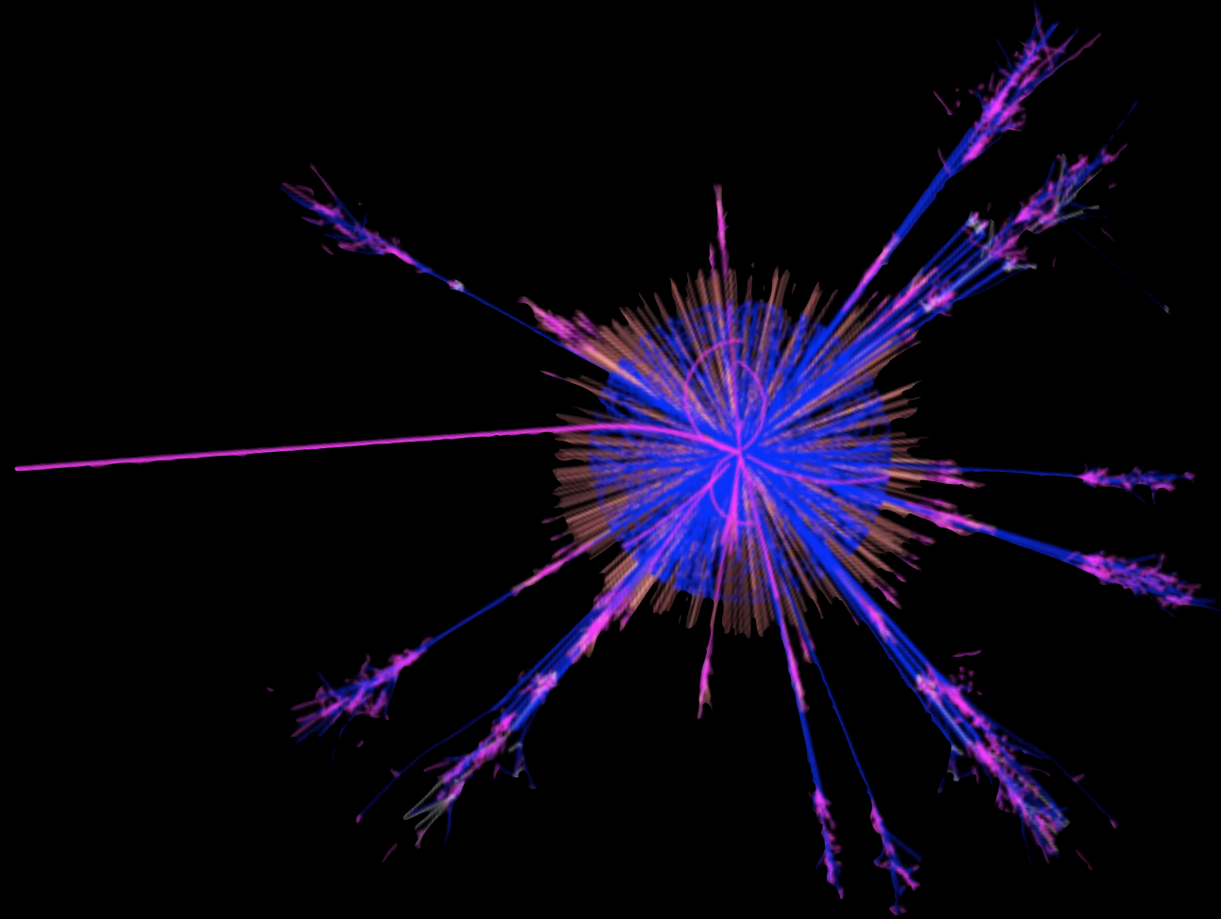
NYU Center for Data Science

Center for Cosmology and particle physics

HEPDATA



@KyleCranmer
New York University
Department of Physics
Center for Data Science

THE APEX DATA

This is fabulous -- to me it feels like a break-through. We will be sure to cite the data -- I very much hope we figure out how to use it properly. The invariant mass distribution is interesting in itself.

We are very grateful for your help with this and will keep in touch.

Cheers, Richard [Lockhart]

Information | Citations (0) | Files

Data from Figure 3 from: Search for a New Gauge Boson in Electron-Nucleus Fixed-Target Scattering by the APEX Experiment

APEX Collaboration (Abrahamyan, S. (Yerevan Phys. Inst.) [...]) *Show all 66 authors*

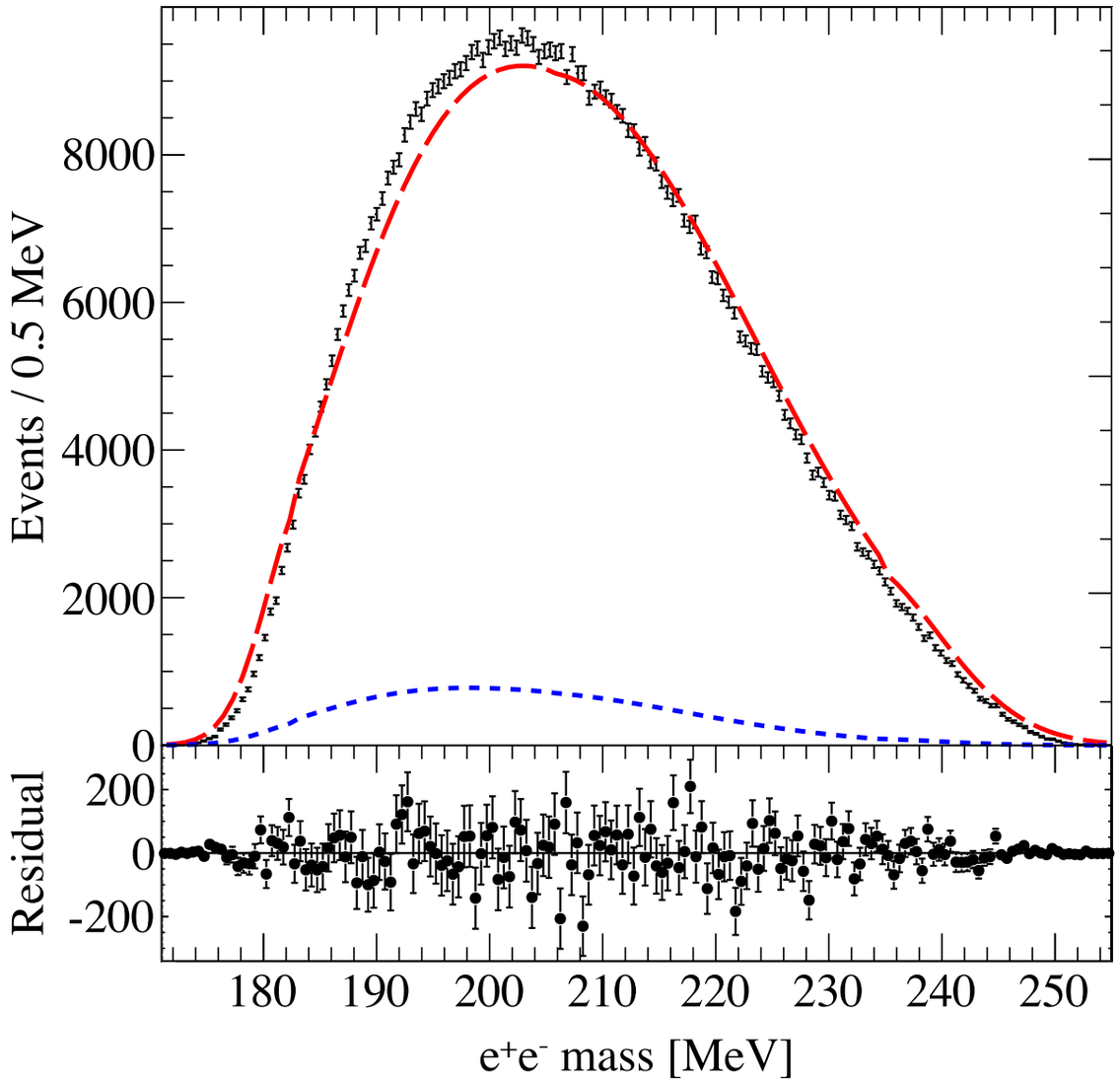
Cite as: APEX collaboration (2011) INSPIRE, http://doi.org/10.7484/INSPIREHEP.DATA.PH21.L5RG

