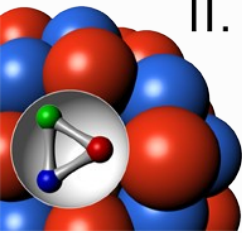


EvtGen – “Next Generation”

Migration in PandaRoot

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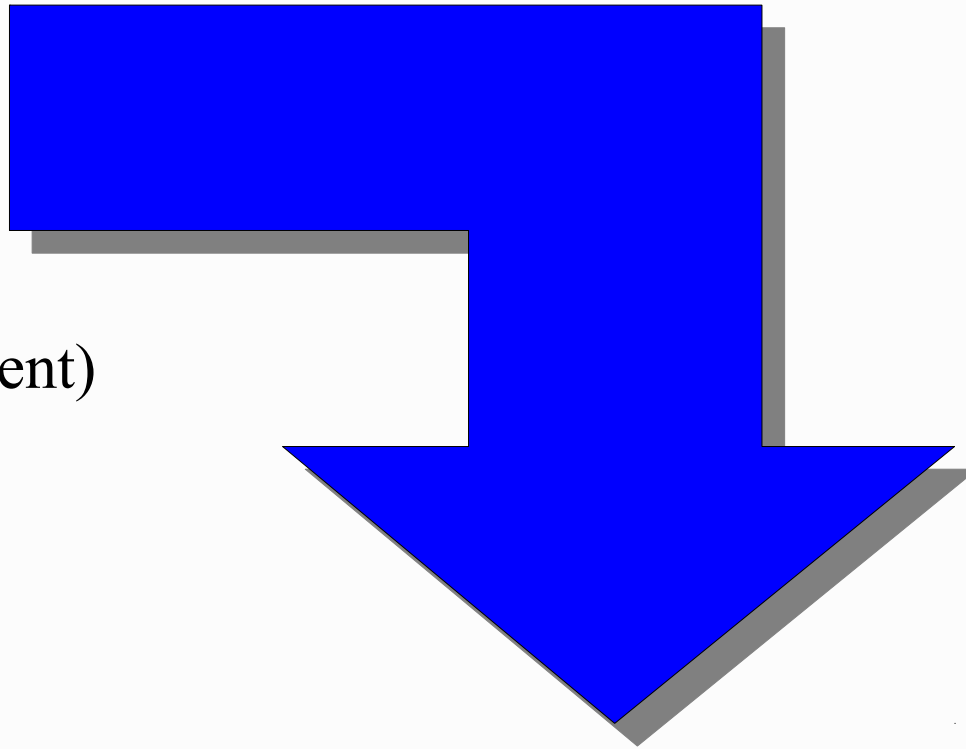
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- Status:
 - Panda uses private version
 - EvtGen in PandaRoot is unsupported/decoupled from updates
 - Works in PandaRoot with some “Hacks” (ex-CERNLIB...)
 - (Needed CLHEP for some interfaces (replaced by Root...))
- New supported EvtGen from Warwick
 - PRO: Support
 - PRO: More models, updated decay files
 - PRO: No need for Cernlib Hacks
 - PRO: No CLHEP anymore
 - PRO: Pythia8, newer Photos
 - CON: Private Panda Models not included

- CLHEP
- Pythia 6
- Old Photos (from cernlib)
- few “hacks” (cernlib replacement)

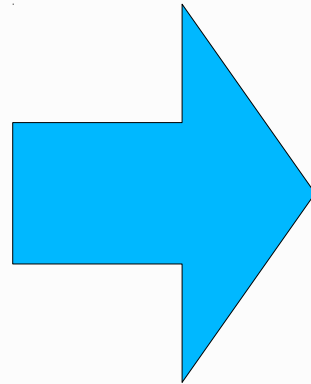


- HepMC-2.06.09 (Interface) <https://savannah.cern.ch/projects/hepmc>
- Pythia8 with HepMC interface (can be switched off, then not needed)
 - HepMC must be installed before Pythia8, thus in Fairsoft
 - Pythia8 (8.165) since fairsoft sep12 release is new enough
 - <http://home.thep.lu.se/~torbjorn/Pythia.html>
- Photos 3.5 (can be switched off, then not needed)
<http://www.ph.unimelb.edu.au/~ndavidson/photos/doxygen/index.html>
- (Tauola 1.0.7-LHC – can be switched off, then not needed)
<http://www.ph.unimelb.edu.au/~ndavidson/tauola/doxygen/index.html>
- EvtGen R01-01-00 <http://evtgen.warwick.ac.uk/src/>

