

PB TMD meeting

- Hoping that you are all ok !

News

- We will have a DESY sympa email list, for communication and meeting announcement: pb-discussion@desy.de

To subscribe to the email list, send an email to sympa@desy.de

write in the subject line: subscribe pb-discussion@desy.de Firstname Name
and leave main body of the message empty.

See also description: <https://lists.desy.de/sympa/help/user-subscribe.html>

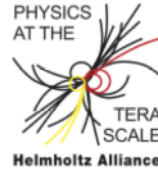
- Sara has kindly agreed to chair PB discussion meetings in future, thanks a lot, Sara.
 - should we move the starting time of the meeting to 15:00 or even 14:00 ?

PB TMD with CASCADE - Monte Carlo school

Helmholtz Alliance

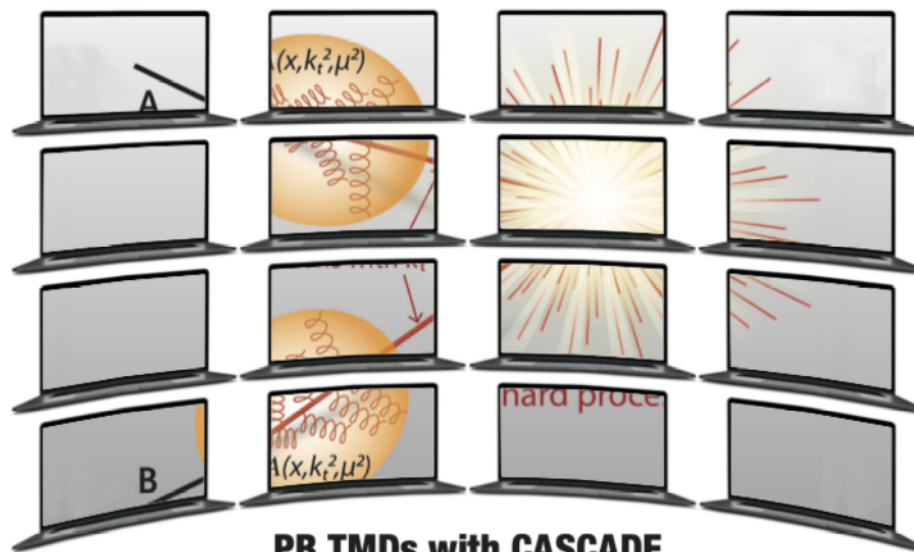
PHYSICS AT THE TERASCALE

Deutsches Elektronen-Synchrotron DESY +++ Karlsruher Institut für Technologie - Großforschungsbereich +++ Max-Planck-Institut für Physik +++ Rheinisch-Westfälische Technische Hochschule Aachen
+++ Humboldt-Universität zu Berlin +++ Rheinische Friedrich-Wilhelms-Universität Bonn +++ Technische Universität Dortmund +++ Technische Universität Dresden +++ Albert-Ludwigs-Universität Freiburg +++ Justus-Liebig-Universität Gießen +++ Georg-August-Universität Göttingen +++ Universität Hamburg +++ Ruprecht-Karls-Universität Heidelberg +++ Karlsruher Institut für Technologie - Universitätsbereich +++ Johannes Gutenberg-Universität Mainz +++ Ludwig-Maximilians-Universität München +++ Universität Regensburg +++ Universität Rostock +++ Universität Siegen +++ Julius-Maximilians-Universität Würzburg +++ Bergische Universität Wuppertal +++



Virtual Monte-Carlo School 2021

8-12 November 2021 (on Zoom)



PB TMDs with CASCADE

Programme:

- Intro to MC techniques and Parton Shower (S. Prestel, Lund)
- Intro to Parton Branching TMDs (F. Hautmann, Oxford/Antwerp)
- Intro to CASCADE (A. Bermudez Martinez, DESY)
- Physics at future colliders (M. Mangano, CERN)
- Exercises on high p_T di-jets at LHC energies
- Results of exercises will be presented at REF2021 workshop and published

Organisation Team: Armando Bermúdez Martínez (DESY), Hannes Jung (DESY), Sara Taheri Monfared (DESY), Qun Wang (DESY)

