

From: Achim Geiser geiser@mail.desy.de
Subject: Re: [h1-zeus] Draft of HERAPDF2.0NNLOjet paper
Date: 12. August 2020 at 12:43
To: Wing, Matthew m.wing@ucl.ac.uk
Cc: h1zeus-herapdf-nnlojet@desy.de



Dear authors, editorial board,

Thanks a lot for the great paper draft and the nice results.

I leave simple style comments to others, so please find my significant comments below:

section 4:

The "experimental" uncertainty is now even less experimental than it was before, since the hadronization uncertainties are now also included. In some ZEUS papers we have just called it "fit" uncertainty, but I know that was not acceptable to H1. So, my compromise proposal (similar to H1/ZEUS paper arXiv:1804.01019)

line 231: "exp/fit"

line 232:

"where exp/fit denotes the fit uncertainty based on the experimental input uncertainties and the hadronization uncertainty"

line 234:

"the fit uncertainty"

line 251: "The similarity ... no additional tension."

I don't think this is true. Similar $\chi^2/\text{dof} > 1$ indicates similar tension, also in the jet data. Thus rather:

"The similarity of the $\chi^2/\text{d.o.f.}$ values indicates a similar level of tension for the jet and inclusive data."

or

"The similarity of the $\chi^2/\text{d.o.f.}$ values indicates that the addition of the jet data does not change the average level of tension in the data."

or

"The similarity of the $\chi^2/\text{d.o.f.}$ values indicates that the addition of the jet data does not increase the average level of tension in the data."

line 259: "the negative gluon term" -> "the flexible gluon term"

There is nothing in this term that forces the gluon to become negative, nor can the gluon be prevented to become negative (at low enough scales) even without this term.

A more flexible parametrisation can never bias the result, as long as the fit converges properly. A more restrictive one can. Thus "could bias" -> "could significantly alter".

line 266: "the details" -> "these details".

It indicates nothing about potential other variations of the gluon parametrisation.

line 278: I would move this difference right to the beginning of the section, since it is a basic conceptual difference that is the main asset of this paper w.r.t. the others.

The difference in the treatment of the scale uncertainties in the previous paragraph, although numerically more important, is only a technical difference and should not be highlighted as if it were a conceptual one. Also, it could be stated that the 100% scale correlation option is the "traditional" variant.

I am personally convinced the treatment we use here is better than the traditional one, so I do *not* propose (and would strongly oppose) changing our default treatment.

Section 6:

Repeat here (or elsewhere) that the jets were obtained with the kt algorithm and $R=1$. Remind that it was established (cite arXiv:1003.2923) that at HERA, using the kt or anti-kt algorithms (as used at LHC) is qualitatively equivalent.

Figures 9-12:

It is hard to see the comparison on log scale only.

Providing ratio subpanels would be helpful.

line 336: "scale uncertainties were not considered for the comparisons to data".

I don't think this is acceptable. The NNLO predictions have significant scale uncertainties (from the jet matrix elements), and these should be shown (separately). This is different from the potential scale uncertainties of the PDFs that were discussed in the previous sections, which can indeed not be usefully quantified.

Best regards, Achim (from vacation)

On Tue, 11 Aug 2020, Wing, Matthew wrote:

Dear All,

As promised, the paper draft on

"Impact of jet production data on the next-to-next-to-leading order determination of HERAPDF2.0 parton distributions"

is hereby circulated. It is attached to this e-mail and also linked to the [indico page](#) along with the presentation from earlier on today. Please send your comments to:

Main authors: A. Cooper-Sarkar, K. Wichmann

Editor: I. Abt

Referees: C. Diaconu (H1). M. Sutton (NNLOJet/APPLFast). B. Foster (ZEUS)

and the the managements using the mailing list for the editorial board:
h1zeus-herapdf-nnlojet@desy.de
Comments should be sent by the latest 25 August so that they can be
considered in the editorial board meeting on 28 August. Please separate
your comments into "significant" and "minor" so that the editorial board can
quickly assess the most important issues.
Thanks,
Matthew

On 4. Aug 2020, at 13:13, Wing, Matthew <m.wing@ucl.ac.uk>
wrote:

Dear All,
This is to announce an H1+ZEUS (as well as the NNLOJet/APPLFast group)
plenary meeting in which the HERAPDF2.0NNLOjets paper draft will be
presented. The meeting will be on
Tuesday 11 August at 14:00 (CEST).
The meeting will be remote only with the connection details and agenda
given at:

[https://eur01.safelinks.protection.outlook.com/?](https://eur01.safelinks.protection.outlook.com/?url=https%3A%2F%2Ffindico.desy.de%2Ffindico%2Fevent%2F26856%2F&data=02%7C01%7C%7C15bfbe823664498d18008d83eac988c%7C1faf88fea9984c5b93c9210a11d9a5c2%7C0%7C637328258308281176&reserved=0)

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[hWFy8GyoBpj6RkdKSOL8H1Vg3GPt29gsLw%3D&reserved=0](https://eur01.safelinks.protection.outlook.com/?url=https%3A%2F%2Ffindico.desy.de%2Ffindico%2Fevent%2F26856%2F&data=02%7C01%7C%7C15bfbe823664498d18008d83eac988c%7C1faf88fea9984c5b93c9210a11d9a5c2%7C0%7C637328258308281176&reserved=0)

The paper draft will also be released to the collaborations for your
consideration on the day of the presentation.

Cheers,
Matthew.

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