- OLD:

- trunk/pgenerators

- EvtGen ★
- Photos ★
- EvtGenBase
- EvtGenModels
- EvtGenDirect ★



- NEW:

- trunk/pgenerators/EvtGen ★

- Photos ★
- Photo3.5 ★
- Tauola ★
- Tauola-107-LHC ★
- EvtGen ★
- R01-01-00 ★
 - EvtGenBase
 - EvtGenModels
 - ...
- EvtGenDirect ★
- Standalone ★

★ contains original (=mostly unmodified) package

★ contains the CMakeLists.txt

- Put anything EvtGen related in one folder
- Do it in a way, that package updates can be done as easy as possible.
 - like including directly their repository
- Leave the possibility to move packages to fairsoft (e.g. photos?)
- But: Allow for private extensions (=models) to EvtGen

- NEW:
 - trunk/pgenerators/EvtGen ★
 - Photos ★
 - Photo3.5 ★
 - Tauola ★
 - Tauola-107-LHC ★
 - EvtGen ★
 - R01-01-00 ★
 - EvtGenBase
 - EvtGenModels
 - ...
 - Private
 - EvtGenDirect ★
 - Standalone ★
 - Decays
- This CMakeLists.txt configures the subdirectories
- Plus a folder with softlinks for include files
- Plus a folder with softlinks for include files
- Put here a folder for private models.
- PandaRoot task
- simpleEvtGen executable
- Panda specific decay files like "Physics Book"

- The following models have been adopted to the new version:
 - EvtDeuteronSpectator
 - EvtElectronPositron
 - EvtLambdaLambdaBar/Pol/HE
 - EvtPpbarGammaGamma/EtacGamma/Pi0Gamma
- Please test!
- New models have to added to the following file in the “Private” folder:
EvtModelReg.cpp
- Submit them to EvtGen if useful for other experiments.

- Photos: Small patch (missing includes), will be fixed in 3.5.2(?)
- Photos: Compiler complains Problem with redefined variable i
- Naming clash between EvtGen “report” enums (ERROR, INFO, DEBUG) and the ones from fair logger class.
 - request sent
- simpleEvtGen needs cout streamer for text output. commented in C file, still in header file. unclear why (obsolete interface?). uncommented -> works
 - request sent
- simpleEvtGen crashes if the EvtGen internal Random is used, works with root's TRandom nevertheless
 - reason found, bugfix submitted
- EvtGenDirect uses old interface to EvtGen -> should be updated!
- Tests:
 - simpleEvtGen new vs old: different results... different random numbers

- No way to have both in parallel
 - Hard transition.
 - Testers needed!!!
 - First Step: HepMC in fairsoft - done
 - Cmake script for noticing HepMC – existing
 - Working version in developers repository
- Are there any other PANDA specific patches or extension we have to preserve?
- Summary:
 - Until now, we cannot link to foreign repositories (yet) due to some name clashes and few unfixed problems with new compilers
 - The longer we wait with the transition, the more problems we might get
 - Put in trunk only after more testing.
 - No changes for the typical user besides new evt.pdl and decay files

Backup

Instructions for HepMC in the external packages:

in folder generators, wget

<http://lcgapp.cern.ch/project/simu/HepMC/download/HepMC-2.06.09.tar.gz>

in folder scripts apply diffs and add the new script `install_hepmc.sh`
and dont forget to apply diff to the main `configure.sh`

rerun `./configure.sh`

Remarks:

Pythia8 needs the HepMc interface enabled. Which is done by default if the HepMc path is set before pythia is compiled. no change needed.

There are a few things which are not "polished" yet.

- a) library names and static libraries. the hepmc uses additional soft-link library names (version numbers). I am not sure if they are needed.
- b) test programs. they are just not used.
- c) propagate the HEPMC path to pandaroot. (fixed... see FindHEPMC in pandaroot trunk/cmake/modules)

```
Add FindHEPMC.cmake in pandaroot trunk/cmake/modules
Add "find_package(HEPMC)" to the main CMakeLists.txt in trunk
Comment the EvtGenDirect line in the main CMakeLists.txt in trunk
```

```
Enter pgenerators and (re)move/rename EvtGenDirect and EvtGen
Unpack my EvtGen_Update.tgz to EvtGen/
Recompile from your built directory.
Complain if something is not working.
```

- ctests
- EvtGen Test cases ...
- ...