

# CEDAR: global tuning of MC event generators

JetWeb, HepData, HepML and HepForge

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# Outline

Introduction

JetWeb — a system for global MC tuning

HepData — the HEP reaction database

HepForge — a lightweight development environment for HEP

# Introduction to CEDAR

# CEDAR: Collaborative e-Science Data Analysis Resource

**CEDAR** is an e-Science project with several sub-projects:

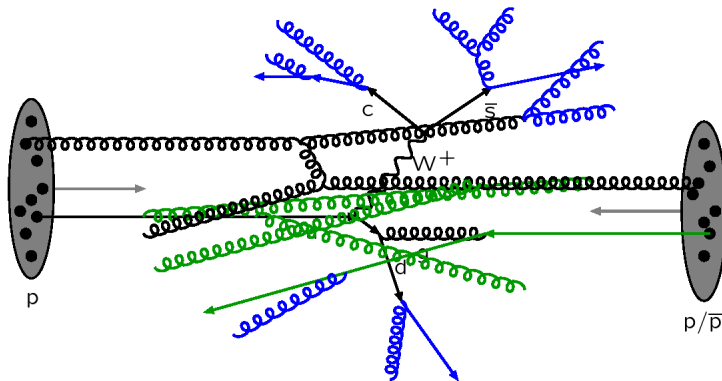
- ▶ **JetWeb**: global tuning of Monte Carlo generator parameters
- ▶ **HepData**: archival of published experimental data
- ▶ **HepML**: set of XML data formats for data sets and MC config
- ▶ **HepForge**: development environment for HEP software
- ▶ **HepCode**: centralised repository of pheno code/programs



[www.cedar.ac.uk](http://www.cedar.ac.uk)

# JetWeb — a system for global MC tuning

# Components of MC event generators



ME, ISR & FSR parton showers, underlying event, hadronisation, decays...

# Event generators: tuneable parameters

- ▶ Parton density functions → MRST/CTEQ...
- ▶ Matrix elements (kinematics, phase space, coupling/scale) → order, match to PDF?
- ▶ Parton showers and ME matching → which shower?
- ▶ Threshold effects in heavy flavour production
- ▶ Fragmentation functions
- ▶ Hadronisation → string/cluster params, strangeness...
- ▶ Underlying event

Large number of params: nonsensical tunings dominate parameter space

# Caveats

There are always caveats, especially in high dimensional problems!

- ▶ *Global* tuning to data required — selective tunings are dangerous
- ▶ Expect *sets* of reasonable configurations, rather than one “ultimate” tuning
- ▶ Any tuning depends on your definition of “best”. Both in terms of what phenomenological features a given expt. considers important and in terms of the fitting measure used.



# Introducing JetWeb

JetWeb is a centralised system for global MC tunings

- ▶ Written in Java, run on Apache + Tomcat framework
- ▶ Database of global data fit qualities for MC models (generator & params)
- ▶ Web interface to view fits and plots
- ▶ Users can request generation of a particular model if not (sufficient) in db
- ▶ Comparisons via a set of routines, each corresponding to a published paper



# JetWeb in action (1)

## Searching

NB. This is the *frozen* copy of JetWeb. . .

The screenshot shows a web browser window titled "Search the JetWeb DataBase - Galeon". The address bar shows the URL "http://jetweb.hep.ucl.ac.uk/JetWeb/JWSearch". The page content includes a search form with the following elements:

- Search the JetWeb DataBase** (Title)
- Welcome** (Text)
- Get results** (Button)
- Clear Form** (Button)
- Sort results by:**  (Dropdown)
- Only show me results with data from:**  (Dropdown)
- Common parameters** (Section Header)
- Generator** (Section Header)
- Version** (Section Header)
- Minimum transverse momentum of hard scatters (GeV)** (Text input)
- Underlying event model(Integer 0-5)** (Text input)
- Photon PDF** (Section Header)
- Proton PDF** (Section Header)
- Intrinsic transverse momentum in photon (GeV)** (Text input)
- Intrinsic transverse momentum in proton (GeV)** (Text input)
- Change Pythia Parameters** (Button)
- Change Herwig Parameters** (Button)
- Java hztool fitter, J. Butterworth, S. Butterworth** (Text)

The search form contains several checkboxes and text inputs for various parameters:

- Generator:** herwig , pythia
- Version:** v6.400 , v6.206 , v6.100
- Photon PDF:** GRVLO , SaS1D , SaS2D , WHIT2
- Proton PDF:** GRVLO , CTEQ5L , CTEQ4L

# JetWeb in action (2)

## Fit list

NB. This is the *frozen* copy of JetWeb. . .

