Status report from using CEPCSW



Setup & Run CEPCSW framework

Central repository

https://github.com/cepc/CEPCSW

• Procedure to run (following the README)

Quick start

SSH to lxslc7 (CentOS 7).

Before run following commands, please make sure you setup the CVMFS:

\$ git clone git@github.com:cepc/CEPCSW.git
\$ cd CEPCSW
\$ git checkout master # branch name
\$ source setup.sh
\$./build.sh
\$./run.sh Examples/options/helloalg.py

• Edit geometry files etc.

Detector geometry setting

VXD-SIT-DC-SET

-- Using the dd4hep modules & xml files already prepared

-- Make close configuration used in the LDT by adjusting parameters/settings. (still need further works/verification)



Sub detector	N layers	${\bf Resolution} \ (\mu m)$		Material budget $(\%X_0)$
		r-ф	\mathbf{Z}	
VXD	6	2.8 / 6 / 4 / 4 / 4 / 4	2.8 / 6 / 4 / 4 / 4 / 4	
SIT	3	7	50	(0.65 per layer)
DC (cell $1x1cm^2$)	100	(110)		
SET	1	7	50	(0.65 per layer)

Checking parameters are undergoing

<u>Settings in the run script</u>

 Following existing run scripts under Example/options/***.py , Detector/DetCRD/scripts/***.py

Configurables import PlanarDigiAlg digiVXD = PlanarDigiAlg("VXDDigi") digiVXD.SimTrackHitCollection = "VXDCollection" digiVXD.TrackerHitCollection = vxdhitname digiVXD.ResolutionU = [0.0028, 0.006, 0.004, 0.004, 0.004, 0.004] digiVXD.ResolutionV = [0.0028, 0.006, 0.004, 0.004, 0.004, 0.004] digiVXD.UsePlanarTag = True #digiVXD.OutputLevel = DEBUG digiSIT = PlanarDigiAlg("SITDigi") digiSIT.IsStrip = False #digiSIT.IsStrip = True digISIT.SimTrackHitCollection = "SITCollection" digISIT.TrackerHitCollection = sithitname digiSIT.TrackerHitAssociationCollection = "SITTrackerHitAssociation" digiSIT.ResolutionU = [0.007] digiSIT.ResolutionV = [0.050] #digiSIT.ResolutionV = [0.000] digiSIT.UsePlanarTag = True #digiSIT.OutputLevel = DEBUG |digiSET = PlanarDigiAlg("SETDigi") digiSET.IsStrip = False #digiSET.IsStrip = True digiSET.SimTrackHitCollection = "SETCollection" digiSET.TrackerHitCollection = sethitname digiSET.TrackerHitAssociationCollection = "SETTrackerHitAssociation" digiSET.ResolutionU = [0.007] digiSET.ResolutionV = [0.050] #digiSET.ResolutionV = [0.000] digiSET.UsePlanarTag = True #digiSET.OutputLevel = DEBUG

```
from Configurables import FullLDCTrackingAlg
full = FullLDCTrackingAlg("FullTracking")
full.VTXTrackerHits = vxdhitname
full.SITTrackerHits = sithitname
#full.SITTrackerHits = sitspname
full.TPCTrackerHits = "NULL" # add TPC or DC tracker hit here, if TPC or DC track
full.SETTrackerHits = sethitname
#full.SETTrackerHits = setspname
full.FTDPixelTrackerHits = ftdhitname
full.FTDSpacePoints = ftdspname
full.SITRawHits
                      = sithitname
full.SETRawHits
                      = sethitname
full.FTDRawHits = ftdhitname
full.TPCTracks = "NULL" # add standalone TPC or DC track here
full.SiTracks = "SubsetTracks"
full.OutputTracks = "MarlinTrkTracks"
full.SETHitToTrackDistance = 5.
#full.OutputLevel = DEBUG
#TODO: more reconstruction, PFA etc.
# DCHDigiAlg
from Configurables import DCHDigiAlg
dCHDigiAlg = DCHDigiAlg("DCHDigiAlg")
#dCHDigiAlg.readout = "DriftChamberHitsCollection"
#dCHDigiAlg.drift_velocity = 40#um/ns
#dCHDigiAlg.mom_threshold = 0 #GeV
#dCHDigiAlg.SimDCHitCollection = "DriftChamberHitsCollection"
#dCHDigiAlg.DigiDCHitCollection = "DigiDCHitsCollection"
#dCHDigiAlg.AssociationCollection = "DCHAssociationCollection"
#dCHDigiAlg.WriteAna = False
# TruthTrackerAlg
from Configurables import TruthTrackerAlg
truthTrackerAlg = TruthTrackerAlg("TruthTrackerAlg")
truthTrackerAlg.maxDigiCut=150
truthTrackerAlg.SiSubsetTrackCollection = "MarlinTrkTracks"
# With "useSiSpacePoint" = true option, following space point hits
# are added to the hit collection for tracking
# "useSiSpacePoint" = false, shall be smart and will be next trial.
truthTrackerAlg.SITSpacePoints = sithitname
truthTrackerAlg.SETSpacePoints = sethitname
truthTrackerAlg.FTDSpacePoints = ftdspname
```

Hit map



simtracker hit map in X-Y plane

Tracking

- Flow in the run script
 - -- SubsetTrack (VXD/SIT/FTD)
 - -- MarlinTrk (SubsetTrack+ SET)
 - -- RecGenfitAlgSDT (MarlinTrk + DC)
- # I have just arrived at this stage.
 # Helps/suggestions are appreciated .

p=100GeV, muon 85deg incident, 1000events.



 $\begin{array}{l} \Delta \, p/p = 0.3335 GeV/100 GeV \sim \\ 3.3 \times 10^{-3} \end{array}$



Momentum resolution

Preliminary results.Need investigationsfurther.

