMS $\frac{1}{N} \frac{dN}{d\lambda_0}$	Pythia 6.428 370 $\frac{1}{N} \frac{dN}{d\lambda_0}$	Pythia 6.428 378 $\frac{1}{N} \frac{dN}{d\lambda_0}$	Pythia 6.428 379 $\frac{1}{N} \frac{dN}{d\lambda_0}$	Ratio to CMS (Pythia 6.428 370)
0	~0.01	~0.01	~0.01	~0.01	~1.0
5	~0.02	~0.02	~0.02	~0.02	~1.0
10	~0.05	~0.05	~0.05	~0.05	~1.0
12	~0.08	~0.10	~0.08	~0.10	~1.25
15	~0.10	~0.12	~0.10	~0.12	~1.2
20	~0.15	~0.15	~0.15	~0.15	~1.0
25	~0.20	~0.20	~0.20	~0.20	~1.0
30	~0.25	~0.25	~0.25	~0.25	~1.0
35	~0.30	~0.30	~0.30	~0.30	~1.0
40	~0.35	~0.35	~0.35	~0.35	~1.0

mcplots.cern.ch [arXiv:1306.3436]

Rivet 3.1.10, $\geq 2.5\text{M}$ events