

The figure displays two panels related to the pT distribution of the second hardest charged jet (pTD2) in the central dijet region (408 < p_T^{dijet} < 481 GeV) from CMS data at 13 TeV, using AK8 jets.

Top Panel: Shows the differential cross-section $\frac{1}{\sigma} \frac{dN}{dp_T} \frac{d\lambda}{d\lambda}$ on a logarithmic scale (y-axis, ranging from 10⁻² to 10²) versus pTD2 (charged-only) on a linear scale (x-axis, ranging from 0 to 1). The data points are shown for CMS (black squares), Pythia 8.315 default (blue triangles), and Pythia 8.315 vincia-default (cyan triangles). The distribution peaks around pTD2 ≈ 0.15 and then decreases. The Pythia 8.315 vincia-default model shows a slightly lower peak and a steeper decline compared to the default model and CMS data.

Bottom Panel: Shows the ratio of the pTD2 distribution to the CMS data on a linear scale (y-axis, ranging from 0.5 to 2) versus pTD2 (charged-only) on a linear scale (x-axis, ranging from 0 to 1). The ratio is plotted for the same three models. The ratio starts high (around 1.8) at low pTD2 and decreases towards 1.0 as pTD2 increases. The Pythia 8.315 vincia-default model shows a ratio that is generally lower than the default model and CMS data, especially at low pTD2. Shaded regions (yellow and green) indicate the uncertainty bands for the ratio.

Source: (CMS_2021_I1920187)

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mcplots.cern.ch [arXiv:1306.3436]

2

1

0.5

pTD2 (charged-only)