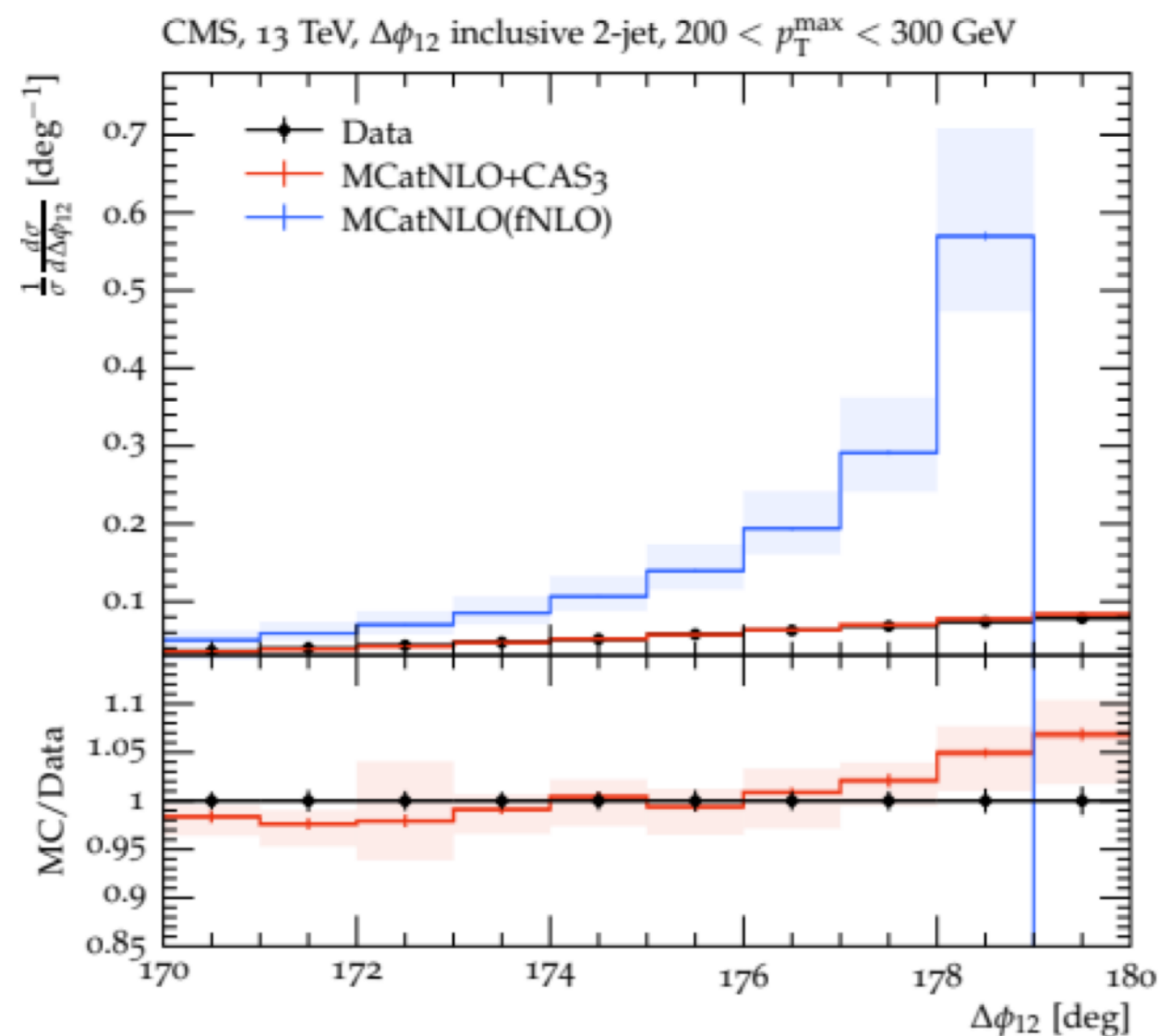
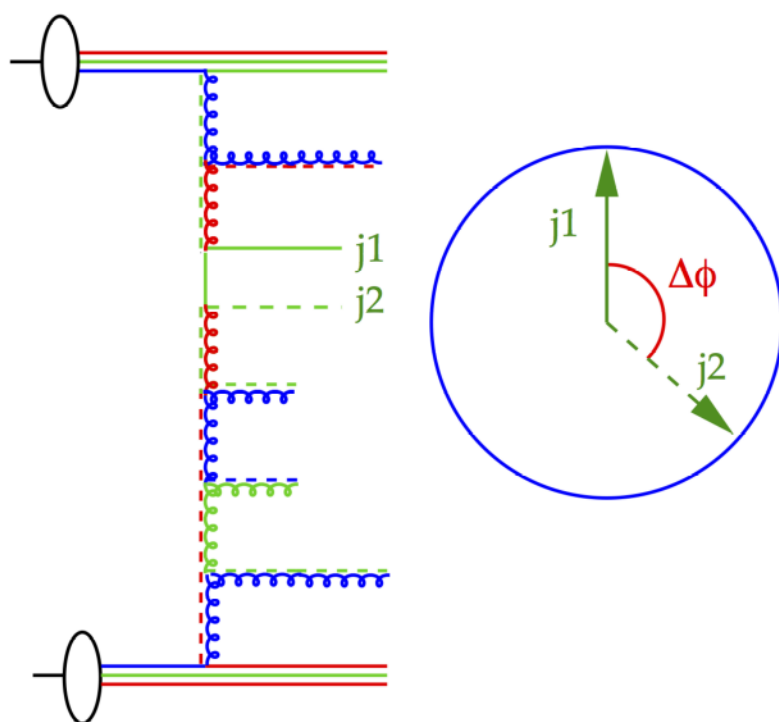
Please register on <https://indico.desy.de/event/31877/>