Description: The unbinned invariant mass spectrum of e+e− pair events in the final event sample collected by APEX. The data correspond to Figure 3 of the paper.

Note: * Temporary entry *

This dataset complements the following publication:
Search for a New Gauge Boson in Electron-Nucleus Fixed-Target Scattering by the APEX Experiment

Record created 2013-10-02, last modified 2013-10-02



RELATED PROJECT: DIANA

Large NSF grant to work on HEP software.

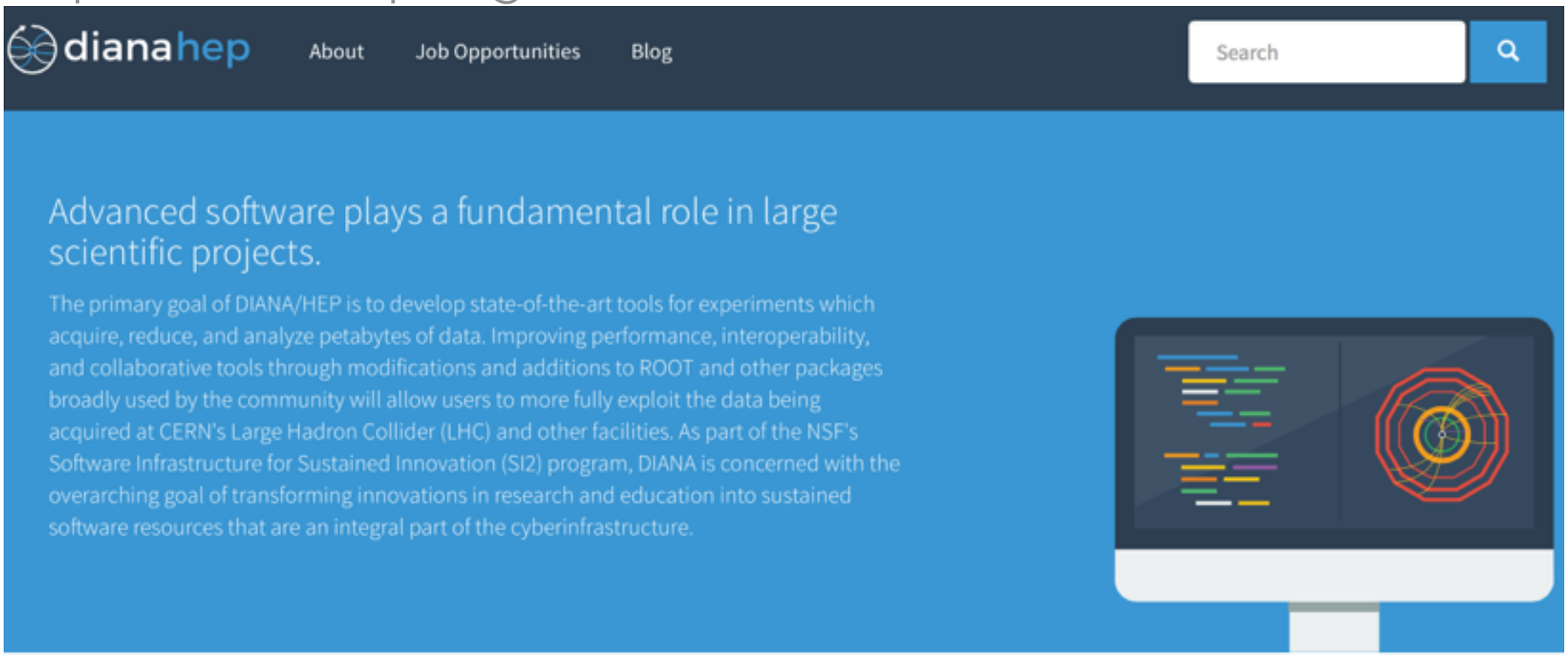
One theme is on improving integration with HEPdata etc.

