

## Z+Jet

Figure 1 displays the LHA  $\lambda_{0.5}^1$  (CMS jet substructure) distribution. The top panel shows the distribution of  $\lambda_{0.5}^1$  for CMS data (black squares) and four Pythia 6.428 models (dashed lines with markers). The bottom panel shows the ratio of the Pythia models to the CMS data, with a green shaded band indicating the ratio range.

The top panel shows the distribution of  $\lambda_{0.5}^1$  for CMS data (black squares) and four Pythia 6.428 models (dashed lines with markers). The x-axis is  $\lambda_{0.5}^1$  (ranging from 0 to 1) and the y-axis is  $\frac{1}{N} \frac{dN}{d\lambda_{0.5}^1}$  (ranging from 0 to 1000). The CMS data is shown as black squares, and the Pythia models are shown as dashed lines with markers: Pythia 6.428 345 (red circles), Pythia 6.428 370 (red triangles), Pythia 6.428 ambt1 (orange triangles), and Pythia 6.428 z2 (green circles). The distribution peaks around  $\lambda_{0.5}^1 \approx 0.3$ .

The bottom panel shows the ratio of the Pythia models to the CMS data, with a green shaded band indicating the ratio range. The x-axis is  $\lambda_{0.5}^1$  (ranging from 0 to 1) and the y-axis is the Ratio to CMS (ranging from 0.5 to 2). The ratio is generally close to 1, indicating good agreement between the Pythia models and the CMS data.

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