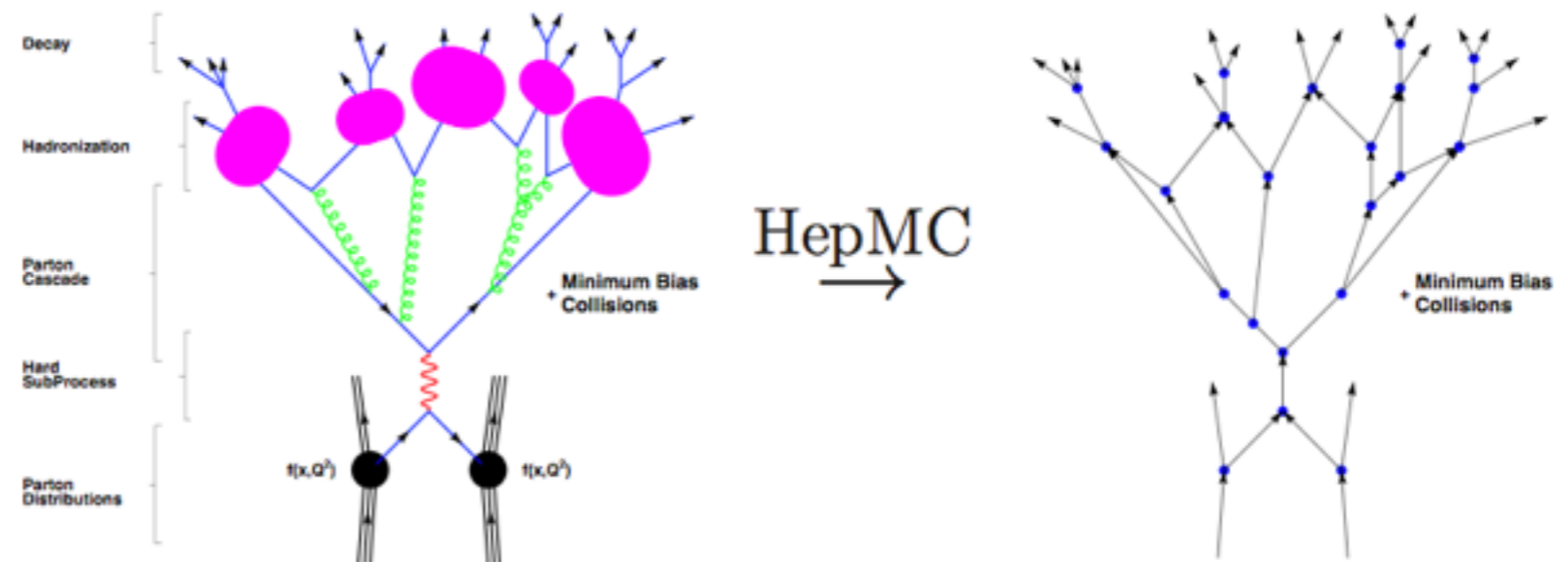# HepMC news
Mini-workshop announcement
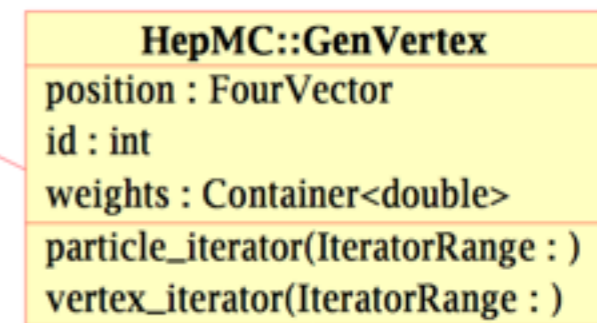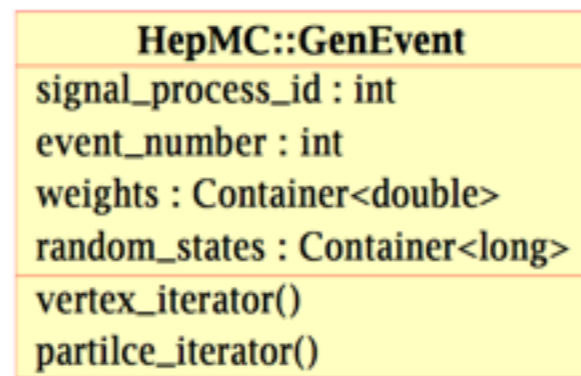
Pere Mato, Witek Pokorski
02.12.2013