ATLAS: Kyle Cranmer

CMS: Peter Elmer and Brian P. Bockelman

LHCb Michael D. Sokoloff

http://diana-hep.org



Collaborative Analyses

Establish infrastructure for a higher-level of collaborative analysis, building on the successful patterns used for the Higgs boson discovery and enabling a deeper communication between the

Reproducible Analyses

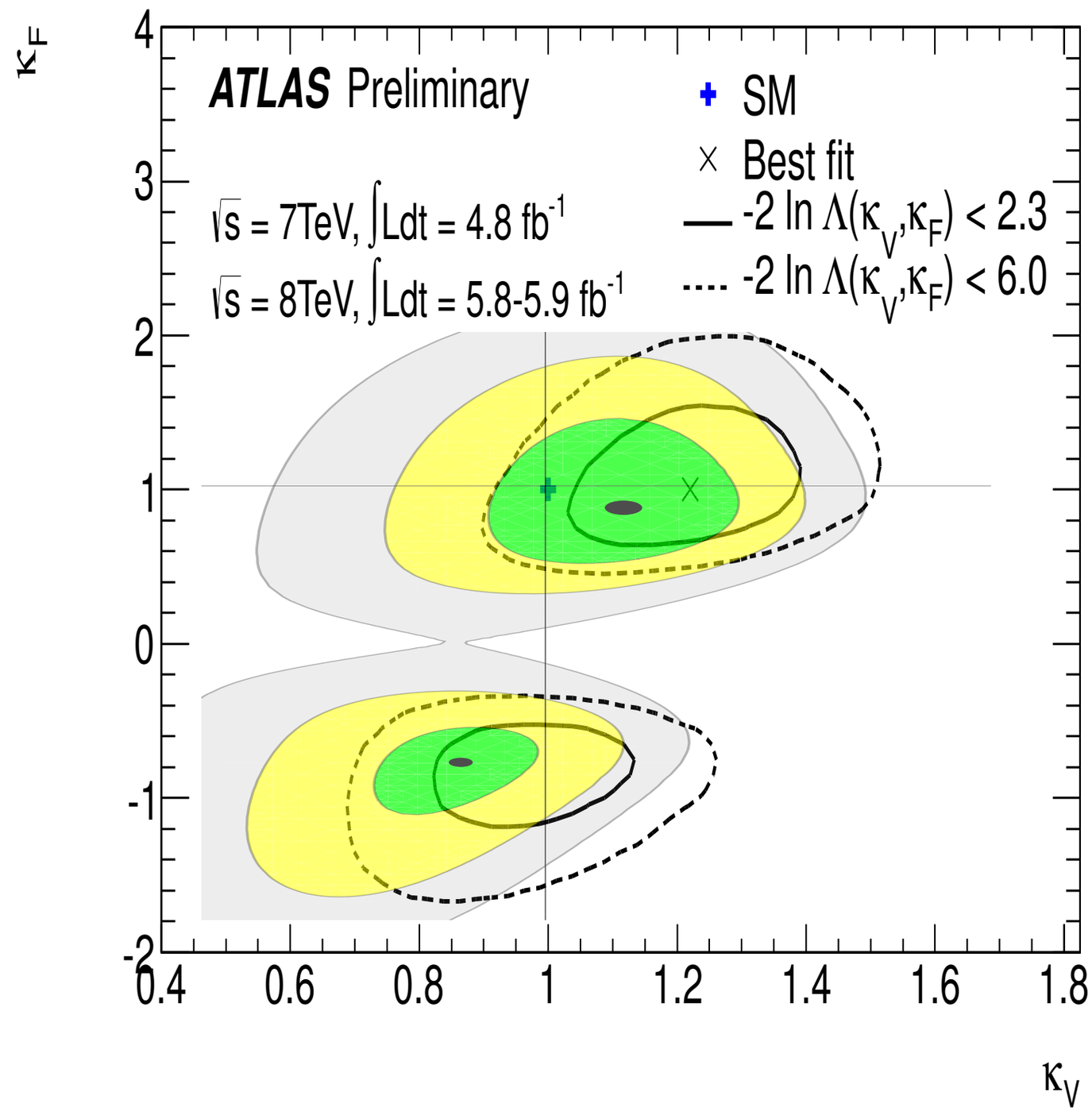
Streamline efforts associated to reproducibility, analysis preservation, and data preservation by making these native concepts in the tools

Interoperability

Improve the interoperability of HEP tools with the larger scientific software ecosystem, incorporating best practices and algorithms from other disciplines into HEP

REPRODUCIBILITY PROBLEM

Not possible for others to reproduce results from paper.

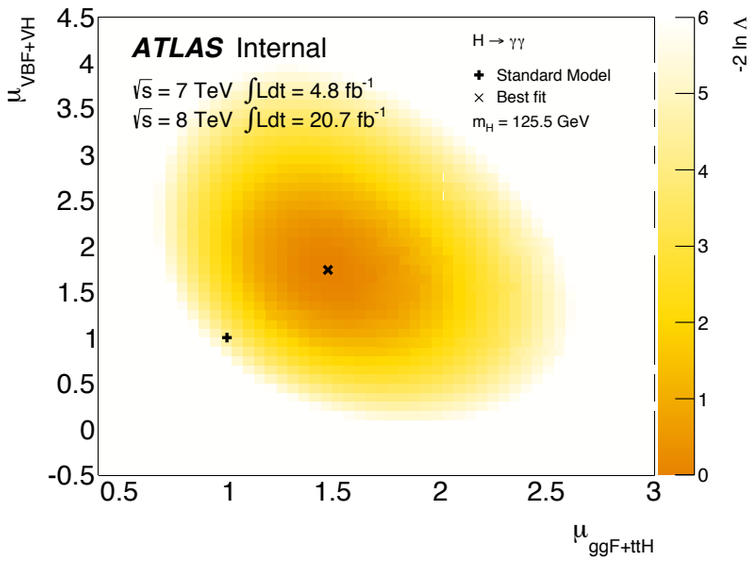


What info and how to retrieve it

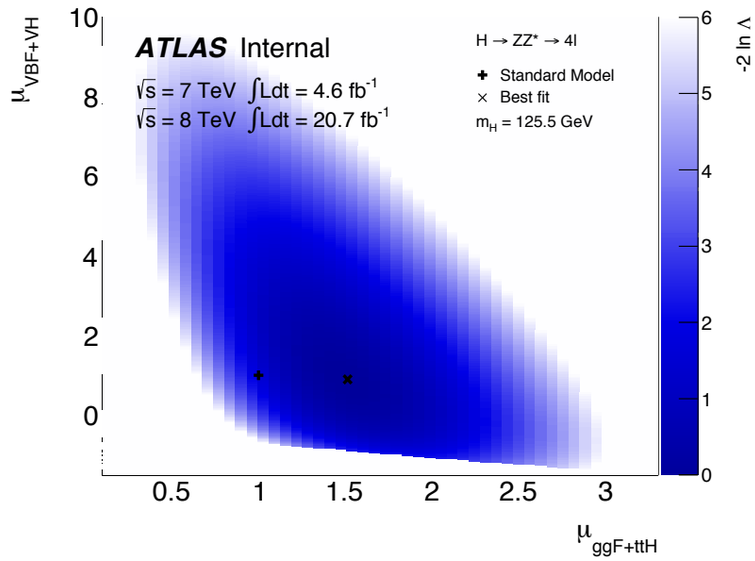
Likelihood scans

for communicating LHC Higgs results. Later ATLAS published such scans profiling over theory & experiment NPs