www.terascale.de/mc2021

- MC school: PB TMDs with CASCADE
 - very positive resonance
 - > 60 registrants
 - > 20 in HandsOn Exercises
- studies on high p_T dijet production
 - presented at REF 2021 by Qun
 - multijet merging presented by Armando
- paper draft is in preparation – next week on arXiv

Why di-jets at high p_T - why TMDs ?

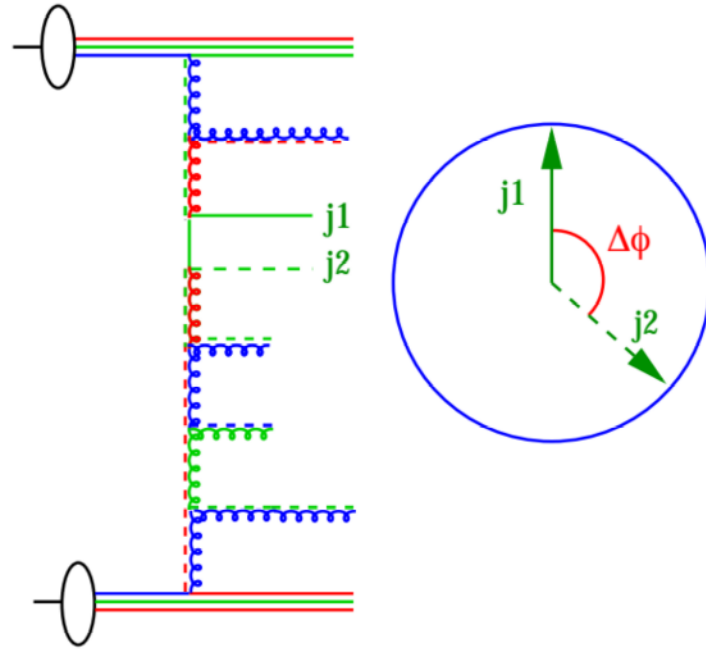
- Measurements with $p_T > 200$ GeV
 - at least 2 jets