Results sorted by Fit (All ET) - Galeon

File Edit View Tab Settings Go Bookmarks Tools Help

Back / Stop 100 http://jetweb.hep.uct.ac.uk/JetWeb/JWSearch

Google Dictionary

Downloads Software Hardware Developers Help Search

### Results sorted by Fit (All ET)

Last updated 05-Oct-2002 at 12:24:15

---

**HERWIG v6.100 run** 30/09/2002 PDFs: Photon **GRVLO** Proton **CTEQSL** PTMIN 3.0GeV UE **JIMMY** Photon kt:0.0 Proton kt:0.0 Scale **1.55** Model ID **97** : [Plots etc](#)

Combined: Chi2/Dof: High ET: **1.47** Low ET: **2.41** Jet Shape: **16.63** Charm: **8.13** All ET: **2.1**

HERA Lumi 5.0(+) pb<sup>-1</sup> Chi2/Dof: High ET: 1.47 Low ET: 2.12 Jet Shape: 7.9 Charm: 8.13 All ET: 1.84

LEP Lumi 400.0(+) pb<sup>-1</sup> Chi2/Dof: High ET: ? Low ET: 3.52 Jet Shape: 3.73 Charm: ? All ET: 3.52

Tevatron Lumi 0.00003(+) pb<sup>-1</sup> Chi2/Dof: High ET: ? Low ET: ? Jet Shape: 27.87 Charm: ? All ET: 2.57

---

**HERWIG v6.100 run** 30/09/2002 PDFs: Photon **WHIT2** Proton **CTEQSL** PTMIN 3.0GeV UE **JIMMY** Photon kt:0.0 Proton kt:0.0 Scale **1.65** Model ID **241** : [Plots etc](#)

Combined: Chi2/Dof: High ET: **1.9** Low ET: **2.46** Jet Shape: **14.33** Charm: **3.05** All ET: **2.23**

HERA Lumi 0.0(+) pb<sup>-1</sup> Chi2/Dof: High ET: 1.9 Low ET: 2.22 Jet Shape: 1.15 Charm: 3.05 All ET: 2.08

LEP Lumi 300.0 pb<sup>-1</sup> Chi2/Dof: High ET: ? Low ET: 3.38 Jet Shape: 9.16 Charm: ? All ET: 3.38

Tevatron Lumi 0.00003(+) pb<sup>-1</sup> Chi2/Dof: High ET: ? Low ET: ? Jet Shape: 27.87 Charm: ? All ET: 1.97

---

**HERWIG v6.100 run** 30/09/2002 PDFs: Photon **SaSD2** Proton **CTEQSL** PTMIN 3.0GeV UE **JIMMY** Photon kt:0.0 Proton kt:0.0 Scale **1.55** Model ID **76** : [Plots etc](#)

Combined: Chi2/Dof: High ET: **1.92** Low ET: **2.64** Jet Shape: **19.29** Charm: **13.54** All ET: **2.39**

HERA Lumi 5.0(+) pb<sup>-1</sup> Chi2/Dof: High ET: 1.92 Low ET: 2.39 Jet Shape: 12.02 Charm: 13.54 All ET: 2.19

LEP Lumi 200.0 pb<sup>-1</sup> Chi2/Dof: High ET: ? Low ET: 3.57 Jet Shape: 11.84 Charm: ? All ET: 3.57

Tevatron Lumi 0.00003(+) pb<sup>-1</sup> Chi2/Dof: High ET: ? Low ET: ? Jet Shape: 27.87 Charm: ? All ET: 2.57

Done.

# JetWeb in action (3)

## Fit details

NB. This is the *frozen* copy of JetWeb. . .

File Edit View Tab Settings Go Bookmarks Tools Help

Back / Stop 100 http://jetweb.hep.ucl.ac.uk/Fits/269/index.html

Google Google Dictionary TheCzarani fpm

### JetWeb Fit No:269

**HERWIG v6.100 run**

Date of last fit:08/11/2002  
[Examine the fitted papers](#)  
[HERA fit](#)  
[LEP fit](#)  
[Tevatron fit](#)

Request higher statistics for: HERA   
 Request similar data   
 Search for similar data

Parton distribution functions: Photon GRVLO Proton CTEQ6L  
 PTMIN (Minimum transverse momentum for hard scatters) 3GeV  
 Underlying Event Model JIMMY  
 Intrinsic KT in the photon is:0.0  
 Intrinsic KT in the proton is:0.0  
 Parton shower cutoff is:2.5  
 Photon radius:1.0  
 Proton radius:3.0  
 PHad:300  
 Fragmentation parameters CLMAX,PSPLT(1),(2):3.35,1.1  
 PRSOF:0  
 QCDLAM:0.18

**Combined this for all fitted experiments:** Chi2/Dof at an overall scale factor of 1.55)

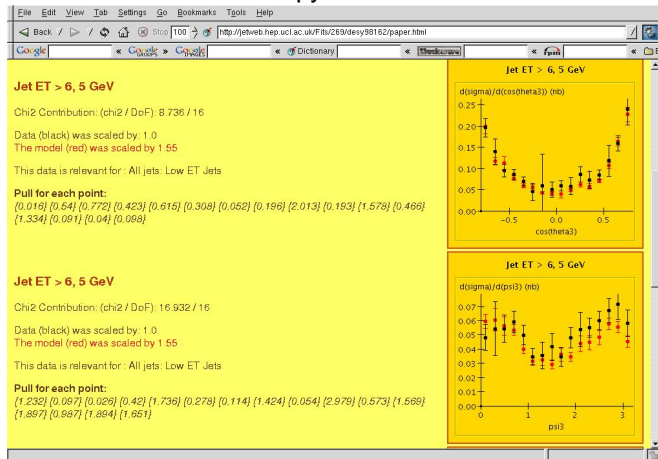
- High ET: 1.5952063
- Low ET: 2.0411307
- Jet Shape: 4.0698969
- Charm: 8.0909271
- All ET: 2.1205643

Done.