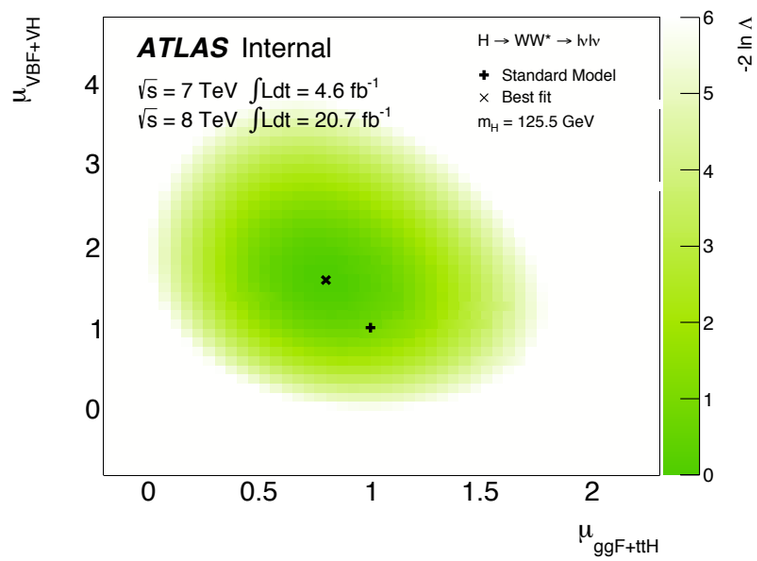
http://doi.org/10.7484/INSPIREHEP.DATA.A78C.HK44



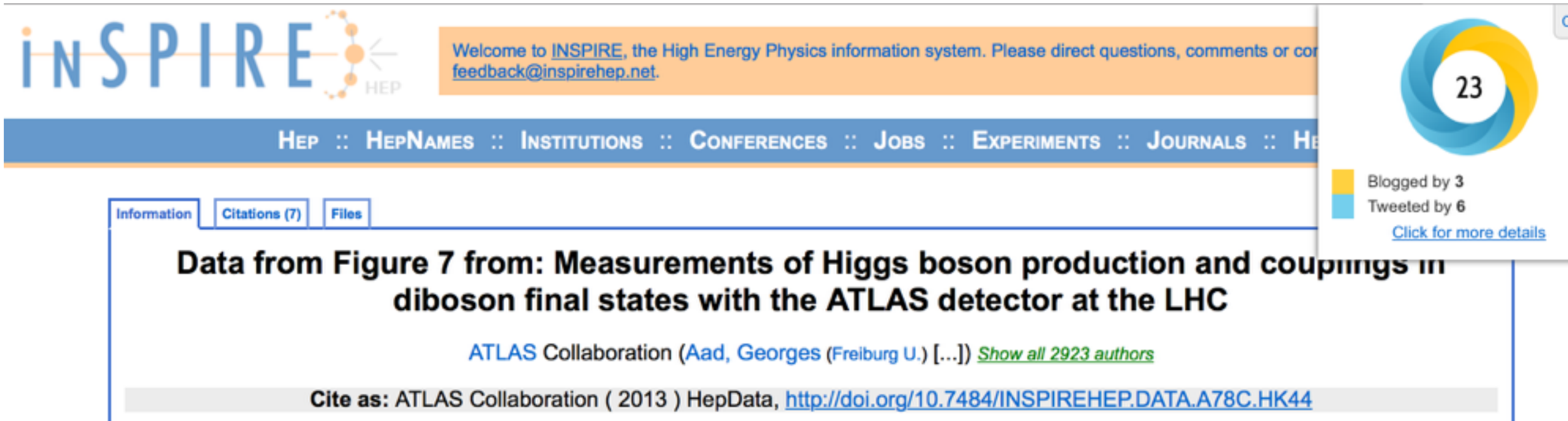
http://doi.org/10.7484/INSPIREHEP.DATA.RF5P.6M3K



