

# Low X workshop



Contribution ID : 45

## Hard Scattering and Tsallis Fits to $p_T$ Spectra in pp Collisions at LHC

Friday 31 May 2013 at 12:50 (00h20')

### Content :

The transverse spectra of produced hadrons in the central rapidity region in pp collisions at LHC fall within the realm of low-x physics. They provide useful information on the dynamics of the collision process. Recent transverse spectra of produced hadrons in pp collisions at the LHC from the CMS, ATLAS, and ALICE Collaborations have been found to conform to phenomenological Tsallis fits that describe well the whole transverse spectrum over a large range of the transverse momenta, with only three parameters [1]. The transverse distribution  $d\sigma/dp_T^2$  in the asymptotic form of  $1/p_T^n$  gives an extracted power index  $n=7.65$  and  $6.60$  for pp collisions at 0.9 and 7 TeV respectively. These power indices differ significantly from what is expected from the naive parton-parton scattering of  $n=4$ . We discuss different proposed models to explain the power indices. Using the hard scattering model, we examine how the multiple hard scattering and other hard processes may modify the power-law behavior of the hadron transverse spectrum.

[1] C. Y. Wong and G. Wilk, Acta Phys. Pol. B 43, 2047 (2012).

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