

TMDlib – TMDplotter tutorial

- setting up:
 - get school accounts and passwds (save then for today)
 - accounts only valid for today
 - at the end of the day, copy everything you want to keep, back to your own account/laptop
 - login to tutorial account:
`ssh -X schoolXX@naf-school01.desy.de`
`cd public`
`source /afs/desy.de/user/j/jung/scratch/ref2018/setup.sh`

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TMDplotter:

- open Browser with <http://tmdplotter.desy.de>
- select to plot k_t distribution of PB-NLO-HERAI+II-2018-set1 and PB-NLOHERAI+II-2018-set2
- plot the uncertainty band of set 1 (or set 2)
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- compare the integrated TMD PB-NLO-HERA-I+II-2018-set1 with HERANLO2.0 (collinear pdf)
- ditto, but with set 2
- ditto with uncertainty bands (takes long)

The screenshot displays the TMDplotter web interface. The title is "TMD plotter — Density as a function of k_t ". The Helmholtz Gemeinschaft logo is in the top right. A navigation bar includes "Home", "TMD PDF", "Luminosity", "New PDFs", "Publications", and "HEP Links".

Parameters

X-axis: min = 0.1 max = 20 GeV log lin
Y-axis: min = 0.0001 max = 100 log lin
ratio: min = 0.4 max = 1.6 log lin

Curves

1. gluon PB-NLO-HERAI+II-2018-set 1
 $\mu = 10$ GeV $x = 0.01$

2. gluon PB-NLO-HERAI+II-2018-set 1
 $\mu = 10$ GeV $x = 0.01$

Output

Format: pdf display ratio display command line hide central value show uncertainty envelope show uncertainty band (Hessian) show all members
Number of points: 20

Buttons: Plot, Restore, Add curve

The plot shows the gluon density distribution for $x = 0.01$ and $\mu = 10$ GeV. The y-axis is $xA(x, k_t, \mu)$ on a log scale from 10^{-4} to 10^2 . The x-axis is k_t [GeV] on a log scale from 10^{-1} to 10 . Two curves are shown: a red line for PB-NLO-HERAI+II-2018-set1 and a blue line for PB-NLO-HERAI+II-2018-set2. An uncertainty band is visible around the curves. A secondary plot at the bottom shows the ratio of the two sets, with a red line at 1.0 and a blue line showing deviations.

TMDlib

TMDlib (<https://tmdlib.hepforge.org/>)

calculate DY cross section with TMD parton densities PB-NLO-HERAI+II-2018-set1 following DY-tmdlib.cc (distributed in TMDlib package)

change to other TMD, MRW-CT10nlo, for example.

TMDlib - TMDplotter tutorial: Questions, requests
