

# 17th MCnet Meeting

Tuesday, 10 April 2018 - Thursday, 12 April 2018

CERN



## Book of Abstracts



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## **Cedar**

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**Student Talks 2 / 30**

## **Introduction**

**Author:** Smita Chakraborty<sup>1</sup>

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Introduction as a new MCnet Ph.D. student at LU and short description of the first research project

**Student Talks 3 / 31**

## Implementing QED radiation in Vincia

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Most parton showers currently work in the leading colour limit, allowing for coherent gluonic radiation through either angular ordering or the dipole/antenna formalism. For photon emission, the equivalent type of radiation in QED, there is no leading colour limit and the soft structure is more complicated. In this talk, I will discuss how we are including photonic emissions into the Vincia parton shower. I will briefly explain several available algorithms which have varying accuracy and speed.

**Student Talks 2 / 32**

## Diffraction in Pythia

**Author:** Christine Rasmussen<sup>None</sup>

Update on ongoing activities in Pythia.

**Student Talks 2 / 33**

## Introduction

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A short introduction about myself as a new PhD student at Lund University.

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## Creating heavy ion events from pp events in a generator independent way

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The Pythia event generator has seen a lot of progress relating to modeling heavy ion collisions, in the parton-level stacking framework known as Angantyr. Several of the ideas behind Angantyr are, however, not local to Pythia, and it is therefore possible to implement them in a generator independent way.

We present the initial version of such an implementation, which essentially allows for input from all three main generators. As this has been suggested as a topic for this years MCnet summer school tutorials, we show some suggestions to how such a tutorial can be organized, and invite for discussion.

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## **HEJ: The Path to NLL**

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Presenting the first set of LL corrections to sub-leading processes within W+Jets in HEJ. This adds resummation to many processes previously only matched to FO.

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## **Secondary absorptive interactions in the Angantyr model**

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TBA

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## **Introduction**

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## **IBA**

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## Blue Yonder

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### d-fine

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## B12

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## Double Parton Distributions and Parton Showers

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Double parton scattering is usually suppressed by single parton scattering. However, in some specific regions of phase-space, the differential cross-sections are comparable. Also, for a given final state, it might happen that the double parton scattering is the dominant contribution if the single parton scattering is suppressed by a higher multiplicity of couplings. For these reasons, it turns out to be necessary to include double parton scattering in event generators in order to give a better description of the data at high energy scales such as at the LHC.

Double parton scattering requires the use of double parton distributions and many efforts have been made during the last decade to produce realistic sets of those distributions, despite the lack of experimental data. In this work, we explore some directions to include those double parton distributions within the conventional partons showers.

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## MadDM v.3.0

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We present the recently published MadDM v.3.0, now a plugin of Madgraph5\_aMC@NLO. The new release extends the capabilities of the previous versions with a dedicated module for dark matter indirect detection. MadDM is now able to generate energy spectra from dark matter annihilation, calculate cosmic rays fluxes and compare the theory predictions with the Fermi-LAT upper limits from the observation of dwarfs galaxies gamma rays. Moreover the new 'scan mode' functionality makes it easy to sample the parameter space of the user's dark matter model.

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## **CEDAR overview**

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**Student Talks 3 / 54****Exploring azimuthal correlations in multijet events**

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Following the recent measurements I did within the CMS collaboration I will bring up some still remaining open issues in closely back-to-back dijet topologies in 2- and 3-jet inclusive events. There are considerable differences observed (up to 15%) and 2- and 3-jet data is not described by any of the models considered simultaneously. Also the unexpected behavior of Madgraph interfaced with Pythia8 will be address for 4-jet inclusive topologies. Preliminary studies suggesting a not proper merging as the source of the differences will be presented. An outlook and prospects on an exhaustive phenomenological investigation to address these issues within the Lund MCnet node will also be given.

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