

Using the Pythia8Interface to CMSSW

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Resources

- Pythia website: <http://www.thep.lu.se/~torbjorn/Pythia.html>
 - A Brief Introduction to PYTHIA 8.1 [arXiv:0710.3820](http://arxiv.org/abs/0710.3820)
 - Pythia 8.100 Online-Manual: <http://www.thep.lu.se/~torbjorn/php8100/Welcome.php>
- Analysis code: <http://cmssw.cvs.cern.ch/cgi-bin/cmssw.cgi/CMSSW/GeneratorInterface/Pythia8Interface/?cvsroot=CMSSW>
- GENSER directory with Pythia 8 libraries: `/afs/cern.ch/sw/lcg/external/MCGenerators/pythia8`

How to compile GeneratorInterface/Pythia8Interface with Pythia 8.100 in CMSSW_1_6_7 on slc4_ia32_gcc345

- setup your working area

```
export PYTHIASUBVERSION=100
export CMSSWVERSION=CMSSW_1_6_7
export SCRAM_ARCH=slc4_ia32_gcc345
export VO_CMS_SW_DIR=/afs/cern.ch/cms/sw
source /afs/cern.ch/cms/sw/cmsset_default.sh
scramv1 project CMSSW $CMSSWVERSION
```

- copy the Pythia 8 libraries into \$CMSSWVERSION/lib/\$SCRAM_ARCH

```
cp /afs/cern.ch/sw/lcg/external/MCGenerators/pythia8/$PYTHIASUBVERSION/slc4_ia32_gcc34/lib/archive/libhepmc
$CMSSWVERSION/lib/$SCRAM_ARCH/.
cp /afs/cern.ch/sw/lcg/external/MCGenerators/pythia8/$PYTHIASUBVERSION/slc4_ia32_gcc34/lib/archive/liblhep
$CMSSWVERSION/lib/$SCRAM_ARCH/.
cp /afs/cern.ch/sw/lcg/external/MCGenerators/pythia8/$PYTHIASUBVERSION/slc4_ia32_gcc34/lib/archive/libpyth
$CMSSWVERSION/lib/$SCRAM_ARCH/libpythia8_$PYTHIASUBVERSION.a
```

- go to directory \$CMSSWVERSION/.SCRAM/\$SCRAM_ARCH
- create your private pythia tool file
- pythia8_\$PYTHIASUBVERSION

```
< doc type=BuildSystem::ToolDoc version=1.0 >
< Tool name=pythia8_100 version=1.0 >

< Environment name=LIBDIR default="/afs/cern.ch/sw/lcg/external/MCGenerators/pythia8/$PYTHIASUBVERSION/slc
</Environment>

< Environment name=INCLUDE default="/afs/cern.ch/sw/lcg/external/MCGenerators/pythia8/$PYTHIASUBVERSION/sl
</Environment>

< lib name=pythia8 >
< lib name=hepmcinterface >

< Runtime name=PYTHIA8DATA value="/afs/cern.ch/sw/lcg/external/MCGenerators/pythia8/$PYTHIASUBVERSION/shar

</Tool>
```

- set up the tool (while you're in \$CMSSWVERSION/.SCRAM/\$SCRAM_ARCH)

```
scramv1 setup pythia8_$PYTHIASUBVERSION 1.0 file:./pythia8_$PYTHIASUBVERSION
```

- Checkout the code

```
cd $CMSSWVERSION/src  
project CMSSW  
cvs co -r v167 GeneratorInterface/Pythia8Interface
```

- Build the code

```
eval `scramv1 runtime -sh`  
scramv1 b
```

- Run the example code in GeneratorInterface/Pythia8Interface/test

```
cmsRun GeneratorInterface/Pythia8Interface/test/pythia8ex1.cfg
```

- Run the example code in `GeneratorInterface/Pythia8Interface/test`

```
cmsRun GeneratorInterface/Pythia8Interface/test/pythia8ex1.cfg
```

- Look at output

Pythia8Source: initializing Pythia.

Pythia PYLIST verbosity level = 1

Pythia HepMC verbosity = 1

```
Number of events to be printed = 1
```

Setting Pythia8 random number seed

```
*-----*
```

```
|
```

```
|
```

```
|      *-----*
```

```
|
```

```
|
```

```
|
```

```
|    PPP   Y   Y TTTTT H   H III     A       Welcome to the Lund Monte Carlo!
```

```
|    P  P   Y Y     T   H   H I     A A      This is PYTHIA version 8.100
```

```
|    PPP         Y     T   HHHHH I   AAAAA Last date of change: 20 Oct 2007
```

```
|    P          Y     T   H   H I   A   A
```

```
|    P          Y     T   H   H III  A   A      Now is 29 Oct 2007 at 15:40:11
```

```
|
```

```
|
```

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```
|
```




View of /CMSSW/GeneratorInterface/Pythia8Interface/data/Pythia8Example1.cfi

[Parent Directory](#) | [Revision Log](#) | [Revision Graph](#)

Revision 1.2 - ([download](#)) ([annotate](#))

Wed Oct 31 14:02:34 2007 UTC (2 months, 2 weeks ago) by *mkirsano*

Branch: **MAIN**

CVS Tags: **v167**, **HEAD**

Changes since 1.1: **+0 -1 lines**

changes for CMSSW_1_6_X

```
source = Pythia8Source
{
  # to printout pythia event record (call pylist)
  untracked int32 pythiaPylistVerbosity = 0
  # to printout HepMC::GenEvent record (HepMC::GenEvent::print())
  untracked bool pythiaHepMCVerbosity = false
  untracked int32 maxEventsToPrint = 0

  PSet PythiaParameters =
  {
    vstring parameterSets =
    {
      "pythia8_example01"
    }

    vstring pythia8_example01 =
    {
      "HardQCD:all = on",
      "PhaseSpace:pTHatMin = 20."
    }
  }
}
```