http://doi.org/10.7484/INSPIREHEP.DATA.26B4.TY5F

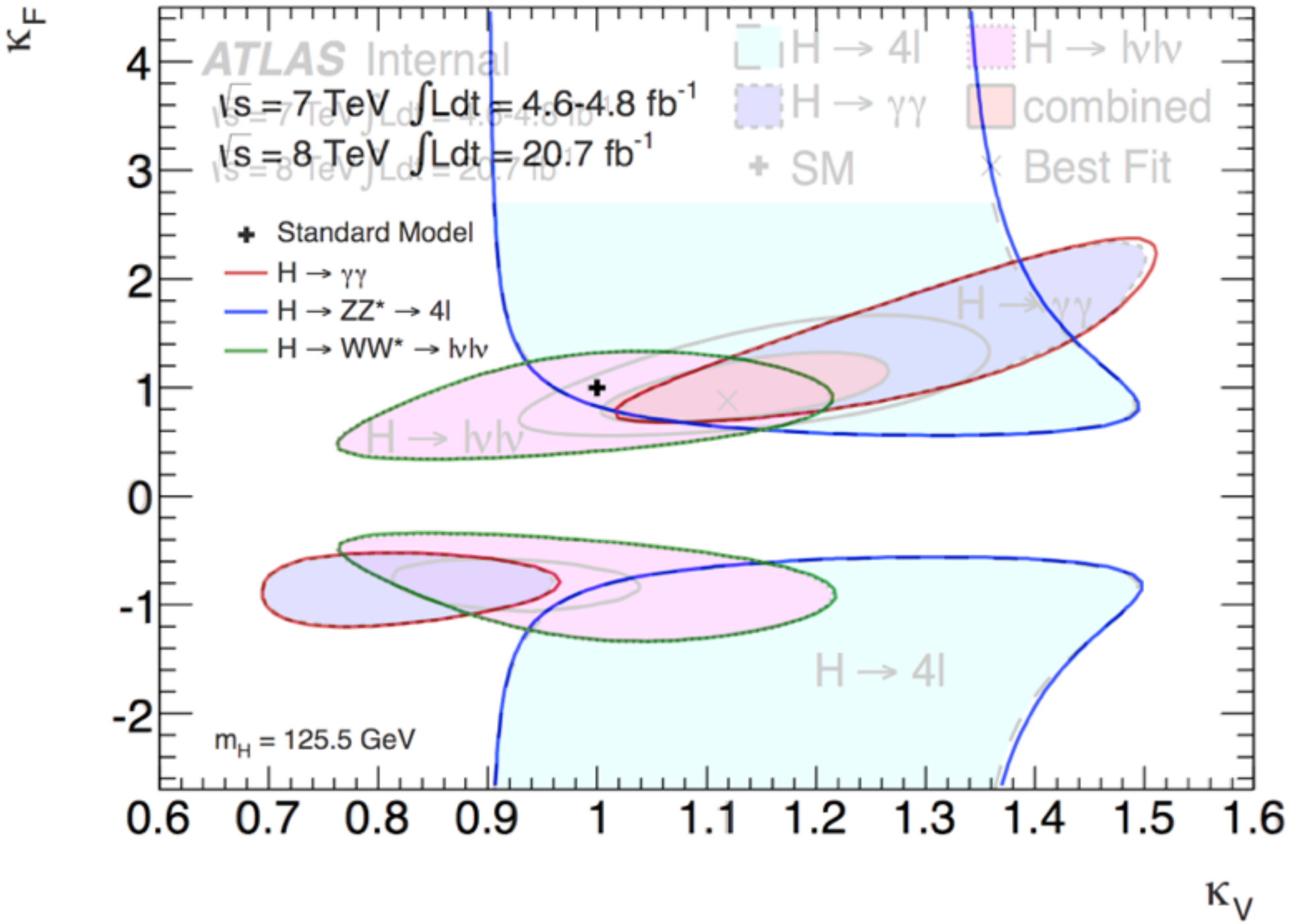


Data are in HEPData directly linked to the paper in INSPIRE and have been cited:



LIKELIHOODS ON HEPDATA

Reproducing derived results from original paper!



COMMON USE-CASES

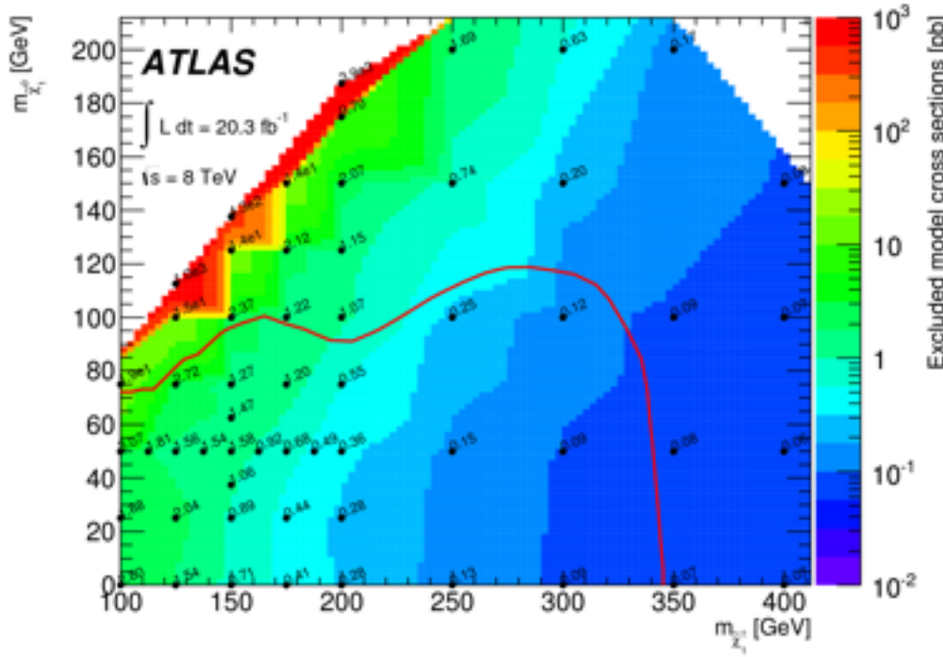
AAD 2014 — Search for direct production of charginos and neutralinos in events with three leptons and missing transverse momentum in sqrt(s) = 8 TeV pp collisions with the ATLAS detector

Experiment: **CERN-LHC-ATLAS (ATLAS)**
Published in **JHEP 1404,169 (2014)** (DOI:10.1007/JHEP04(2014)169)
Preprinted as **CERN-PH-EP-2014-019**
Archived as: **ARXIV:1402.7029**
Auxiliary Material: http://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/PAPERS/SUSY-2013-12/
Record in: **INSPIRE**
Record in: **CERN Document Server**

CERN-LHC. A search for the direct production of charginos and neutralinos in final states with three leptons a
transverse momentum is presented. The analysis is based on 20.3 fb^-1 of sqrt(s) = 8 TeV proton--proton colli
delivered by the Large Hadron Collider and recorded in 2012 with the ATLAS detector. Observations are cons
Standard Model expectations and limits are set in R-parity-conserving phenomenological Minimal Supersymm
Models and in simplified supersymmetric models, significantly extending previous results. For simplified super
models of direct chargino (C1) and next-to-lightest neutralino (N2) production with decays to lightest neutralin
either all three generations of sleptons, staus only, gauge bosons, or Higgs bosons, C1 and N2 masses are ex
700 GeV, 380 GeV, 345 GeV, or 148 GeV respectively, for a massless N1.

Link to SLHA/ directory containing all .slha files
Link to SLHA.tar.gz file (8 MB) containing all .slha files

Total numb r of tables: **67**. D splaying: **1** to **10**. First | Previous | Next | Last | All



looking for excluded cross-sections, would be nice if there was a quick way to select this type of entry

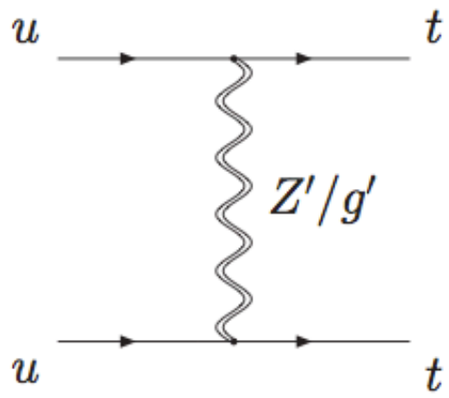
ATL-CB-PUB-2015-001
17 March 2015

Level-1. Published results

All scientific output is published in journals, and preliminary results are made available in Conference Notes. All are openly available, without restriction on use by external parties beyond copyright law and the standard conditions agreed by CERN.

Data associated with journal publications are also made available: tables and data from plots (e.g. cross section values, likelihood profiles, selection efficiencies, cross section limits, …) are stored in appropriate repositories such as HEPDATA[2]. ATLAS also strives to make additional material related to the paper available that allows a reinterpretation of the data in the context of new theoretical models. For example, an extended encapsulation of the analysis is often provided for measurements in the framework of RIVET [3]. For searches information on signal acceptances is also made available to allow reinterpretation of these searches in the context of models developed by theorists after the publication. ATLAS is also exploring how to provide the capability for reinterpretation of searches in the future via a service such as RECAST [4]. RECAST allows theorists to evaluate the sensitivity of a published analysis to a new model they have developed by submitting their model to ATLAS.

