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CMS Measurement of Upsilon Production at 7TeV

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The differential cross section as a function of transverse momentum for the production of the $\Upsilon(nS)$ ($n=1,2,3$) states decaying into a pair of muons has been measured in pp collisions at $\sqrt{s} = 7$ TeV using 4.9 fb^{-1} of data collected by the CMS detector. The analysis selected events with dimuon rapidity $|y(\mu\mu)| < 0.6$, and the measurements cover dimuon transverse momentum in the range $p_T(\mu\mu) = 10\text{-}100 \text{ GeV}$. The data show a transition from exponential to power-law behavior in the neighborhood of 20 GeV , and the power-law exponents for all three states are consistent. The ratio of differential cross sections for the higher s-wave excitations rises at low $p_T(\mu\mu)$, then becomes flatter at higher $p_T(\mu\mu)$ where the power-law behavior dominates.

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