# JetWeb in action (4)

## Paper view

NB. This is the *frozen* copy of JetWeb...



## HzTool: <http://hepforge.cedar.ac.uk/hztool/>

JetWeb is only the front-end, distribution and comparison system. “Experimental analyses” are done by **HzTool**

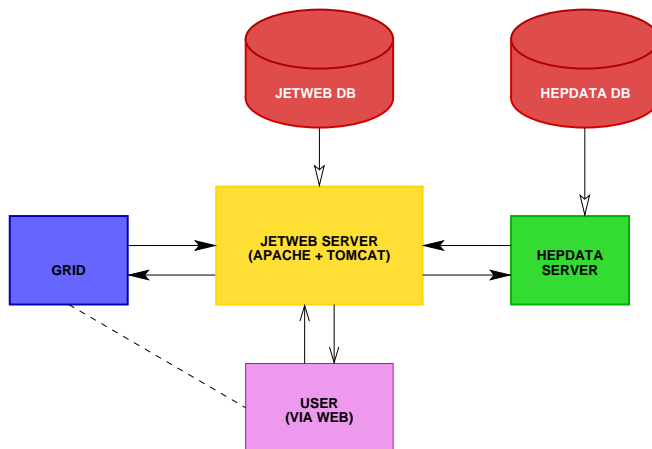
- ▶ HzTool is a library of Fortran routines for reproducing observables
- ▶ Typically one HzTool routine per paper
- ▶ Typically written by paper authors
- ▶ Generator independent: generator specifics in HzSteer package
- ▶ **Rivet: C++ replacement being written by CEDAR:**  
<http://hepforge.cedar.ac.uk/rivet/>

# JetWeb enhancements

CEDAR is enhancing JetWeb in several ways:

- ▶ **Experimental data to be taken from (upgraded) HepData**
- ▶ **Framework re-factor to make model extensions easier**
- ▶ Plans to use Grid authentication and job distribution
- ▶ New histogramming modules using the AIDA interfaces
- ▶ (Scanning parameter space, re-weighted fits...)
- ▶ **First CEDAR version of JetWeb to be available soon**

# (New) JetWeb behind the scenes





# HepData — the HEP reaction database

# Introducing (legacy) HepData

- ▶ Searchable ~30 years' worth of scattering data, PDFs etc.
- ▶ Historically stored in hierarchical BDMS database: very inflexible and little modern support
- ▶ Data available as text files, PAW kumacs or GIF images
- ▶ Legacy db stores pretty much everything as a string
- ▶ Adding records requires writing a Fortran routine
- ▶ Mirrors to SPIRES, PDG info

# HepData enhancements

- ▶ Migration to relational SQL database with Java servlet front-end, sharing object model components with JetWeb
- ▶ Database sanitising e.g. axis-level properties, uniform units, measurement classes. . .
- ▶ Using “HepML” and AIDA interfaces: XSLT transformations to many data formats possible
- ▶ Will use Grid authentication for expts. to submit data directly (modulo sanity checking)



## A brief aside on “HepML”

- ▶ XML representation for generator configs and HepData data sets (and more to come?)
- ▶ Defined by a set of XML schema docs under the `http://www.cedar.ac.uk/hepml/ namespace`
- ▶ Will also contain Python API and Java XSLT transformer classes using HD object model
- ▶ Intended for use by JetWeb etc., also by external projects (e.g. Professor)
- ▶ Will be a common MC generator log/config format (MCnet)
- ▶ HepData XML schema version 0.1 (release for comment) very soon: please check it out!

`http://hepforge.cedar.ac.uk/hepml/`

## HepML fragment (1)

```

<?xml version="1.0" encoding="UTF-8"?>
<hepml xmlns="http://www.cedar.ac.uk/hepml/hepdata/0.1/">
  <data timestamp="2006-04-07 13.09.27">
    <paper irn="3326047" paperId="3552">
      <dataset datasetId="1">
        <comment>
          FITTED, BACKGROUND SUBTRACTED, PEAK OMEGA CROSS SECTION,
          ...
        </comment>
        <property name="RE(Q=MU)" value="E+ E- --&gt; MU+ MU-" />
        <property name="RE(Q=HAD)" value="E+ E- --&gt; PI+ PI0 PI-" />
        <xaxis header="SQRT(S) IN GEV" xaxisId="1">
          <bins>
            <bin pointId="1" value="0.7726" />
            <bin pointId="2" value="0.7776" />
            ...
          </bins>
        </xaxis>
      </dataset>
    </paper>
  </data>
</hepml>

```

...

