

The figure displays the charged-particle multiplicity distribution in the forward region for CMS data and two Pythia 6.428 models. The top panel shows the differential particle density $\frac{1}{\#} \frac{dN}{dp_T d\lambda}$ on a logarithmic scale versus p_T (GeV). The bottom panel shows the ratio of the distribution to the CMS data on a linear scale versus multiplicity (charged-only).

Top Panel: Differential Particle Density
 Y-axis: $\frac{1}{\#} \frac{dN}{dp_T d\lambda}$ (log scale, 10^{-5} to 1)
 X-axis: p_T (GeV) (log scale, 10^0 to 10^2)
 Legend:
 - CMS: Black squares with error bars
 - Pythia 6.428 370: Red line with open triangles
 - Pythia 6.428 default: Orange dashed line with open squares

Bottom Panel: Ratio to CMS
 Y-axis: Ratio to CMS (linear scale, 0.5 to 2.5)
 X-axis: multiplicity (charged-only) (linear scale, 0 to 100)
 Legend:
 - CMS: Black squares with error bars
 - Pythia 6.428 370: Red line with open triangles
 - Pythia 6.428 default: Orange dashed line with open squares

The top panel shows that the Pythia 6.428 370 model (red line) provides a better description of the CMS data (black squares) at high p_T compared to the default model (orange dashed line). The bottom panel shows that the Pythia 6.428 370 model (red line) overpredicts the multiplicity at high values, while the default model (orange dashed line) underpredicts it.