

# HERAFitter Users Meeting

## Announcements:

- PDF school + workshop (same vidyo link)
  - Workshop: don't miss it tomorrow →
  - new release of HERAFitter: herafitter
- Future events: PRC @ DESY, High X workshop
- next HERAFitter User's meeting: fill in the doodle:  
<http://doodle.com/wtyi3sqpb6vzzpkt>

<b>Theoretical uncertainties in PDF analysis: scale variations: chair S. Moch</b> SR 4a/b, DESY Hamburg	<i>MOCH, Sven-Olaf</i> 09:30 - 09:50
<b>Treatment of errors in PDF fits. Chair S. Camarda</b> SR 4a/b, DESY Hamburg	<i>CAMARDA, Stefano</i> 09:50 - 10:10
<b>Which number of flavours to use for which data? Flavour separation and Strange PDF.</b> Chair F. Olness	<i>OLNESS, Fred</i>
<b>Review of the benchmarking exercise and METAPDF: chair P. Nadolsky</b> SR 4a/b, DESY Hamburg	<i>NADOLSKY, Pavel</i> 10:30 - 10:50
<b>Ongoing developments towards new prescription by PDF4LHC group: chair A. Cooper-Sarkar</b>	<i>COOPER-SARKAR, A.</i>
<b>Transverse Momentum Distributions for LHC: chair H. Jung</b> SR 4a/b, DESY Hamburg	<i>JUNG, Hannes</i> 11:10 - 11:30

<https://indico.desy.de/conferenceTimeTable.py?confId=9388#20141002.detail>

# New: HERAFitter-1.1.0

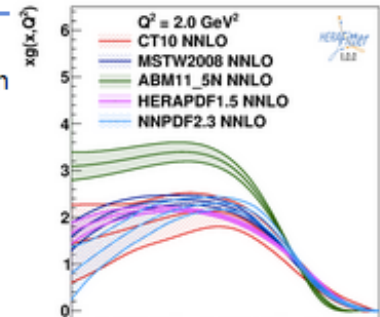
- We released a new tarball: [www.herafitter.org](http://www.herafitter.org)

## HERAFitter



### Welcome to HERAFitter

Proton parton distribution functions (PDFs) are essential for precision physics at the LHC and other hadron colliders. The determination of the PDFs is a complex endeavor involving several physics process. The main process is the lepton proton deep-inelastic scattering (DIS), with data collected by the HERA ep collider covering a large kinematic phase space needed to extract PDFs. Further processes (fixed target DIS, ppbar collisions etc.) provide additional constraining powers for flavour separation. In particular, the precise measurements obtained or to come from LHC will continue to improve the knowledge of the PDF. The HERAFitter project is an open source QCD fit framework ready to extract PDFs and assess the impact of new data which we would like to present here. The framework includes modules allowing for a various theoretical and methodological options, capable to fit a large number of relevant data sets from HERA, Tevatron and LHC. This framework is already used in many analyses at the LHC.



### Downloads of HERAFitter software package

**HERAFitter-1.0.0 stable release is publicly available.**  
All the HERAFitter releases can be accessed [HERE](#).

HERAFitter /  
DownloadPage  
manual-0.3.1.pdf

### Releases of the HERAFitter QCD analysis package

- Versioning convention: **i.j.k** with
  - i** - stable release
  - j** - beta release
  - k** - bug fixes.
- The release notes can be found in this attachment: @HERAFitter\_release\_notes.pdf .
- Description paper in preparation.

Date	Version	Files	Remarks
📅 09/2014	<b>1.1.0</b>	@herafitter-1.1.0.tgz	release with decoupled @theoryfiles-new.tgz
12/2013	1.0.0	@herafitter-1.0.0.tgz	stable released with decoupled @theoryfiles.tgz
06/2013	0.3.1	@herafitter-0.3.1.tgz	fix release includes @manual-0.3.1.pdf and decoupled @theoryfiles.tgz
03/2013	0.3.0	@herafitter-0.3.0.tgz	release includes @manual-0.3.1.pdf and decoupled @theoryfiles.tgz
07/2012	0.2.1	@herafitter-0.2.1.tgz	fix release for 0.2.0
05/2012	0.2.0	@herafitter-0.2.0.tgz	added functionality for LHC users
09/2011	0.1.0	@herafitter-0.1.0.tgz	first release

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## HERAFitter / DownloadPage

manual-0.3.1.pdf

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12/2013	1.0.0	<a href="#">@herafitter-1.0.0.tgz</a>	stable released with
06/2013	0.3.1	<a href="#">@herafitter-0.3.1.tgz</a>	fix release includes
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05/2012	0.2.0	<a href="#">@herafitter-0.2.0.tgz</a>	added functionality
09/2011	0.1.0	<a href="#">@herafitter-0.1.0.tgz</a>	first release

## HERAFitter: Releases and Updates

September, 2014

HERAFitter versions are labeled as **herafitter-i.j.k** where **i** is the stable release number, **j** is beta release number, and **k** is bug fixes.

Release	Date	Description
<b>herafitter-1.1.0</b>	29.09.2014	<ul style="list-style-type: none"><li>• Removed dependence on CERNLIB and related libraries.</li><li>• Added interface to LHAPDFv6.</li><li>• Added more and improved drawing options for visualisation of results.</li><li>• Added possibility to deal with multi-dimensional data (virtual grids).</li><li>• Additional options in parametrisation styles: added mixed forms between HERA style for gluon and sea and CTEQ style for valence.</li><li>• Added new data from Tevatron, ATLAS and CMS.</li><li>• Added improvements and more flexibility in the <math>\chi^2</math> and covariance matrix code: possibility to transform into nuisance representation for data with uncertainties given in the covariance form</li></ul>

- **New fastNLO version**
- **DiffTop grids via fastNLO**

# Next steps

Bug fixes to herafitter-1.1.0 → herafitter-1.1.1

- reweighting code with gluon ID LHAPDFv5 vs LHAPDFv6

Towards herafitter-1.2.0

- adjusting plotting tools for reweighting code to be used
- backward compatibility of reweighting code with LHAPDFv5
- All DrawResults features transferred to DrawPdfs (removing redundancy)
- QED PDFs
- . . .
- APFEL evolution + FONLL scheme → see today's presentation
- Hoppet (MSbar scheme for masses) + ACOT NNLO scheme
- minimization, generalised parametrisation