

# Jets

The figure displays the groomed  $p_{TD2}$  distribution for CMS data and various Pythia 8.308 tunes. The top panel shows the differential distribution  $\frac{dN}{d\ln(p_{TD2})}$  on a logarithmic scale (from 1000 to 100,000) versus groomed  $p_{TD2}$  on a linear scale (from 0 to 1). The bottom panel shows the ratio of the simulated distributions to the CMS distribution, with a central line at 1 and a yellow shaded region representing the ratio range.

**Legend:**

- CMS (Black squares)
- Pythia 8.308 default (Blue triangles)
- Pythia 8.308 tune-AU2 (Red inverted triangles)
- Pythia 8.308 tune-AU2lox (Red diamonds)
- Pythia 8.308 tune-AU2loxx (Red squares)
- Pythia 8.308 tune-AU2m (Brown stars)

**Top Panel Data (Approximate):**

| groomed $p_{TD2}$ | CMS   | Pythia 8.308 default | Pythia 8.308 tune-AU2 | Pythia 8.308 tune-AU2lox | Pythia 8.308 tune-AU2loxx | Pythia 8.308 tune-AU2m |
|-------------------|-------|----------------------|-----------------------|--------------------------|---------------------------|------------------------|
| 0.05              | ~1000 | ~1000                | ~1000                 | ~1000                    | ~1000                     | ~1000                  |
| 0.1               | ~1000 | ~1000                | ~1000                 | ~1000                    | ~1000                     | ~1000                  |
| 0.15              | ~1000 | ~1000                | ~1000                 | ~1000                    | ~1000                     | ~1000                  |
| 0.2               | ~1000 | ~1000                | ~1000                 | ~1000                    | ~1000                     | ~1000                  |
| 0.3               | ~1000 | ~1000                | ~1000                 | ~1000                    | ~1000                     | ~1000                  |
| 0.5               | ~1000 | ~1000                | ~1000                 | ~1000                    | ~1000                     | ~1000                  |
| 0.7               | ~1000 | ~1000                | ~1000                 | ~1000                    | ~1000                     | ~1000                  |
| 1.0               | ~1000 | ~1000                | ~1000                 | ~1000                    | ~1000                     | ~1000                  |

**Bottom Panel Data (Approximate):**

| groomed $p_{TD2}$ | Ratio to CMS |
|-------------------|--------------|
| 0.05              | ~0.8 - 1.4   |
| 0.1               | ~0.9 - 1.2   |
| 0.2               | ~0.8 - 1.3   |
| 0.3               | ~0.9 - 1.2   |
| 0.5               | ~0.9 - 1.2   |
| 0.7               | ~0.9 - 1.2   |
| 1.0               | ~0.9 - 1.2   |

2  
1  
0.

groomed pTD2