

General information

- <https://cmsweb.cern.ch/>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/WorkBook>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideFrameWork>
- CMSSW cheat sheet: <https://twiki.cern.ch/twiki/bin/view/Main/CMSSWCheatSheet>
- Git/CMSSW repository: <https://github.com/cms-sw/cmssw>
- Git/CMSSW documentation: <https://github.com/cms-sw/cms-sw.github.io>
- <http://cmslrx.fnal.gov/>
- <https://cmssdt.cern.ch/SDT/doxygen/>
- `edmPluginHelp -p PoolSource` (PoolSource can be replaced by any module)

Git commands

- CMSSW has a github integration: check files in `/cvmfs/cms.cern.ch/common/`
 - ◆ `git cms-init`: initialises a CMSSW git repository from github (`cms-sw/cmssw` has to be forked before)
 - ◆ a large repository cache will be built up at the first time (default location in afs home directory, which one should avoid), put the following line in your `.zshrc`: `export CMSSW_GIT_REFERENCE=/afs/desy.de/group/cms/pool/USER/.cmsgit-cache`
 - ◆ `git cms-addpkg`: adds a package from the repository to your build environment
 - ◆ `git cms-merge-topic`
- create new branch: `git checkout -b BRANCHNAME`
- checkout remote branch as track branch: `git checkout -t origin/BRANCHNAME`
- push new branch to remote repo: `git push -u origin BRANCHNAME`
- remove local branch: `git -D BRANCHNAME`
- Update remote branch list on local machine: `git remote update origin --prune`
- remove remote branch connection in local repo: `git branch -d -r origin/BRANCHNAME`

How to get official samples

Finding centrally produced samples

- <https://cmsweb.cern.ch/das/>

Producing samples using official recipes

- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideCmsDriver>

Data-TIER definitions

- http://cmslrx.fnal.gov/lxr/source/Configuration/EventContent/python/EventContent_cff.py
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/WorkBookDataFormats>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideRecoDataTable>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideAodDataTable>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/WorkBookMiniAOD>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/WorkBookMiniAOD2015>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/WorkBookMiniAOD2016>

Conditions/ Global Tag

- Global Tag Browser: <https://cms-conddb.cern.ch/cmsDbBrowser/index/Prod>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideFrontierConditions>
- <https://twiki.cern.ch/twiki/bin/view/CMS/AICaDB>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideCondDB>
- show content of global tag: conddb list 80X_dataRun2_Prompt_v15
- show content (IOV=interval of validity, payload) of tag: conddb SiPixelGainCalibration_2009runs_express
- strip gain payloads:
 - ◆ <https://test-stripcalibvalidation.web.cern.ch/test-stripcalibvalidation/CalibrationValidation/ParticleGain/>
 - ◆ <file:///afs/cern.ch/cms/tracker/sistrvalidation/WWW/CalibrationValidation/ParticleGain/>
- sqlite subfolder contains payload info
- inspect like:
 - ◆ `sqlite3 -line /afs/cern.ch/cms/tracker/sistrvalidation/WWW/CalibrationValidation/ParticleGain/Run_285368_to_28`
 - ◆ `.tables`
 - ◆ `select * from IOV;`
 - ◆ `.quit`

Working Twikis

- <https://twiki.cern.ch/twiki/bin/view/CMS/HiggsToTauTauWorking2016>

CMSSW framework

CMSSW config files

- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideAboutPythonConfigFile>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideEDMPathsAndTriggerBits>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideDeclarePlugins>

New products, skims, slims

- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideCreatingNewProducts>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideSkimConfiguration>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideThinnedCollections>

Thread-safe modules

- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/FWMultithreadedFrameworkTransitions>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/FWMultithreadedFrameworkModuleTypes>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/FWMultithreadedAnalysisEDAnalyzer>

Ready-to-use modules/ code fragments

- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuidePhysicsCutParser>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideSkeletonCodeGenerator>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuidePhysicsTools>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideCandidateModules>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideCandCombiner>

- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideGenericSelectors>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuidePhysicsCutParser>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideEDMNTuples>

PAT

- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuidePAT>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuidePATUserData>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuidePATMCMatching>

FW-Lite

- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideFWLiteScanner>

generator information

- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideDataFormatGeneratorInterface>

dE/dx related information

- <https://twiki.cern.ch/twiki/bin/view/CMS/DEdx>

NAF links

- find out quota on SONAS: <https://sonas-quota.desy.de/index>

Technical issues

SCRAM build system

- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideScram>

EDM data structures

- in case you want to make use of polymorphism (you want to run over `pat::Tau` and `pat::Muon` collections, but you use only the common properties from `pat::Candidate`) use `emd::View<pat::Candidate>` instead of `std::vector<pat::Tau>` or `std::vector<pat::Muon>`
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/WorkBookCommonContainersEdm>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/WorkBookAssociationMap>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideEDMRef>

Software Guide on CRAB

- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideCrab>
- CRAB cheat sheet: <https://twiki.cern.ch/twiki/bin/view/CMSPublic/CRAB3CheatSheet>
- tutorial (introductory): <https://twiki.cern.ch/twiki/bin/view/CMSPublic/WorkBookCRAB3Tutorial>
- tutorial (advanced): <https://twiki.cern.ch/twiki/bin/view/CMSPublic/CRAB3AdvancedTutorial>

General C++

- <http://www.cplusplus.com/reference/utility/move/>
- https://en.wikipedia.org/wiki/Smart_pointer
- http://www.cplusplus.com/reference/memory/unique_ptr/
- http://www.cplusplus.com/reference/memory/shared_ptr/