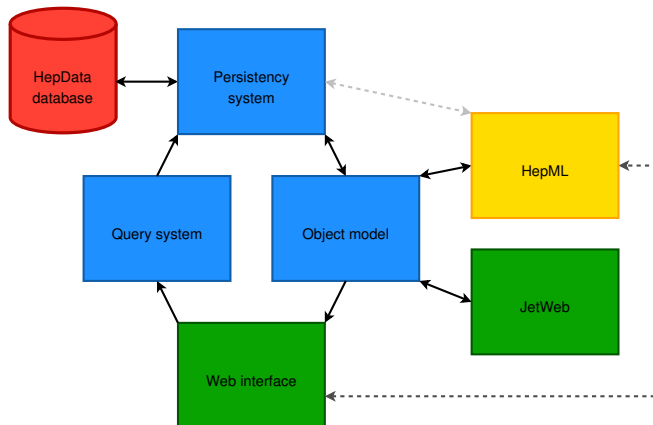
## HepML fragment (2)

```

...
<yaxis header="SIG(Q=HAD) IN MUB" yaxisId="1">
  <points>
    <point pointId="1" value="0.269" />
    <point pointId="2" value="0.74" />
    ...
    <point pointId="7" value="0.065" />
  </points>
  <axiserror norm="percent" source="sys" plus="11.0" minus="11.0"
    description="FROM NUCLEAR ABSORPTION CORRECTION" />
  ...
  <pointerrors norm="abs" source="stat">
    <pointerror plus="0.096" minus="0.096" pointId="1" />
    <pointerror plus="0.192" minus="0.192" pointId="2" />
    ...
    <pointerror plus="0.036" minus="0.036" pointId="7" />
  </pointerrors>
</yaxis>

```

# HepData behind the scenes



# First HepData demos (1)

Query interface (breaking the rules — spot the SQL!)

Reaction:

Observable:

**Params:**

- reac = null
- obs = null

```
SELECT DISTINCT kr.paper_id paperId, kr.ds_id dsId, o.description obsDesc, r.description reacDesc FROM (keyword kr
JOIN keyword ko USING (paper_id,ds_id)) JOIN observable o ON o.observable_id=ko.observable_id JOIN reaction r ON
r.reaction_id=kr.reaction_id JOIN final_particle fp ON fp.reaction_id=r.reaction_id JOIN particle p ON
p.particle_id=fp.particle_id WHERE (ko.observable_id IS NOT NULL and kr.reaction_id IS NOT NULL) LIMIT 10;
```

1. 1-1 : SIG / GAMMA P --> ETA P Dataset ID:1
2. 1-2 : DSIG/DOMEGA / GAMMA P --> ETA P Dataset ID:2
3. 1-3 : DSIG/DOMEGA / GAMMA P --> ETA P Dataset ID:3
4. 1-4 : DSIG/DOMEGA / GAMMA P --> ETA P Dataset ID:4
5. 1-5 : DSIG/DOMEGA / GAMMA P --> ETA P Dataset ID:5



# First HepData demos (2)

HepData  $\rightarrow$  HepML  $\xrightarrow{\text{XSL}}$  HTML

• Home

## HepData XSL test

Reformatted HepML for HepData:

**Paper: 3326047**

Dataset:

SQRT(S) IN GEV	SIG(Q=HAD) IN MUB $\pm 11\% \pm 5\% \pm 6.6\% \pm 7\%$	SIG(Q=HAD)/SIG(Q=MU) $\pm 11\% \pm 5\% \pm 6.6\% \pm 7\%$
0.7726	0.269 $\pm$ 0.096	1.85 $\pm$ 0.66
0.7776	0.74 $\pm$ 0.192	5.15 $\pm$ 1.34
0.7801	1.13 $\pm$ 0.225	7.92 $\pm$ 1.58
0.7826	1.63 $\pm$ 0.166	11.5 $\pm$ 1.17
0.7851	1.07 $\pm$ 0.226	7.59 $\pm$ 1.61
0.7876	0.625 $\pm$ 0.149	4.46 $\pm$ 1.06
0.8026	0.065 $\pm$ 0.036	0.48 $\pm$ 0.27

# HepForge — a lightweight development environment for HEP

# Software engineering for small HEP projects

- ▶ **Everyone has written code that might be re-used. . .**
- ▶ But hard to get managed development started: need to find/install software. . .
- ▶ Small projects don't have the resources to do nice things, like:
  - ▶ Using standard build/installation systems e.g. **autotools**, **libtool**
  - ▶ Being independent of execution/build environment e.g. **/cern!**
  - ▶ Formal quality control, feedback and bug tracking
  - ▶ Version control systems (CVS, **Subversion**)

HepForge provides many of these features in a powerful, easy-to-use environment.

# HepForge

- ▶ New collaborative development system
- ▶ Online at <http://hepforge.cedar.ac.uk>
- ▶ Features including:
  - ▶ Shell access with full set of dev tools
  - ▶ Web space (with several convenient features)
  - ▶ CVS and Subversion version control (+ public viewers)
  - ▶ Wiki and bug tracker
  - ▶ Mailing lists for developers and users
  - ▶ Downloads manager
- ▶ We've done the "boring bits"!
- ▶ Quite a few users: Herwig++, Pythia6, LHAPDF...