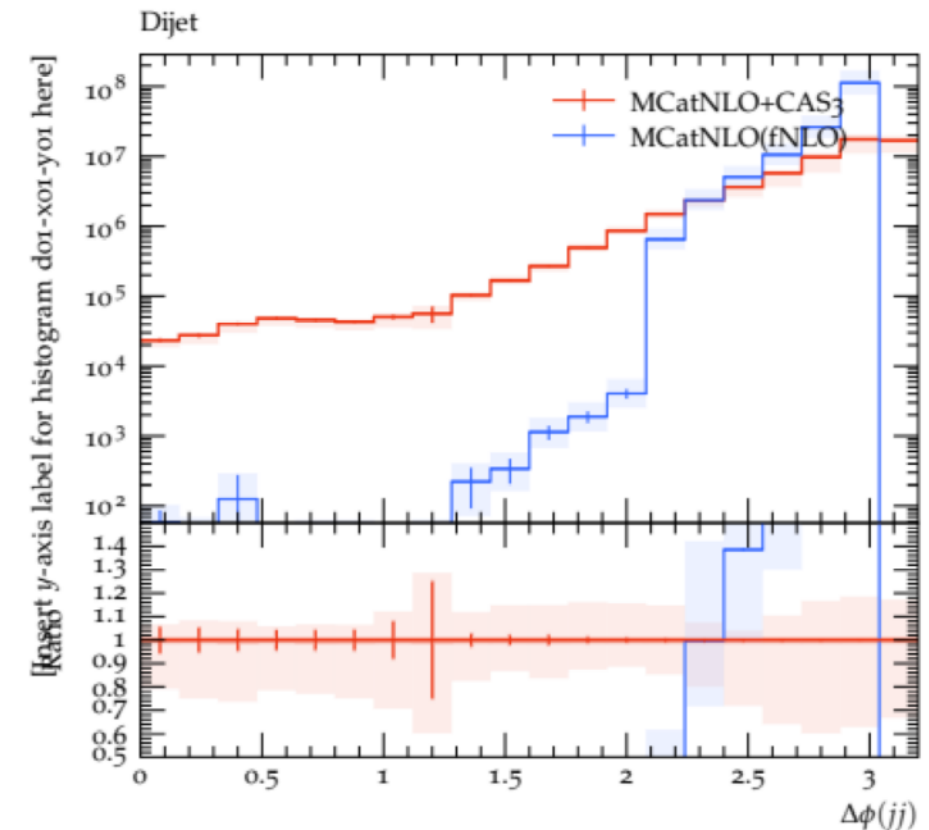
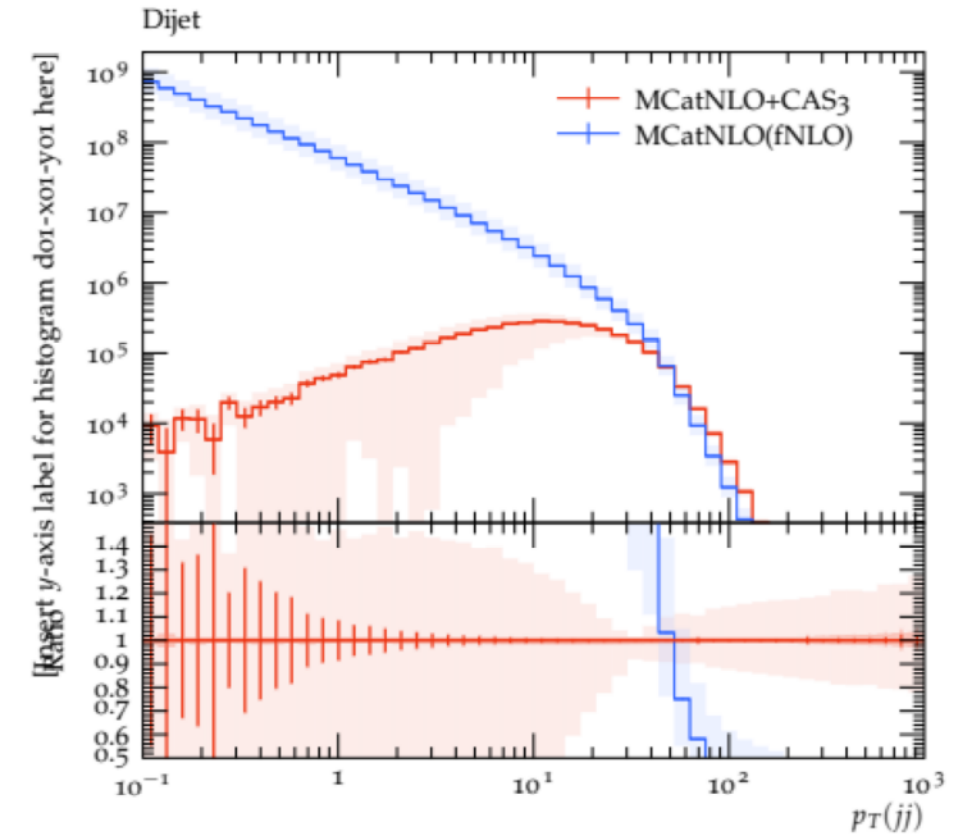
- MCatNLO-dijet + TMD + TMD shower gives a good description of large $\Delta\phi$
- MCatNLO (fNLO)-dijet is not appropriate for this observable

Why back-to-back region is important ?

- Look at p_T of di-jet system:



- Experimentally p_T is more difficult:
 - interesting effect at $p_T < 10$ GeV
 - easier is $\Delta\phi$
- in QCD, there are always soft gluons:
 - probability to have no soft gluon: $\rightarrow 0$
 - x-section for $\Delta\phi \rightarrow \pi$ (or $p_T(jj) \rightarrow 0$) vanishes



REF 2021 workshop

- Many very good presentations
 - I found interesting/important discussion on
 - factorization breaking
 - time-like evolution – fragmentation functions
 - How to proceed ?
 - dijets in back-to-back region is already one step towards understanding factorization breaking issue
 - Pending issue on PB:
 - Time-like evolution and Time-like parton shower
 - What else ?

Agenda

PB TMD discussion

 Thursday 2 Dec 2021, 15:30 → 17:30 Europe/Berlin

Videoconference
Rooms



PB TMD discussion

15:30 → 15:35 **Intro**

15:35 → 15:55 **The three photons production at LHC and applications of TMDs**

Speaker: Ramin Kord Valeshabadi

15:55 → 16:15 **Non-perturbative CSS kernel from PB**

Speaker: Armando Bermudez Martinez (CMS (CMS Fachgruppe QCD))