Debugger and further Software Development Tools

- How to use valgrind to check for memory leaks and performance bottle necks:
<https://twiki.cern.ch/twiki/bin/view/CMSPublic/WorkBookOptimizeYourCode>

Lumi

- <https://twiki.cern.ch/twiki/bin/view/CMS/LumiCalc>
- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideGoodLumiSectionsJSONFile>
- <http://cms-service-lumi.web.cern.ch/cms-service-lumi/brilwsdoc.html>

on lxplus:

```
export PATH=$HOME/.local/bin:/afs/cern.ch/cms/lumi/brilconda-1.0.3/bin:$PATH
brilcalc lumi -b 'STABLE BEAMS' --normtag /afs/cern.ch/user/l/lumipro/public/normtag_file/normtag
```

Test samples

- https://cmsweb.cern.ch/das/request?input=dataset%3D%2FTT_TuneCUETP8M1_13TeV-powheg-pythia8%2Fdataset=/TT_TuneCUETP8M1_13TeV-powheg-pythia8/RunIIFall15DR76-25nsFlat10to25TSG_76X_mcRun2_asymptotic_v11
- [globaltag=76X_mcRun2_asymptotic_v11](https://cmsweb.cern.ch/das/request?input=dataset%3D%2FTT_TuneCUETP8M1_13TeV-powheg-pythia8%2Fglobaltag=76X_mcRun2_asymptotic_v11)

Official Production (MC and data)

general

- Physics Performance and Datasets Group: <https://twiki.cern.ch/twiki/bin/view/CMS/PPDOrganization>
- Physics Data And Monte-Carlo Validation Subgroup:
<https://twiki.cern.ch/twiki/bin/view/CMS/PdmV>
- website with tools: <https://cms-pdmv.cern.ch/>

database of official MC production setups

- MC request management: <https://twiki.cern.ch/twiki/bin/view/CMS/McM>,
<https://cms-pdmv.cern.ch/pmp/>
- click on OutputDatasets and enter the DAS name of your dataset of interest
- click on setup icon in order to see the cmsDriver setup

data reprocessing

- Data Reprocessing: <https://twiki.cern.ch/twiki/bin/view/CMS/PdmVDataReprocessing>
- Production Monitoring Platform: <https://cms-pdmv.cern.ch/pmp/>

Example use of cmsDriver.py

- <https://twiki.cern.ch/twiki/bin/view/CMSPublic/SWGuideCmsDriver>

- howto create RECO from RAW+AOD (for pixel):
<https://twiki.cern.ch/twiki/bin/view/CMS/PixelRecipes>

GEN-SIM-RAW

```
cmsDriver.py test.py \
  --step RAW2DIGI,L1Reco,RECO \
  --eventcontent RECO SIM \
  --filein file:RunIIFall15DR76_TT_TuneCUETP8M1_13TeV-powheg-pythia8_GEN-SIM-RAW_25nsFlat10to25TS
  --fileout test.root \
  --conditions 76X_mcRun2_asymptotic_v13 \
  -n 1 \
  --no_exec
```

GEN-AODSIM

```
cmsDriver.py Configuration/Generator/python/bbA_MSSM_MA150GeV_tanB15_13TeV_pythia6_cfi.py \
  --step GEN, SIM, DIGI, L1, DIGI2RAW, HLT:GRun, RAW2DIGI, L1Reco, RECO \
  --pileup_input dbs:/MinBias_TuneA2MB_13TeV-pythia6/Fall13-POSTLS162_V1-v1/GEN-SIM \
  --pileup AVE_20_BX_25ns \
  --conditions 80X_mcRun2_asymptotic_2016_miniaODv2 \
  --era Run2_25ns \
  --magField 38T_PostLS1 \
  --geometry Extended2015 \
  --beamspot Realistic8TeVCollision \
  --datatier GEN-SIM \
  --mc \
  --eventcontent AODSIM \
  --python_filename bbA_MSSM_MA150GeV_tanB15_13TeV_pythia6_FULLSIM_cfg_1.py \
  -n 100 --no_exec \
  --fileout /nfs/dust/cms/user/perieanu/bbA_MSSM_MA150GeV_tanB15_13TeV_pythia6/AOD/bbA_MSSM_MA150
```

AODSIM-miniAOD

```
cmsDriver.py miniAOD \
  --step PAT \
  --conditions 80X_mcRun2_asymptotic_2016_miniaODv2 \
  --era Run2_25ns \
  --datatier MINIAODSIM \
  --mc \
  --eventcontent MINIAODSIM \
  --filein file:/nfs/dust/cms/user/perieanu/bbA_MSSM_MA150GeV_tanB15_13TeV_pythia6/AOD/bbA_MSSM_MA150
  --fileout /nfs/dust/cms/user/perieanu/bbA_MSSM_MA150GeV_tanB15_13TeV_pythia6/AOD/bbA_MSSM_MA150
  --python_filename bbA_MSSM_MA150GeV_tanB15_13TeV_pythia6_miniaOD_cfg_1.py \
  -n -1 --no_exec \
  --runUnscheduled
```

Re-RECO (data)

```
cmsDriver.py reprocessDeDxHitInfo \
  -s RECO \
  --runUnscheduled \
  --nThreads 4 \
  --data \
  --era Run2_2016 \
  --scenario pp \
  --conditions 80X_dataRun2_Prompt_v8 \
  --eventcontent AOD \
  --datatier AOD \
  --customise Configuration/DataProcessing/RecoTLR.customisePostEra_Run2_2016 \
  --filein inputfile.root \
  -n 500 \
  --no_exec
```

This topic: Main > CMSSWLinkCollection

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