Rivet monthly dev meeting

1 March 2023

Recent activity / TODOs

- **Rivet ongoing developments** ⇒ [Review MRs](#) 👏
  - Chris profiled and improved memory consumption in merging
  - Projection private → protected, to ease inheritance
  - HepMC3 cross-section / weight vector inconsistency workaround added (CG)
    - TODO: AB, AV, CG to discuss, propose, take to multiweight-std group
  - AB ported in PID utils efficiency improvement from upstream MCUtils (we should remove this duplication and just suck up the dependency from 3.2.x)
    - Room for technical project, e.g. GSoC, to profile & improve PID utils
  - CMS-flagged dressed-lepton definition bug: photons from prompt muon and tau not accepted. Changed definition to pass optional bool args to isPrompt()
    - Actually, the affected analysis wasn't even using DressedLeptons! Now fixed, too
    - Plus tidying of DressedLeptons to remove redundant promptness filtering

Recent activity / TODOs

- **Rivet ongoing developments continued…**

    - AB finally addressed Tomek's report about PseudoJet bad construction from P4,V4
        - template<T> fastjet::PseudoJet(T x) for any T with operator[]: bad-idea!
        - Fix provides an implicit Vector4 → PseudoJet cast operator. Better than nothing

    - Small tweaks in units, signed/unsigned, ctau0 info fixes, typos,
    Python str auto-encoding →Unicode, HepMC Mac linking

    - New analyses:
        - ATLAS_2023_I2625697 (multijet EECs),
        - ATLAS_2022_I2023464 (H→γγ),
        - LHCF (nearly)

Major-release tasks

- **In parallel: work toward v3.2.0**

  - ~~CPU-saving no-copy of the HepMC event, with API constness change~~: ~~merged~~

  - ~~Finish and merge thread-safety branch (important for Gambit~~ → ~~Tomek Procter~~)

  - ~~Add early versions of automatic "object flattening", and no-width scaling~~

  - ~~Merge HDF5 analysis data, and live/dead-conversion branches~~ → ~~AB~~

  - ~~Plotting merge (+ CHC patches)~~ → ~~Jamie, Yoran, AB, CB, etc.:~~ **meeting needed**

  - ?? Jet clustering of any ParticleBase: some reclustering devel, nuanced due to need to propagate constituents / recluster, maybe needs a proj subclass → **AB**

  - Deprecation clean-out and enum rationalisation (started)
    - including "enumification" of the DISKinematics options arg :-/ → AB

  - Primary particles definition / enforcement
    → mix of PIDs and decay time; Leif started tech discussion

Recent activity / TODOs

- **Other developments, part 1**

    - **YODA2**
        - Ready?!
        - Weighted stats calculator methods now exposed as standalone functions
        - HepData output for YODA2: done, MR
        - HDF5 format development shelved until YODA 2.1

    - **YODA / new plotting machinery**
        - ~~Gambit reports warnings from deleted implicit operator=s: check warnings in CI~~
        - Update from Jamie & Yoran: put matplotlib plotting beta in Y1.9.8 / R3.1.8
        - Merge-readiness?

    - **Documentation**
        - heprivet.org: Anjelo still to look at fixing the block to CI deployment
        - Python (and template C++) documentation still a problem to solve!

    - **Release 3.1.8:** ready in next ~2 weeks, including mpl plotting option?
    - **Release 3.2:** API tidying, MCUtils & HDF5 external dependencies, … any others?

Recent activity / TODOs

- **Other developments, part 2**

  - **HepMC3**
    - Preparation to the release. The slides will be circulated today/tomorrow.
    - Aim for the 3.26 release within days after the circulation of slides.
    - https://gitlab.com/hepcedar/rivet/-/issues/349 – interesting issue.WIP.

  - **FJcontrib**
    - The version 1.051 from today adds a plugin with an emulation of original KTCLUS. This will allow to include more old analyses, especially from HERA.

  - **Asymmetric beam ambiguity**
    - Allow eg. p-Pb and Pb-p and adding a ~~mirror~~ 180 rotation projection. (LL)
      - Analyses should track the orientation and propagate
      - TODO: Add "flipped" validation test events for asymm beam analyses?

Misc + AOB

- **CERN gitlab accessibility via MCnet/LPCC**
  - TODO: reserve group/project/repo names on gitlab.cern
  - TODO: request Mac CI runners (Intel *and* M1) on CERN Gitlab!

- **Events, schools, talk requests? + working meetings…**
  - Requests for CMS / ATLAS / FCC / other Rivet & Contur tutorials… any progress?
  - In-person meeting would be good, but money: piggyback off other meetings for now
    - MCnet meeting CERN 24-28 Apr
    - Who is planning to go to Les Houches and which session?
    - MCnet school Durham 10-14 July
    - BSM Reinterpretation Forum, Durham, 29 Aug-1 Sept

BACKUP