

PB TMD meeting

Travels/visits in Corona times

- How are you ?
 - Travel restrictions in several countries
 - closing of activities – Universities etc are closed
 - CERN allows only people working at CERN to enter – no access for meetings
 - DESY does not allow people from risk zones to enter (only after having 2 weeks of Quarantine)
 - Travels to and from the "red regions" are forbidden. Note that these now include all Italy, all Iran and Grande Est in France, these new regions appeared the last 2 days. If you have been in one of these places up to 14 days ago you have to stay at home in quarantine. Guests from these regions are not allowed on campus and in general you should rethink of all guests visits.

Next workshops

- all Moriond conferences cancelled
- DIS 2020 NY: cancelled
- LHPC 2020 25-30 May 2020 Paris (Deadline abstract: 13 April 2020)
 - similar abstracts as for ICHEP ?

Next workshops

- ICHEP 2020 30 July – 5 August Prague (Deadline abstract: 25 February)
 - Jet production at NLO in the Parton Branching method at LHC energies
A. Bermudez, F. Hautmann

My abstracts

☰ 3 / 3 🔍 Enter #id or search string 📄

616. TMD densities at leading and higher order from the Parton Branching method

👤 Sara Taheri Monfared (Deutsches Elektrone...)

🕒 Last modified: 21 Feb 2020

Submitted

We present a new determination of Transverse Momentum Dependent (TMD) parton distributions obtained with the Parton Branching (PB) method at LO, NLO and NNLO. The PB TMDs are extracted from fits to precision DIS data using

800. Drell-Yan production at NLO in the Parton Branching method at low and high DY masses and low and high \sqrt{s}

👤 Qun Wang (Peking University (CN))

🕒 Last modified: 25 Feb 2020

Submitted

Transverse Momentum Dependent (TMD) parton distributions obtained from the Parton Branching (PB) method are combined with next-to-leading-order (NLO) calculations of Drell-Yan (DY) production. We apply the MC@NLO method for

857. Parton Branching method and applications to pp and ep processes

👤 Jindrich Lidrych (Deutsches Elektrone...)

🕒 Last modified: 26 Feb 2020

Submitted

Transverse Momentum Dependent (TMD) parton distributions obtained within the Parton Branching (PB) approach offer a wide spectrum of applications to describe processes in nn as well as in ep interactions. We give an overview of the PB

CASCADE news

- CASCADE was used mainly for DY production, with TMDs
- NOW, switching to use also parton shower from TMDs
 - activity started to investigate parton shower in detail
 - first from general purpose MC generators: PYTHIA8, HERWIG6
 - then using CASCADE

CASCADE news

- Instructions running CASCADE with TMDs and Shower
 - new parameters in steering file