RECASTING


u
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Z′/g′
u
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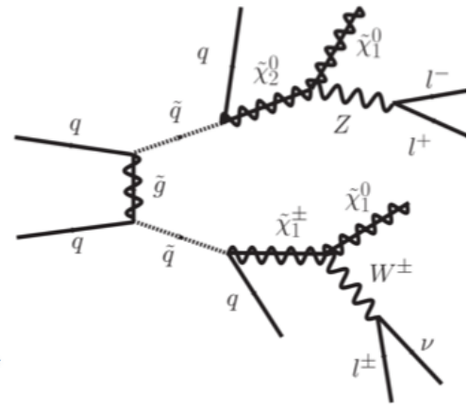
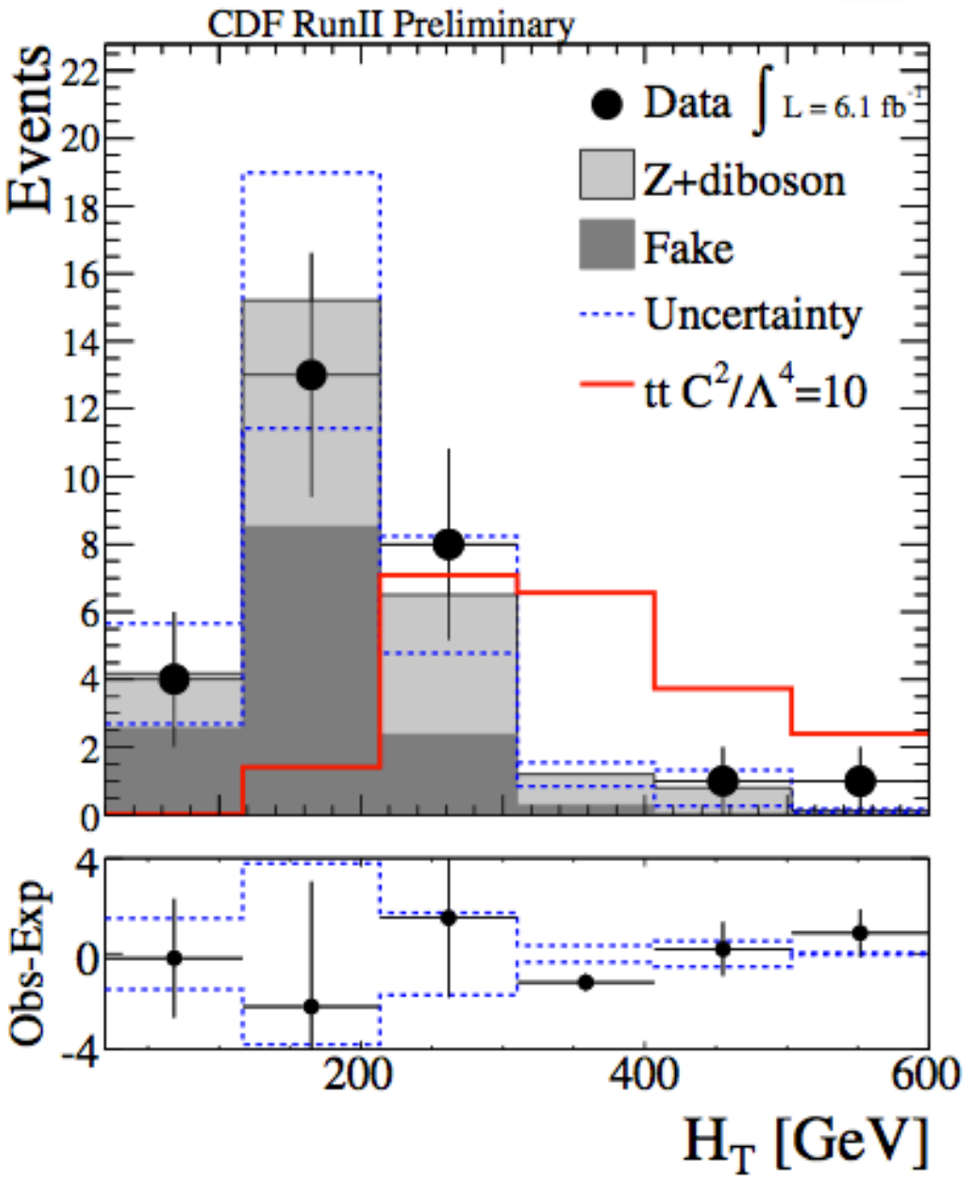
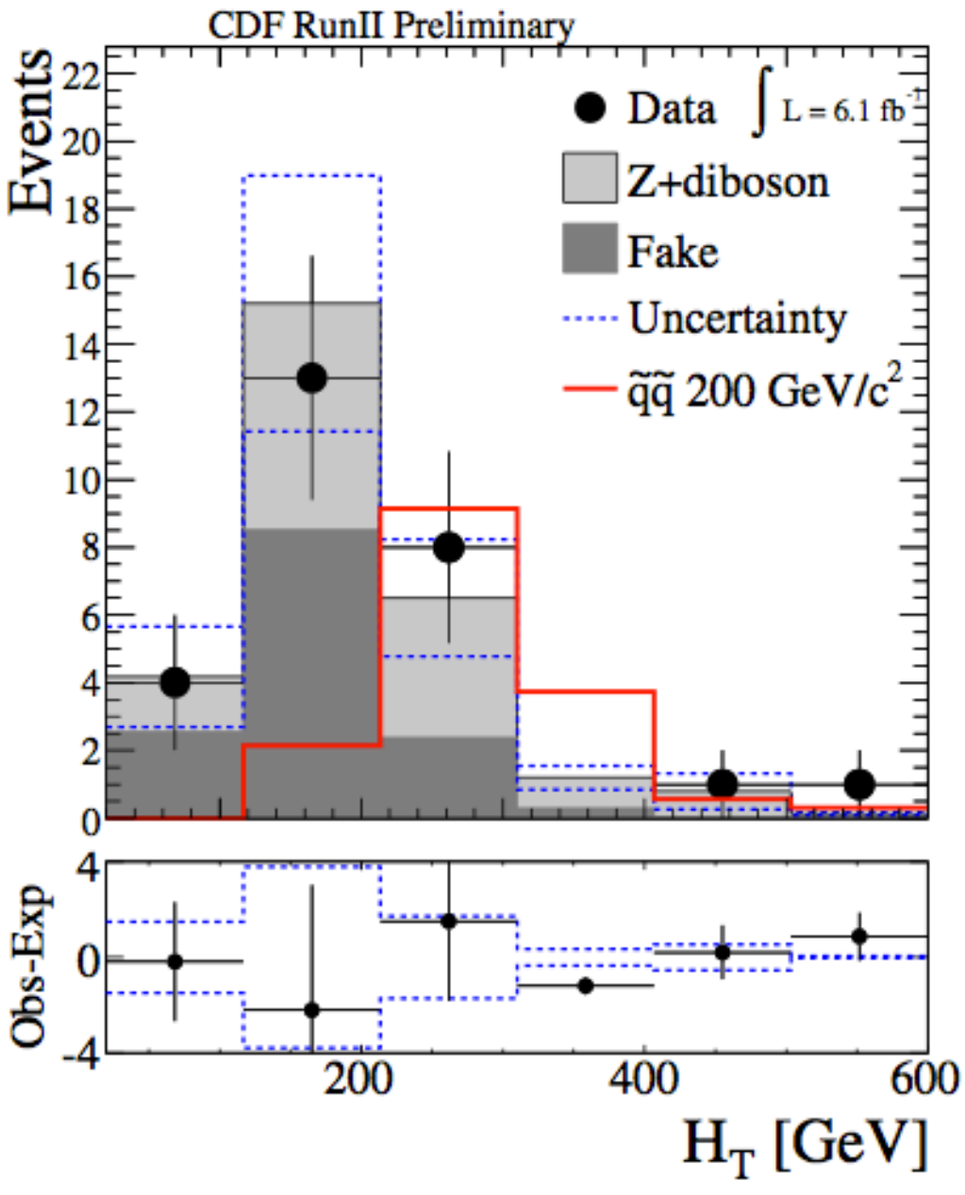
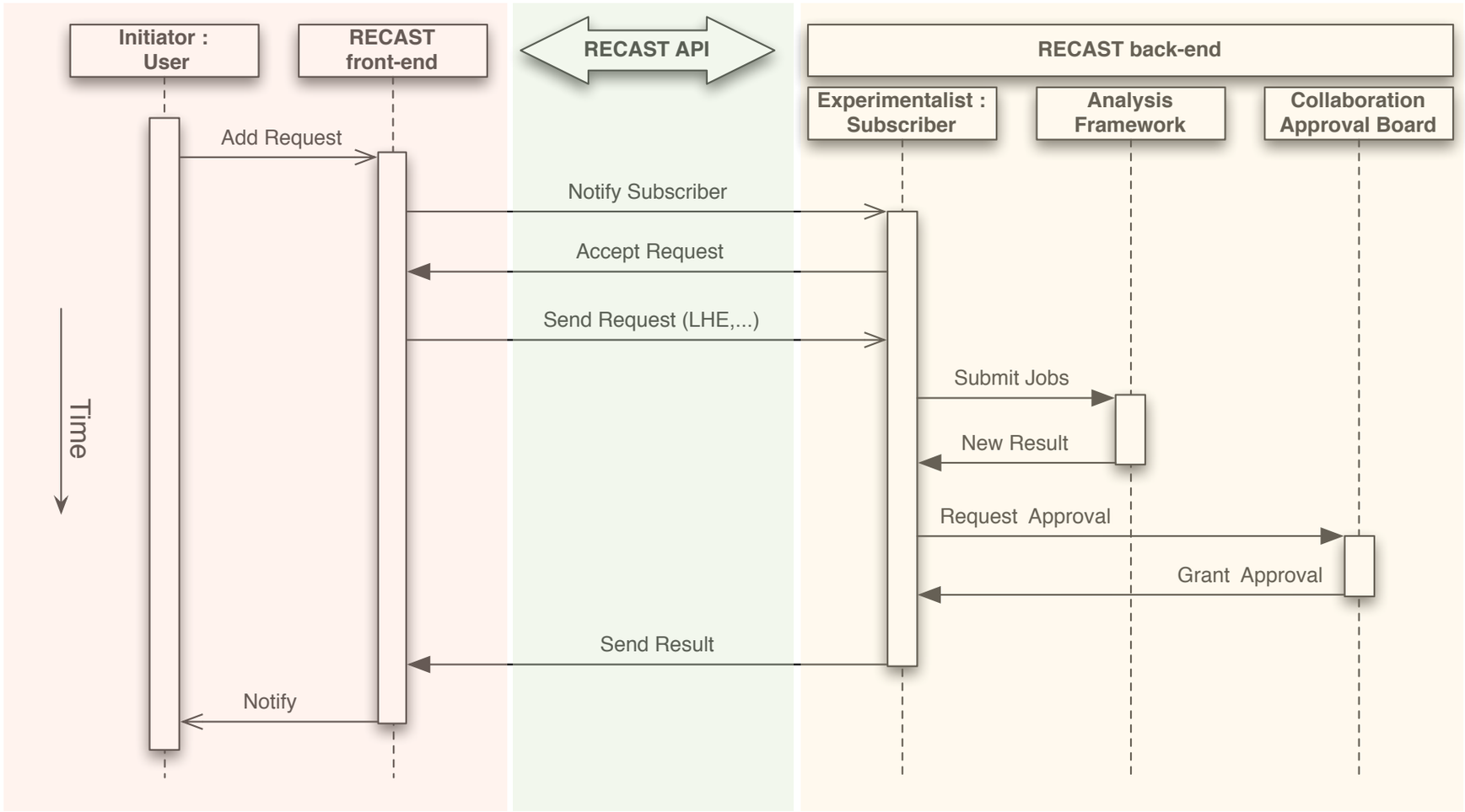

