

Update on CEDAR Projects

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Update on CEDAR Projects

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

What is CEDAR?

- Main aim 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)
 - XML descriptions of HepData records and generator parameters (HepML)
 - Lightweight code development environment (HepForge).

- Fortran library of generator-independent analysis routines.
- HZTool status and plans:
 - See talk by Christiane Risler for status of HERA measurements in HZTool.
 - Also actively adding Tevatron measurements (E.Nurse et al)
 - Badly need LEP hadronic measurements, but these may be better added to Rivet (see later).
 - The only planned major development (apart from including new generators and new data) 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:
 - Currently lots of development (beta releases).
 - Will output HepML parameter descriptions for HERWIG and PYTHIA.
 - Will output histograms as AIDA (XML) or HBOOK RZ files.
 - See <http://hepforge.cedar.ac.uk/hzsteer>

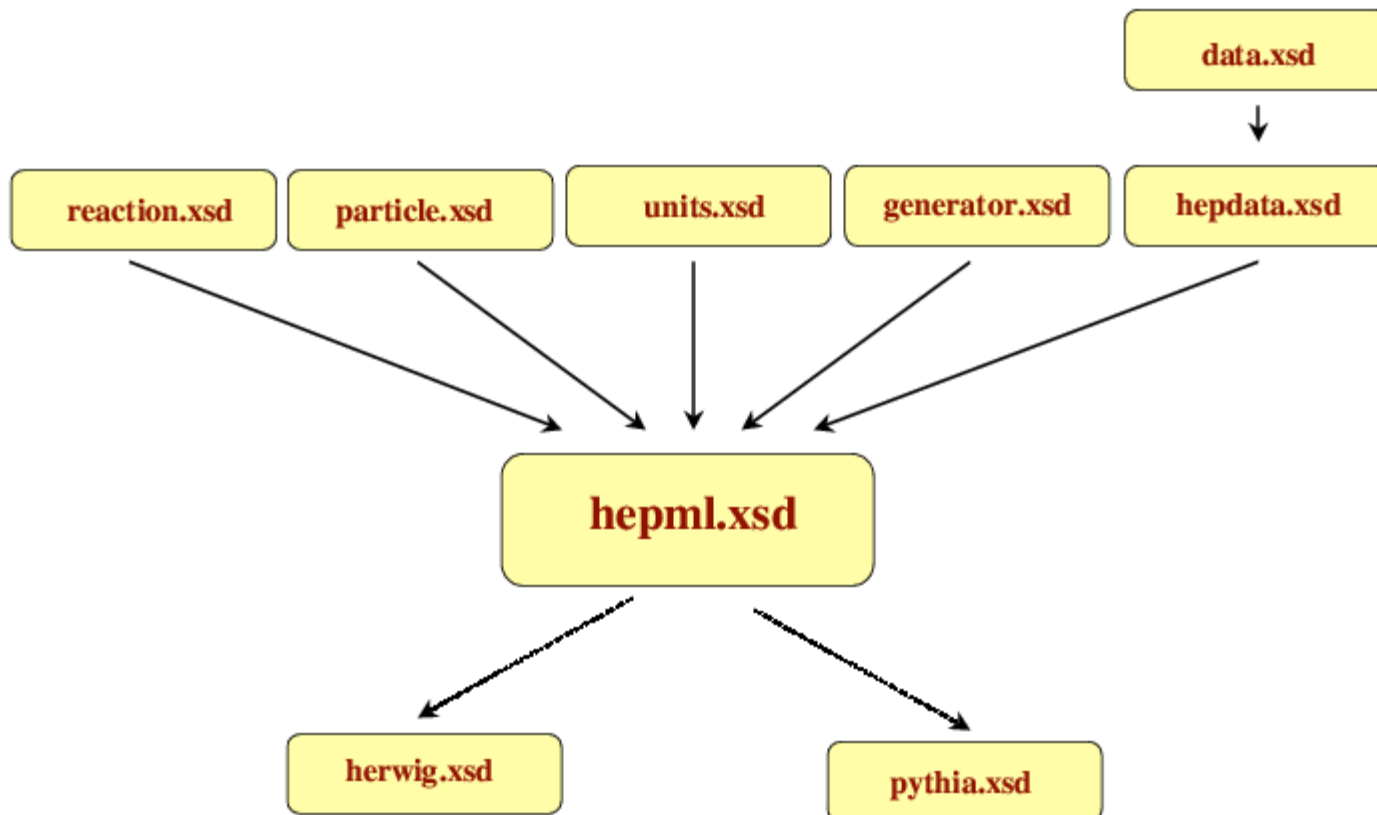
Rivet and RivetGun

- Robust Independent Validation of Experiment & Theory
- Approximately equivalent to a C++ replacement of HZTool (Rivet) and HZSteer (RivetGun).
 - Will make greater use of existing external libraries (CLHEP, KtJet etc)
 - Rivet is generator independent.
 - RivetGun must interface to ThePEG, Sherpa, Pythia8 and existing Fortran generators.
 - Generators to be configured using HepML.

Rivet and RivetGun

- Design and development ongoing
 - see web pages, e.g.
<http://hepforge.cedar.ac.uk/rivet/code/pub/inherits>
- Plan for a working demo in time for the MC4LHC workshop in July.
 - Current developers; A. Buckley, L. Lonnblad, B. Waugh, JMB
 - Hope to expand this a lot, as with HZTool, once the basic structure is working.
- See <http://hepforge.cedar.ac.uk/rivet> and <http://hepforge.cedar.ac.uk/rivetgun>

- General XML schemas for describing HEP objects.
 - Name also used by MCDB project for planned MC event-record I/O
 - Ideally would like to merge/reuse common elements with MCDB subschemas when available.
- CEDAR HepML schemas now available for MC parameters and HepData records
 - I/O for JetWeb and HepData
 - Each generator author can effectively “subclass” the general parameter description, thus restricting the names and types of parameters to be only those relevant for their generator.



- Proposed schemas for Fortran Herwig and Pythia currently under discussion with authors
 - Test versions of Fortran output available in HZSteer
 - Used by JetWeb when uploading new MC data.
- See <http://hepforge.cedar.ac.uk/hepml>
- See next talk for more on the HepData elements of HepML.

- 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

- **Goals**
 - Build up database of validated models using wide range of existing data
 - Running HZSteer and RivetGun on LCG
 - CEDAR now a registered VO
 - would like to use GENSER distribution of generators
 - would like HZSteer (and eventually RivetGun) supported in GENSER – discussion with/request to LCG team.
 - Add new generators and data rapidly as they appear
 - Add more user front-end facilities for interactive tuning and analysis
- See <http://jetweb.cedar.ac.uk>