## Who should be interested in HepForge?

- ▶ Who's it for? Small–medium size projects.
- ▶ Stand-alone preferred but not reqd. Aids re-use.
- ▶ Intentions to use standard external systems  
Don't re-invent or *break expected behaviour* (UI design)
- ▶ Intention to document properly
- ▶ General responsible development, essentially

In return, HF provides powerful **software management infrastructure with minimum entry level and learning curve**


# HepForge tour

## Home page

HepForge > Home - CEDAR - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://hepforge.cedar.ac.uk/

 **CEDAR** CEDAR HEPDATA JETWEB HEPML HEPFORGE DEV

- Home
- About
- Register
- Projects
- SVN / CVS
- Downloads
- Documentation

### CEDAR HepForge

HepForge is a development environment for high energy physics software development projects. Some of the benefits offered by HepForge are:

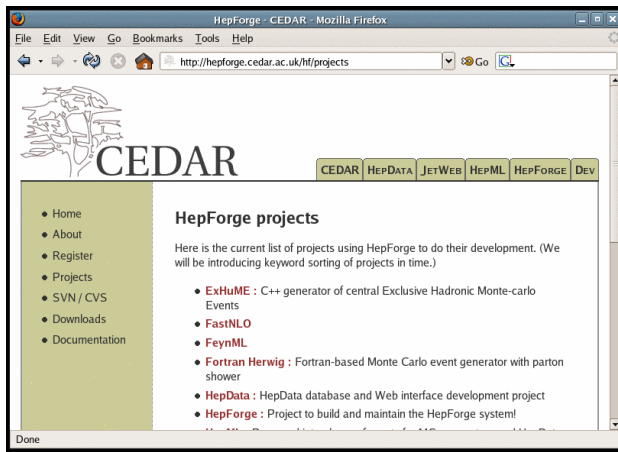
- Shell account with up to date development tools
- Web page hosting
- CVS and Subversion code management systems

Done



# HepForge tour

## Project list (1)



HepForge - CEDAR - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://hepforge.cedar.ac.uk/hf/projects

**CEDAR**

CEDAR HEPDATA JETWEB HEPML HEPFORGE DEV

- Home
- About
- Register
- Projects
- SVN / CVS
- Downloads
- Documentation

### HepForge projects

Here is the current list of projects using HepForge to do their development. (We will be introducing keyword sorting of projects in time.)

- **ExHuME** : C++ generator of central Exclusive Hadronic Monte-carlo Events
- **FastNLO**
- **FeynML**
- **Fortran Herwig** : Fortran-based Monte Carlo event generator with parton shower
- **HepData** : HepData database and Web interface development project
- **HepForge** : Project to build and maintain the HepForge system!

Done



# HepForge tour

## Project list (2)

HepForge - CEDAR - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://hepforge.cedar.ac.uk/hf/projects

- **HepML** : Proposed interchange formats for MC parameters and HepData records
- **HepTeX** : Collection of HEP-specific TeX/LaTeX packages
- **Herwig++**
- **HZSteer** : IO and steering utilities for HZTool.
- **HZTool** : Data-MC comparison histogramming
- **JetWeb** : Web-based system for MC event generator validation
- **Jimmy** : Multiple iterations implementation for Herwig
- **KtJet** : C++ implementation of the kt jet clustering algorithm
- **LHAPDF** : Les Houches Accord PDF library and interface
- **Professor** : Tuning tool for MC generators
- **PyFeyn** : Python library for programatically drawing Feynman diagrams
- **Rivet** : C++ re-implementation of the HZTool MC validation tool
- **RivetGun** : Generator interfacing system for Rivet
- **RunMC** : C++ frond-end of Monte Carlo models
- **ThePEG** : Platform for using and building C++ event generators

W3C XHTML 1.0

Done





# HepForge tour

## Project VC listing

HepForge > SVN / CVS > Subversion - CEDAR - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://hepforge.cedar.ac.uk/hf/vc/svn/hepdata/trunk/ Go

- Home
- About
- Register
- Projects
- SVN / CVS
  - Subversion
  - CVS
- Downloads
- Documentation

### HepForge version control

[hepdata] / trunk      Project Root:  Go

Current revision: **516 (of 516)**

Jump to directory revision:  Go

Files shown: 0

File	Rev.	Age	Author	Last log entry
Parent Directory				
hdbdmsmigrate/	433	2 months	whalley	'changes since move to svn'
hdcommon/	498	12 days	buckley	Moving DBMatch back due to problems with pro
hdmigrate/	499	12 days	buckley	Moved DBMatch back for convenience
hdmodel/	512	8 days	buckley	Added hasZeroSize() method for determining w
hdxml/	488	12 days	buckley	Making a new package for HepData HepML wr
hepdata/	516	4 days	buckley	Adding errors as expected...