q
q̃
χ̃₂⁰
χ̃₁⁰
l⁻
Z
l⁺
q
g̃
q̃
χ̃₁±
χ̃₁⁰
q
W±
l±
ν


CDF RunII Preliminary
Events
Data
∫ L = 6.1 fb⁻¹
Z+diboson
Fake
Uncertainty
tt C²/Λ⁴=10
Obs-Exp
H_T [GeV]

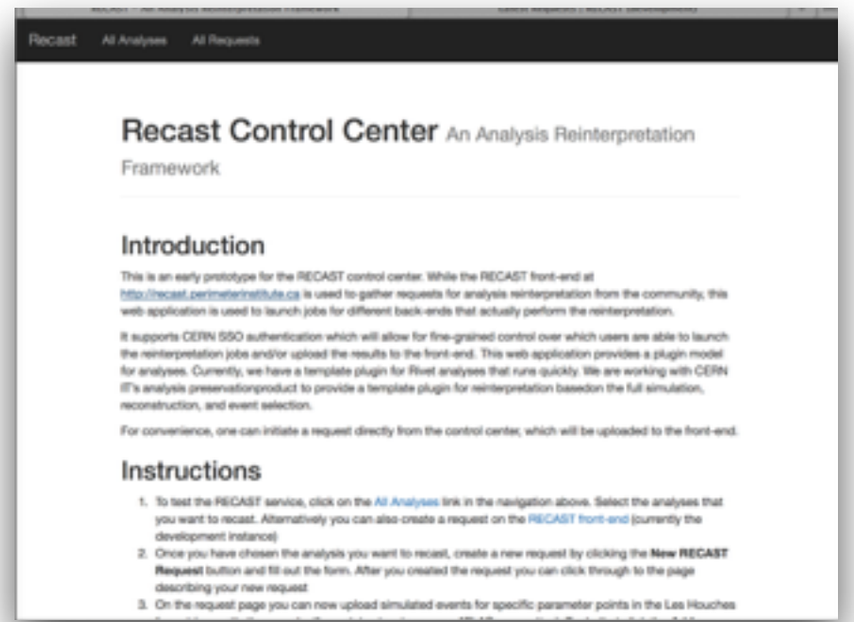

CDF RunII Preliminary
Events
Data
∫ L = 6.1 fb⁻¹
Z+diboson
Fake
Uncertainty
q̃q̃ 200 GeV/c²
Obs-Exp
H_T [GeV]



recast.perimeterinstitute.ca

Front-end prototype designed by K.C. and Itay Yavin, live since 2012.

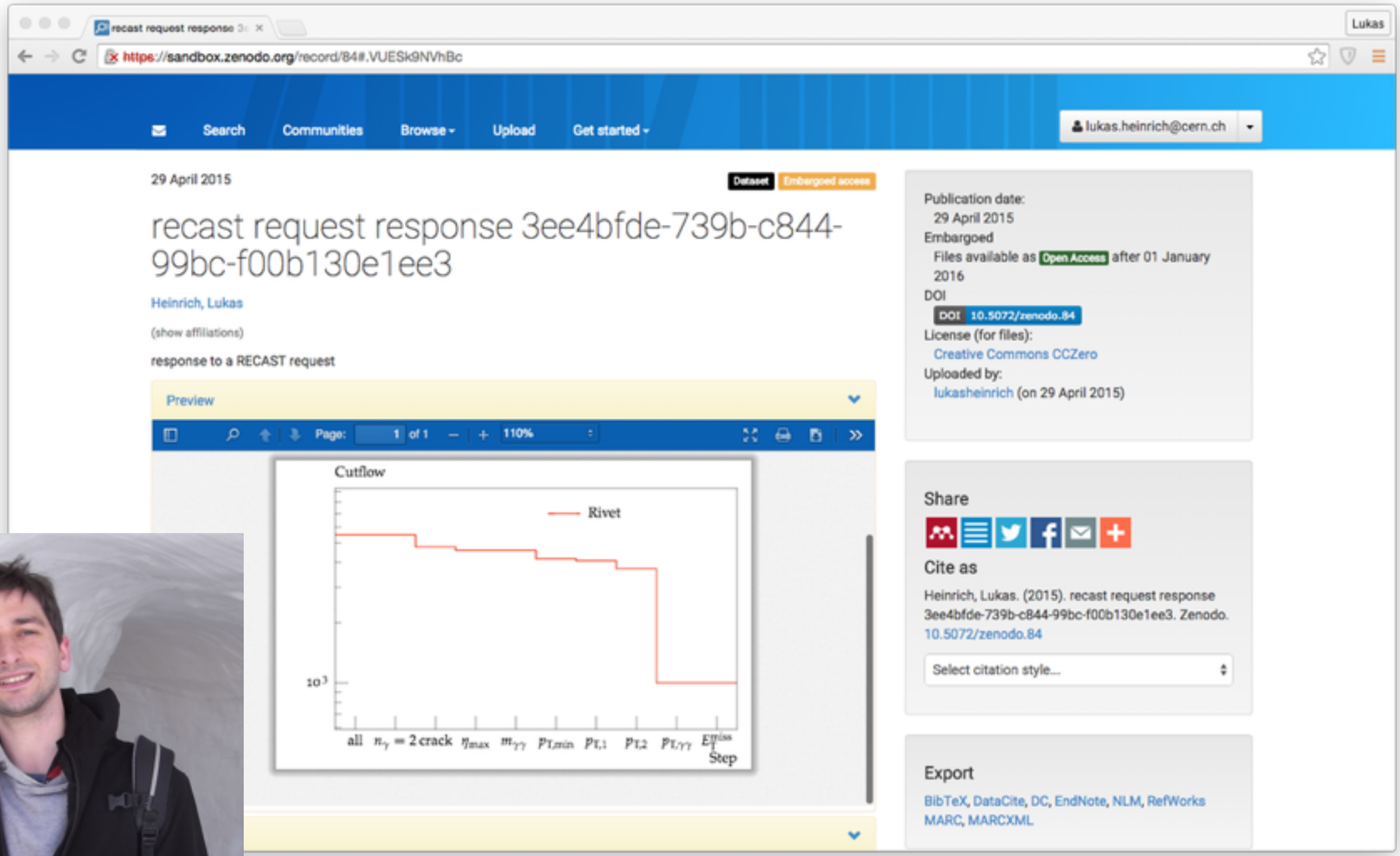
recast-demo.cern.ch



New! Great work by Lukas Heinrich (NYU), contributions from Ken Bloom via DASPOS and Frank & Tibor of CERN-IT !

EXAMPLE RECAST → ZENODO

If experiments do adopt something like this, would be nice to have API connection to upload result.



FEEDBACK I'VE HEARD

excited about new developments

love idea of more native and higher fidelity upload (eg. HistFactory import). Felt like combining backgrounds and uncertainties was very ambiguous.

Would like command line interface

like that code is on GitHub

Just an example (figshare is a non-HEP data repository)

figshare command line client

This is a simple client for the figshare API in python. Currently very much a work-in-progress. The relatively annoying handling of the OAuth back and forth is implemented using requests-oauthlib. Currently the following actions are implemented:

- list_articles
- create_article
- upload_file
- delete_file

The API supports quite a few more actions which haven't been implemented yet. I'm happy to merge PRs!

Example

```
$ figshare list_articles
Met-enkephalin MD Trajectories
------------------------------
article_id: 1026324
description: Ten ~50 ns molecular dynamics (MD) simulation
```