



CEDAR

Overview of CEDAR Projects

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Update on CEDAR Projects

- What is CEDAR?
- HepForge
- HepData
- HZTool, HZSteer, Rivet
- JetWeb
- HepML

What is CEDAR?

- Set of software tools, the main aim of which is to couple validation tools for *MC programs* (and other physics calculational) tools with *data*.
 - JetWeb, HZTool, Rivet for validation
 - HepData archive of high energy physics data.
- Also provides (since it needs them itself)
 - Lightweight code development environment (HepForge).
 - XML descriptions of HepData records and generator parameters (HepML, in collaboration with LCG Generators)

- Handy, lightweight development platform for small reusable HEP software projects.
- Pick and mix of services available:
 - Version control, bug/issue tracking, download/release management, web space, wiki, mailing lists, shell account...
- Ask if you want to know more
 - <http://hepforge.cedar.ac.uk> (or <http://hepforge.org>)
 - very well advertised by Dave Grellscheid, HERWIG++

- Data store for all HEP measurements
- Current public version is in legacy Berkeley DB
- CEDAR have migrated it to a MySQL DB
 - long term maintenance
 - java object model
 - accessible to jetweb and others

- Fortran library of *generator-independent* analysis routines.
 - Each routine reproduces the particle-level distributions of a single paper.
 - Fairly wide user base in experiment and phenomenology, over ~10 years.
- HZTool status and plans:
 - HERA origins -> contains a fairly large selection of HERA papers
 - Smaller selection of Tevatron measurements
 - Small selection of LEP data
 - New measurements still being added.
 - The only planned major development is to export data header files directly from HepData for each release.
 - Current version 4.1 (5/4/2006).
 - See <http://hepforge.cedar.ac.uk/hztool>

- Fortran main program and I/O for HZTool
- Mainly intended for use by JetWeb, but also useful to others
- HZSteer status and plans:
 - Last major update release very soon.
 - Outputs proposed HepML parameter descriptions for HERWIG and PYTHIA.
 - Outputs histograms as AIDA (XML) or HBOOK RZ files.
 - See <http://hepforge.cedar.ac.uk/hzsteer>

Rivet and RivetGun

- Robust Independent Validation of Experiment & Theory
- Approximately equivalent to a C++ replacement of HZTool (Rivet) and HZSteer (RivetGun).
 - Will make use of some existing external libraries (CLHEP, KtJet/FastJet etc)
 - Rivet is generator independent.
 - RivetGun interfaces to HERWIG, PYTHIA6, ThePEG, Sherpa, *soon HERWIG++ , PYTHIA8 , ARIADNE and others*
 - Plan to allow configuration of generators using HepML model files (see later).
 - Outputs histograms for comparison to data from HepData and for inclusion in JetWeb.
 - Intended as a convenient standalone tool for MC developers, experimentalists and theorists, as well as a component of JetWeb.

Rivet and RivetGun

- Design and development ongoing
 - Framework there, but not much physics content yet.
 - First beta release with some useful functionality expected in the next few weeks.
- See <http://hepforge.cedar.ac.uk/rivet> and <http://hepforge.cedar.ac.uk/rivetgun>

- Web and database server for archiving validated MC models.
- Uses HZSteer and HZTool running on LCG
 - Future releases will use Rivet/Gun as well
- Undergone major redevelopment after initial demonstrator version
 - New test version now available.
 - Uses HepML for describing validated models
 - Will soon use HepData as the single source for all measurements

JetWeb Goals

- Build up database of validated models using wide range of existing data
- Add new *generators* and *data* rapidly as they appear.
- Users add their own new parameter settings.
- Add more user front-end facilities for interactive tuning and analysis.
- See <http://jetweb.cedar.ac.uk>

- XML Schemas to allow
 - exchange of parameters needed to reliably reproduce a particular generator run.
 - exchange of HepData records.
- Collaboration with LCG Generators (MCDB subproject).

Summary

- HZSteer/HZTool: stable, released, usable and used.
- HepData: Transition to MySQL well underway, should be transparent to users.
- Rivet/Gun: exists, interested parties welcome join development. Beta release soon (will be used in first MCnet school, April).
- JetWeb: exists, not enough data in it yet, but can be experimented with, and comments welcome. Gradually increased content from now on.
- HepML: parts exist, being used. Lots of development to do.
- HepForge: exists, is stable and very useful already to many projects.