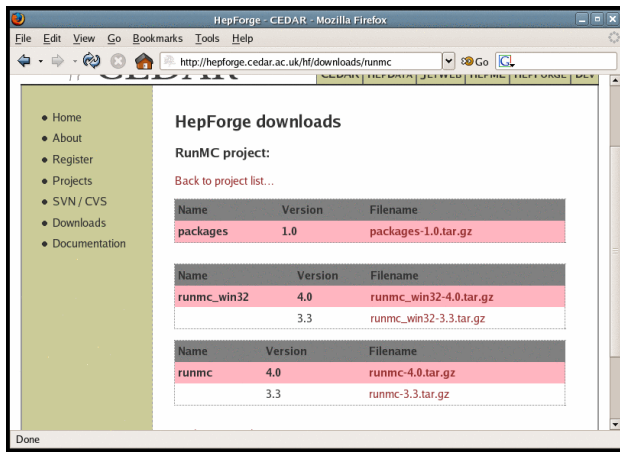
hepforge@cedar.ac.uk  
Powered by ViewCVS 1.0-dev

Done



# HepForge tour

Project downloads listing (also personal copy via SSI)



The screenshot shows a web browser window titled "HepForge - CEDAR - Mozilla Firefox" with the URL "http://hepforge.cedar.ac.uk/hf/downloads/runmc". The page displays "HepForge downloads" for the "RunMC project". A navigation menu on the left includes Home, About, Register, Projects, SVN / CVS, Downloads, and Documentation. The main content area lists three projects, each with a table of versions and filenames.

**HepForge downloads**

**RunMC project:**

[Back to project list...](#)

Name	Version	Filename
packages	1.0	packages-1.0.tar.gz

Name	Version	Filename
runmc_win32	4.0	runmc_win32-4.0.tar.gz
	3.3	runmc_win32-3.3.tar.gz

Name	Version	Filename
runmc	4.0	runmc-4.0.tar.gz
	3.3	runmc-3.3.tar.gz



# HepForge tour

Documentation: user guide (note scrollbar!)

HepForge > Documentation > User guide - CEDAR - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://hepforge.cedar.ac.uk/hf/docs/userguide

**CEDAR** CEDAR HEPDATA JETWEB HEPML HEPFORGE DEV

- Home
- About
- Register
- Projects
- SVN / CVS
- Downloads
- Documentation
  - User guide
  - FAQ

## HepForge user guide

This is the guide to the services provided by **HepForge**. Please check here and in the **FAQ** if you have a problem with the system. If you can't find an answer there, email us at [hepforge@cedar.ac.uk](mailto:hepforge@cedar.ac.uk).

### Shell account and filesystem

Your HepForge account gives you full Unix shell access to our server, with user privileges. You will have personal webspace (if you want to use it) at `http://www.cedar.ac.uk/~<username>` which can be accessed by creating a personal `publichtml` directory containing HTML files: `mkdir ~/publichtml; touch ~/public_html/index.html` should do the trick. These pages will be visible on the Web at `http://www.cedar.ac.uk/~<username>/`.

### Project information

Each project's file space contains a directory called `project-config` in which various



# HepForge tour

Project Web page: LHAPDF

LHAPDF :: HepForge - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://hepforge.cedar.ac.uk/lhapdf/

## LHAPDF the Les Houches Accord PDF Interface

- LHAPDF Home
- Installation
- PDF sets
- User manual
- Theory review
- C++ wrapper
- Mailing list
- ChangeLog
- Contact

---

- hepforge

### Home

LHAPDF provides a unified and easy to use interface to modern PDF sets. It is designed to work not only with individual PDF sets but also with the more recent multiple "error" sets. It can be viewed as the successor to PDFLIB, incorporating many of the older sets found in the latter, including pion and photon PDFs. In LHAPDF the computer code and input parameters/grids are separated thus allowing more easy updating and no limit to the expansion possibilities. The code and data sets can be downloaded together or individually as desired. From version 4.1 onwards a configuration script facilitates the installation of LHAPDF.

<p><b>Contents:</b></p> <ul style="list-style-type: none"> <li>Installing LHAPDF.</li> <li>List of all available PDF sets.</li> <li>On-line user manual.</li> <li>A wrapper for C++.</li> <li>A little bit of theory.</li> </ul>	<p><b>Downloads:</b></p> <p>Latest released version:</p> <ul style="list-style-type: none"> <li>4.2 (full): <a href="#">lhpdf-4.2.tar.gz</a></li> <li>4.2:(no pdfsets): <a href="#">lhpdf-4.2-nopdf.tar.gz</a></li> </ul>
--	---

Done



# HepForge tour

Project Web page: Herwig++

The screenshot shows a Mozilla Firefox browser window displaying the Herwig++ project page. The address bar shows the URL `http://hepforge.cedar.ac.uk/herwig/`. The page title is "The Herwig++ Event Generator". The navigation menu includes links for "ThePEG: Wiki CVS", "Herwig++: Wiki CVS Dev", and "Fortran Herwig: Wiki". The main content area has a yellow background and contains the following text:

**The Herwig++ Event Generator**

**Overview**

Herwig++ is a completely new event generator, written in C++. It is built on the experience gained with the well-known event generator **HERWIG**. The aim is to provide a multi purpose event generator with similar or improved capabilities (like angular ordered parton evolution and the cluster hadronization model). At some point the ongoing development of the Fortran version will terminate and Herwig++ will take over.

Herwig++ is based on **ThePEG** and **CLHEP**.

**Download**

**Herwig++ 2.0 beta**

The **Herwig++ 2.0 beta** release has been tested with **CLHEP-2.0.2.2** and **ThePEG-2006-01-31**.

