

Z+Jet

Figure 1 displays the multiplicity distribution of jets in CMS and Monte Carlo 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 Monte Carlo models to the CMS data.

Top Panel: Multiplicity λ_0^0 (CMS jet substructure)

The top panel shows the distribution of the number of jets, N , as a function of multiplicity. The x-axis is multiplicity (0 to 40), and the y-axis is $\frac{1}{N} \frac{dN}{d\lambda_0^0}$ (0 to 160). The data points are shown for CMS (black squares) and Monte Carlo models (Herwig++ 2.7.1 default, orange dashed line with circles; Herwig 7.2.1 default, green dashed line with squares). The CMS data points are very low, while the Monte Carlo models show a peak around multiplicity 12.

Bottom Panel: Ratio to CMS

The bottom panel shows the ratio of the Monte Carlo models to the CMS data. The x-axis is multiplicity (0 to 40), and the y-axis is the ratio (0.5 to 2). The ratio is shown for Herwig++ 2.7.1 default (orange) and Herwig 7.2.1 default (green). The ratio is generally above 1, indicating that the Monte Carlo models predict a higher multiplicity than the CMS data.

Multiplicity	CMS $\frac{1}{N} \frac{dN}{d\lambda_0^0}$	Herwig++ 2.7.1 $\frac{1}{N} \frac{dN}{d\lambda_0^0}$	Herwig 7.2.1 $\frac{1}{N} \frac{dN}{d\lambda_0^0}$	Ratio to CMS (Herwig++)	Ratio to CMS (Herwig 7.2.1)
0	~0.01	~0.01	~0.01	~1.0	~1.0
5	~0.01	~25	~22	~2500	~2200
12	~0.01	~70	~75	~7000	~7500
18	~0.01	~35	~38	~3500	~3800
25	~0.01	~8	~8	~800	~800
30	~0.01	~2	~2	~200	~200
35	~0.01	~0.5	~0.5	~50	~50
40	~0.01	~0.1	~0.1	~10	~10

mcplots.cern.ch [arXiv:1306.3436]