

Jets

The figure displays two panels related to the multiplicity distribution of CMS data and Monte Carlo models.

Top Panel: Shows the multiplicity distribution $\frac{dN}{d\ln \lambda_0^0}$ (CMS jet substructure) versus multiplicity. The y-axis ranges from 0 to 180. The x-axis ranges from 0 to 100. The plot compares CMS data (black squares) with three Monte Carlo models: Herwig 7.2.1 softTune (green line with downward triangles), Pythia 6.428 370 (red line with upward triangles), and Pythia 8.308 default (blue line with upward triangles). The CMS data shows a sharp peak at multiplicity 0, while the Monte Carlo models show a broader distribution peaking around multiplicity 40-50.

Bottom Panel: Shows the ratio of the Monte Carlo models to the CMS data, labeled "Ratio to CMS", versus multiplicity. The y-axis ranges from 0.5 to 2.0. The x-axis ranges from 0 to 100. The plot compares the three Monte Carlo models to the CMS data. The ratio is generally close to 1.0 for multiplicities up to 40, but increases significantly for higher multiplicities, reaching values above 2.0 for multiplicities greater than 60.

Source: CMS_2021_I1920187

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mcplots.cern.ch [arXiv:1306.3436]