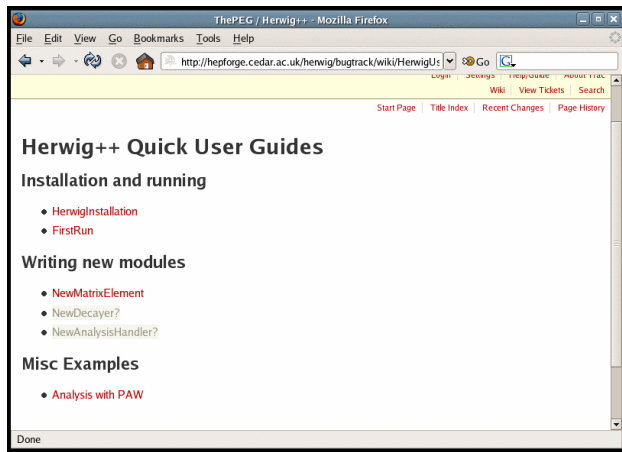
The **release note**.

The status bar at the bottom of the browser window shows "Done".



# HepForge tour

## Project wiki



The screenshot shows a Mozilla Firefox browser window with the address bar displaying `http://hepforge.cedar.ac.uk/herwig/bugtrack/wiki/HerwigU...`. The page content is as follows:

ThePEG / Herwig++ - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://hepforge.cedar.ac.uk/herwig/bugtrack/wiki/HerwigU... Go

Log in Settings Help/About About Trac

Wiki View Tickets Search

Start Page Title Index Recent Changes Page History

## Herwig++ Quick User Guides

### Installation and running

- [HerwigInstallation](#)
- [FirstRun](#)

### Writing new modules

- [NewMatrixElement](#)
- [NewDecayer?](#)
- [NewAnalysisHandler?](#)

### Misc Examples

- [Analysis with PAW](#)

Done



# HepForge tour

## Project bug tracker: milestones

HepData :: HepForge - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://hepforge.cedar.ac.uk/hepdata/bugtrack/roadmap/

Home

- Home
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- Tracker
  - ◊ Milestones
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Wiki | Timeline | Roadmap | Browse Source | Login | Settings | HelpGuide | AboutTrac | View Tickets | New Ticket | Search

## Roadmap

Milestone: **JetWeb Accessing HepData**  
Due in 2 months

80%

Closed tickets: 0 Active tickets: 1

Also a [CEDAR Milestone](#).

Milestone: **JetWeb and HepData development version**  
Due in 5 months

100%

Closed tickets: 3 Active tickets: 0

Done



# HepForge tour

## Project timeline (integrated with SVN)

HepData :: HepForge - Mozilla Firefox

http://hepforge.cedar.ac.uk/hepdata/bugtrack/timeline

hosted by CEDAR HepForge

- Home
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- Wiki
- Contact

Wiki | Timeline | Roadmap | Browse Source | Login | Settings | HelpGuide | AboutTrac | View Tickets | New Ticket | Search

## Timeline

View changes from 150206 and 30 days back.

- Milestones
- Ticket changes
- Repository checkins
- Wiki changes

Update

**10/02/06:**

- 17:34 **Changeset [516] by buckley**  
Adding errors as expected...
- 15:19 **Changeset [515] by buckley**  
Making progress, thanks to new use of XSLT 2.0 rules and the Saxon ...

**07/02/06:**

- 15:57 **Changeset [514] by buckley**  
Getting HzTool? Fortran headers working

Done





# HepForge tour

## Project bug listing

HepData :: HepForge - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://hepforge.cedar.ac.uk/hepdata/bugtrack/report/3

### JetWeb Accessing HepData

Ticket	Summary	Component	Version	Type	Owner	Created
#2	Create XSL transformer for data HepML -> HzTool Fortran headers	hepdata	1.0	task	buckley *	01/11/05

### Object model and db persistency refactoring

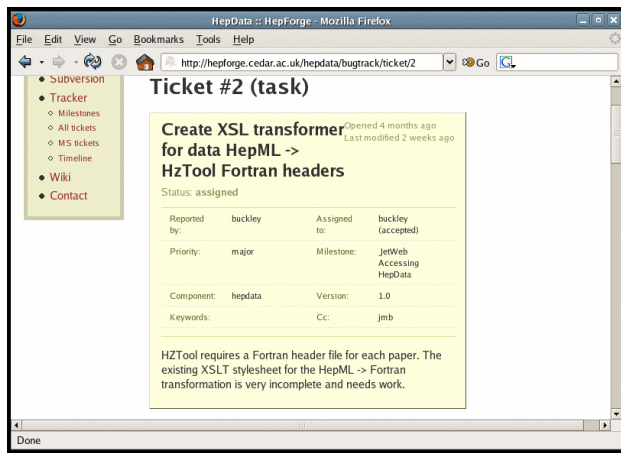
Ticket	Summary	Component	Version	Type	Owner	Created
#42	Refactor the object model / db interaction	model	1.0	task	buckley *	17/01/06
#54	Improve error representation in the object model	model	1.0	task	buckley *	01/02/06
#46	Consider using SQL double for data values	migration	1.0	enhancement	buckley *	21/01/06
#26	Separate HepData model from migration code	hepdata	1.0	defect	buckley *	25/11/05
#53	Use enums for error type	model	1.0	enhancement	buckley *	01/02/06
#56	Separate stat/sys and	model	1.0	enhancement	buckley *	02/02/06