&CASCADE_input	Nr of events to process
NrEvents = -1	Read LHE file
Process_Id = -1	Max sacling factor for accept/reject
!MaxFactor = 10	Hadronisation on (=1)
!Hadronisation = 1	Hadronisation on (=1)
Hadronisation = 0	Space-like Parton Shower
SpaceShower = 1	Order alphas in Space Shower
SpaceShowerOrderAlphas=2	Time-like Parton Shower
TimeShower = 1	Scale choice for Time-like Shower
ScaleTimeShower = 4	1: $2(m^2_{1t}+m^2_{2t})$
	2: shat
	3: $2(m^2_1+m^2_2)$
	4: $2 \cdot \text{scalup}$ (from lhe file)
!ScaleFactorFinalShower = 1.	scale factor for
	Final State Parton Shower
PartonEvolution = 2	type of parton evolution
	in Space-like Shower
	1: CCFM
	2: full all flavor TMD evolution
EnergyShareRemnant = 4	energy sharing in proton remnant
	1: $(a+1)(1-z)^{**a}$ $\langle z \rangle = 1/(a+2) = 1/3$
	2: $(a+1)(1-z)^{**a}$
	$\langle z \rangle = 1/(a+2) = m_q/(m_q+m_Q)$
	3: $N/(z(1-1/z-c/(1-z))^{**2})$
	$c=(m_q/m_Q)^{**2}$
	4: PYZDIS: KFL1=1
Remnant = 0	=0 no remnant treatment
PartonDensity = 102200	use TMDlib: PB-TMDNLO-set2
PartonDensity = 101201	use TMDlib: PB-TMDNLO-set1
TMDDensityPath= './share'	Path to TMD density for
	internal files
lheInput = 'MCatNLO-example.lhe'	LHE input file
lheHasOnShellPartons = 1	= 0 LHE file has
	off-shell parton configuration
lheReweightTMD = 0	Reweight with new TMD
	given in PartonDensity
lheScale = 4	Scale defintion for TMD
	0: use scalup
	1: use shat
	2: use $1/2 \sum p_t^2$ of final parton/particles
	3: use shat for Born and $1/2 \sum p_t^2$ of final parton(particle)
	4: use shat for Born and max p_t of most forward/baward parton(particle)
lheNBornpart = 2	Nr of hard partons (particles) (Born process)
ScaleFactorMatchingScale = 2.	Scale factor for matching scale when including TMDs
lheWeightId = 0	use weight Id = ...
	as weight for LHE file

Factor for checking performance

CASCADE news

- Tool to investigate initial state parton shower: Plugin to access IPS infos - get_ips

```
#include <iostream>
using namespace std;

extern "C" {
int Ncount ;
void get_ips_(int & ievent, int & ileg, int & nbran, double & x, double & z, double & qprime, double & kt2 ){
    if ( Ncount == 1) {
        cout << " CASCADE: dummy version of get_ips is used "<< endl;
        cout << " Get_ips: ievent = " << ievent << " Ileg = " << ileg << " nbran = " << nbran << endl;
        cout << " Get_ips: q_prime = " << qprime << " x = " << x << " z = " << z << " kt_2 " << kt2 << endl;
        ++Ncount ;
    }
    // here fill histos
}
}
```


CASCADE news

- Please NOTE:
 - CASCADE with TMDs and PS is still in development phase
 - Investigate output and results critically
 - check on Nr evnts with wrong weights
 - check on E-p conservation
 - investigate output

```
casmain      100000
final x-sections: sigma = 0.355E+06 pb   +/- 0.842E+04
External Procees from LHE file
Nr events:      100001
Negative events :    45053.0000000000000
Negative weights: -486056.77944059984
sigma visible = 355.      nb   +/- 8.42
light quarks : xsec = 165.      nb. Nqqb = 46595
charm quarks : xsec = 16.2      nb. Nqqb = 4557
bottom quarks : xsec = 12.2      nb. Nqqb = 3431
Nr of events generated :      100001
Nr of events written:      99992
Error summary on event generation ^
Errors and their meaning meaning:
CAS_LHEREAD wt>wtmax (warning) :      20
CAS_LHEREAD ntry exceeded. :      8
cabran Wt > 1..... :      93152
cabran veto called :      94573290
sum of weights      106655.65714922789
updfgrid finalized
CASCADE running time =      4852.57275      seconds. Time/event = 4.85257283E-02
```

- Please consult me before showing results outside – check that results are reasonable !

CASCADE news

- New release, with all features in: **CASCADE 3.0.2-beta01**

Agenda

PB TMD discussion

Thursday, 27 February 2020 from **15:30** to **17:30** (Europe/Berlin)
at **CMS meeting room**

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Description Vidyo connection:

<https://vidyoportal.cern.ch/flex.html?roomdirect.html&key=Nh6qpY4rP69Q>

If you want to join by phone, please use one of the phone numbers listed in the link below:

<http://information-technology.web.cern.ch/services/fe/howto/users-join-vidyo-meeting-phone>

and enter the meeting extension 1010403749 in order to join.

Thursday, 27 February 2020

15:30 - 15:50

Intro 20'



Agenda