Quick reminder

- HepMC - C++ event record for Monte Carlo Generators

  - allows to builds 'events' out of 'particles' and 'vertices'

- became a 'de facto' standard

  - used by all LHC experiments to interface between MC generators and Geant4

  - used to store generated events
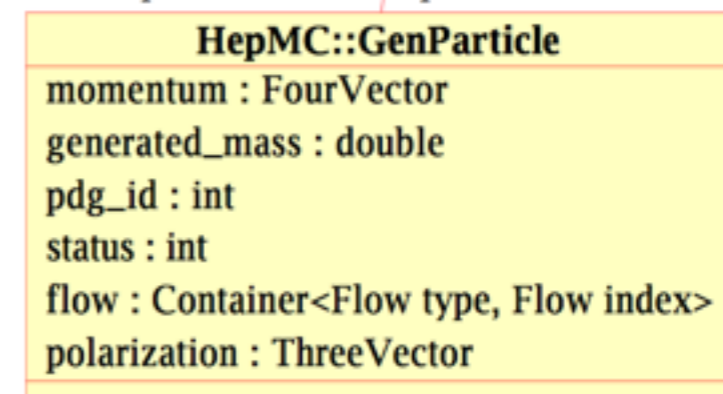
- code is now 12 years old

Design (shortcomings)

HepMC::GenEvent

signal_process_id : int
event_number : int
weights : Container<double>
random_states : Container<long>
vertex_iterator()
partilce_iterator()

HepMC::GenVertex

position : FourVector
id : int
weights : Container<double>
particle_iterator(IteratorRange :)
vertex_iterator(IteratorRange :)

+end_vertex   production_vertex

+particles_in   particles_out

HepMC::GenParticle

momentum : FourVector
generated_mass : double
pdg_id : int
status : int
flow : Container<Flow type, Flow index>
polarization : ThreeVector

- use of pointers to relate different objects

  - problematic for I/0

- some redundancy

  - e.g. mass of electron stored for every event

- inefficient use of iterators

- some members obsolete, some requested to be added

Current status

- currently at HepMC 2.xx series

  - production release 2.06.08

  - maintained by Lynn Garren (Fermilab)

- very little activity over the last year(s)

  - some bug reports and requests not addressed

- more and more voices expressing concern about the maintenance and development status of such a crucial package

  - people were willing to contribute, but encountering problems…

New elements

- as agreed with Lynn, Generator Services project takes over the role of the release manager and librarian of HepMC code

- HepMC SVN repository (now obsolete), cloned to GIT

  - https://git.cern.ch/web/HepMC.git

- Integrated with the rest of the LCG external packages

  - nightly builds, CDash, CTest, automated builds

- new developers given direct access to the code

  - Andy Buckley, more to come

- planning to directly involved all the experiments in the future design of HepMC

  - building up a team of developers and 'committee' formed by experiments' representatives and some MC generators authors to approve any changes

Release plan

- minor release(s) coming with some fixes of long standing problems

- work on HepMC 3 starting early 2014

- major release (3.00.00) planned for summer 2014, so the experiments can still migrate to it before LHC restart

HepMC Mini-Workshop

- meeting to discuss all of this on January 21st

  - presentation of the current status of HepMC

  - presentations by all of the experiments on the usage and requirements for HepMC

  - proposal for the development of HepMC 3

- purpose of the workshop

  - form group of developers of HepMC 3

  - form 'committee' to represent all the experiments and the MC generators community to approve all the changes in the format

- not a purpose of the workshop

  - concrete, final decisions on the future format of HepMC

Conclusion

- Moving to new way of HepMC development

    - more community-driven

    - more open to external contributions

    - controlled and approved by all the stakeholders

- mini-workshop in January to start this new form

    - working meetings regularly (once per month?) afterwards

- aiming for new major release (HepMC 3.00.00) by summer 2014