Done



# HepForge tour

## Project bug details (1)



HepData :: HepForge - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://hepforge.cedar.ac.uk/hepdata/bugtrack/ticket/2

- Subversion
- Tracker
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### Ticket #2 (task)

**Create XSL transformer for data HepML -> HzTool Fortran headers** Opened 4 months ago  
Last modified 2 weeks ago

Status: assigned

Reported by:	buckley	Assigned to:	buckley (accepted)
Priority:	major	Milestone:	JetWeb Accessing HepData
Component:	hepdata	Version:	1.0
Keywords:		Cc:	jmb

HZTool requires a Fortran header file for each paper. The existing XSLT stylesheet for the HepML -> Fortran transformation is very incomplete and needs work.

Done



# HepForge tour

## Project bug details (2)

HepData :: HepForge - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://hepforge.cedar.ac.uk/hepdata/bugtrack/ticket/2

### Attachments

Attach File

### Change History

17/01/06 17:55:28: Modified by buckley

- description changed.
- milestone set to *JetWeb Accessing HepData*.

I've re-written the XSL transformer classes somewhat.  
The next steps are:

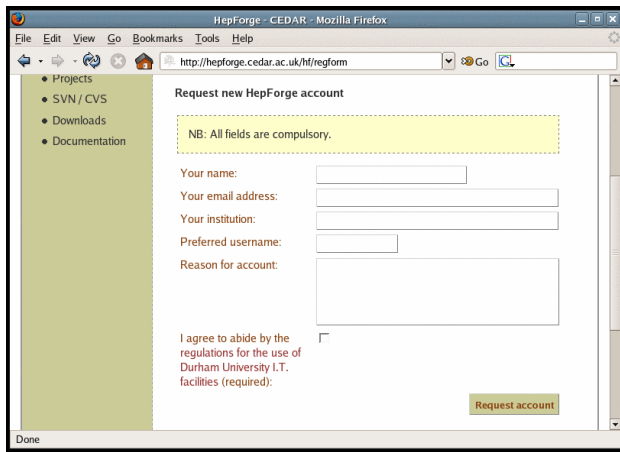
- abstract the re-formatter classes to be more generic: HepMLReformatter, HepMLSplitReformatter, HepMLTextReformatter etc. (need better names)
- provide a superclass/interface common to

Done



# HepForge tour

The HepForge registration form! **Think about it...**



The screenshot shows a Mozilla Firefox browser window titled "HepForge - CEDAR - Mozilla Firefox". The address bar contains "http://hepforge.cedar.ac.uk/hf/regform". The page content is titled "Request new HepForge account". A yellow dashed box contains the text "NB: All fields are compulsory." Below this are several input fields: "Your name:", "Your email address:", "Your institution:", "Preferred username:", and "Reason for account:". At the bottom, there is a checkbox for "I agree to abide by the regulations for the use of Durham University I.T. facilities (required):" and a "Request account" button.



# Registration

Please think about using HepForge!

- ▶ Current users include: Herwig++, ThePEG, Pythia, LHAPDF, RunMC, FastNLO, Jimmy, KtJet. . .
- ▶ Plus all the CEDAR sub-projects, of course!
- ▶ Requirements:
  - ▶ has to be for a **re-useable** HEP project
  - ▶ not for processor-intensive use
  - ▶ commitment to document and support your project
  - ▶ encouraged to use standard build procedures etc.

**We can and will help with this!**

Visit **<http://hepforge.cedar.ac.uk>** to register

# Summary

# Summary

- ▶ CEDAR is primarily a generator tuning system, combining JetWeb and HepData
- ▶ Aim is that any expt MC configuration should be “CEDAR-blessed” to be considered trustworthy
- ▶ Timescale: must be ready for LHC data
- ▶ HepForge is available for HEP software development now!
- ▶ Eventually will be used to implement the HepCode system
- ▶ Feedback has all been very positive: system is powerful but very easy to use
- ▶ Consider HepForge for *your* re-useable HEP code!

# HepForge backend (1)

For the interested...

- ▶ Python-based with shell scripts for acc. management
- ▶ Various Subversion things, e.g.
  - ▶ re-write of CVS: almost complete UI compatibility
  - ▶ support for symlinks, metadata, dirs, **mv/cp!**
  - ▶ anon read access over HTTP; rw dev access over SSH
  - ▶ **use it!** Migration from CVS is easy.
- ▶ ViewVC with multi-site hack (also via SSI)



# HepForge backend (2)

For the interested...

- ▶ Trac bug tracker and wiki:
  - ▶ SQLite backend and SVN integration
  - ▶ Moin-compatible wiki
  - ▶ excellent tool!
- ▶ Web system with post-processing scripts
  - ▶ HTML Tidy
  - ▶ transparent header and footer handling
- ▶ Download manager (personalisable via SSI)