Rivet monthly dev meeting

16 June 2020

Main points

- **Rivet 3.1.2 + YODA 1.8.3?** -> make release in next weeks
  - Hack-fix for *loong*-broken HepMC2 weight ordering. (Cf. new HepMC 2.06.11)
  - YODA Index (lots of work by Nick R, Holger, Louie) + Python interfaces (AB)
- **Gitlab procedures, Mattermost, mailing lists...**
  - Delete HepForge mailing lists (AB) — request has been sent: Andy to chase
  - CI updates: new hepbase images in CIs for YODA and Rivet
  - **Review MRs**
- **Big topics**
  - HDF5 analysis-data machinery (Holger)
  - Performance & multi-threading (Aditya et al): GenEvent copying very slow?
  - Plotting (Christian B et al)
  - Data objects (Nick et al)
  - Weight-name handling and standardisation (Chris G)
  - HepData syncing (Chris G et al)

Major work

- **Continuous integration**
  - New images, more build parametrisation: now covering GCC/clang, Fedora/Ubuntu, and Python 2/3. *Note: Python 3 needs to become our standard*
    Andy to merge; Louie to add monthly (?) full validation

- **HDF5 analysis data machinery (Holger)**
  - Status?
  - Holger to ping CMS, prototype interface

- **Performance & multi-threading (Aditya et al)**
  - Started Rivet profiling… prelim results? Thanks to Holger
  - Aditya to try removing the GenEvent copy in AH::analyze… for 3.1.2??
  - Leif to commit his pthread-hack solution for multithreading for v3.1.2

Major work

- **Plotting (Christian B et al)**
  - Meeting on 4 June: agreed to generate Python MPL scripts *without* TeX
  - Plan to reinvent the .plot style files as YAML
  - Priority tasks: understanding MathText issues & designing weight handling
  - More detail on Mattermost
  - Christian to prototype the Python-script generation
  - Chris to extract weight-handling logic from rivet-cmphistos
  - Andy to test MathText on titles direct from .plot files
  - Anyone for YAMLizing .plot syntax?

- **Data objects (Nick et al)**
  - Started on YODA with Index, currently API templating, then HDF5 data format
  - More details in backup

Further notes on Nick’s GSOC project

- Worked on yoda's index file functionality requested by Holger -> Now merged
- Experimented with pytest to replace python code testing routine in YODA
- Working on generalizing Binning interactions:
  - Introduced variadic templates into distribution type to make it's filling without initialization lists possible.
  - Experimenting with BinnedObject class to allow exposing binned object interface externally.
  - Working on generalizing axis matching to allow usage of non-numeric types for binning.

Misc issues

Weight-name handling and standardisation (Chris G)

- Everything with “AUX” or “DEBUG” in the name will be skipped by Rivet/plotting scripts https://gitlab.com/hepcedar/rivet/-/merge_requests/136
- Everything with “NOPLOT” in the name will be included by Rivet but skipped by plotting
- https://gitlab.com/hepcedar/rivet/-/blob/release-3-1-x/doc/tutorials/multiweights_plotting.md#weight-names for update to character restrictions in weight names — Chris G to start conversation
- Should we have a “formal” write up of this? — YES
- Issues with weights and merging (Leif) — Leif to commit fixes this week for patch release

HepData sync effort:

- Status of HD sync, sync scripts & booking-helper features?
  - Of 916 Rivet analyses in rivet/analyses, 454 (49.6%) were compatible and 462 (50.4%) were incompatible.
- HEPData moved to a new server => Timeout issues
- Record size is going to get (much?) larger, will this be sustainable for Rivet/Yoda?