

EVENT DISPLAY FOR CLICdp

CLIC Workshop 2015

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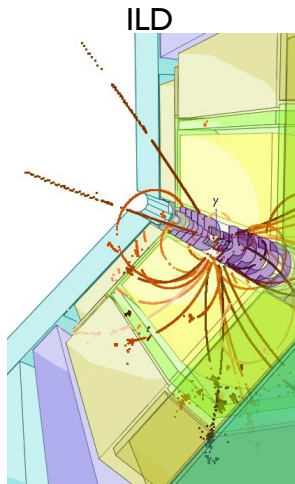


27 January 2015

CED

C Event Display

- Client ↔ Server application Marlin
 - Server (`glced`) accepts commands from Marlin
 - Based on OpenGL and OpenGL Utility Toolkit (GLUT)
 - GLUT is shipped in CVMFS or installed in SLC6 `glut-devel`
 - Client independent of visualization software (OpenGL and GLUT)
- CEDView - Marlin processor for CED
 - Starts client and server and simplifies communication
- Based on GEAR:
 - ✓ worked for ILD
 - ✓ now works also for CLIC_SiD and DD4Hep



Initialization

- ILCSOft versions are installed on CVMFS (CernVM File System)
- No need for you to install ILCSOft (if you have SLC6)
- Install CVMFS on your desktop

```
/afs/cern.ch/eng/clic/software/scripts/installCVMFS.sh
```

- Now you can initialize ILCSOft with one command

```
. /cvmfs/ilc.desy.de/sw/x86_64_gcc44_sl6/v01-17-06/init_ilcsoft.sh
```

- At present modifications not part of ILCSOft (next release)

```
svn co https://svnsrv.desy.de/public/marlinreco/CEDViewer/trunk
```

```
mkdir trunk/build
```

```
cd trunk/build/
```

```
cmake -C /cvmfs/ilc.desy.de/sw/x86_64_gcc44_sl6/v01-17-06/ILCSOft.cmake ..
```

```
make install
```

```
export MARLIN_DLL=/path_to_folder/CEDViewer/trunk/lib/libCEDViewer.so
```

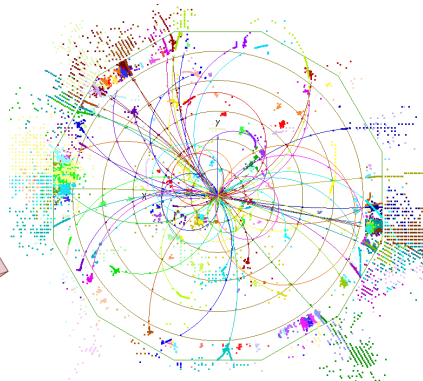
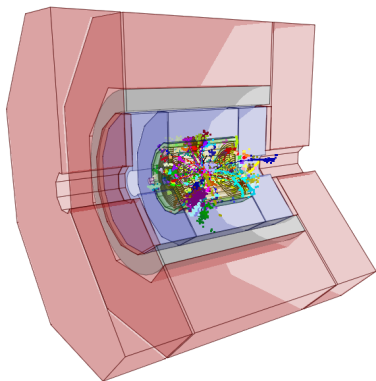
- Now you are ready!

CED Event Display for CLIC_SiD

- GEAR file created for CLIC_SiD (only for event display)
CEDViewer/trunk/ced2go/gear_CLIC_SiD.xml
- Modified template file to interface the modifications
CEDViewer/trunk/ced2go/ced2go-CLIC-template.xml

Usage:

```
ced2go -d gear.xml -t template.xml Your.slcio
```



The Template

CEDViewer

```
<parameter name="DrawInLayer">
BeamCalHits 0 3 1
EcalBarrelHits 0 3 1
EcalEndcapHits 0 3 1
HcalBarrelHits 0 3 1
HcalEndcapHits 0 3 1
HcalPlugHits 0 3 1
LumiCalHits 0 3 1
MuonBarrelHits 0 3 1
MuonEndcapHits 0 3 1

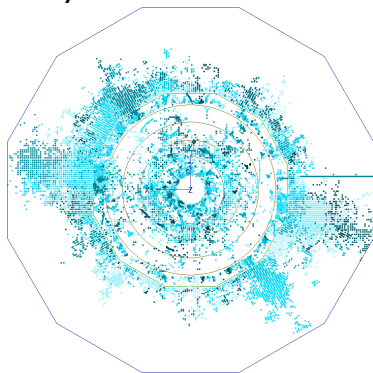
SiTrackerBarrelHits 0 3 2
SiTrackerEndcapHits 0 3 2
SiTrackerForwardHits 0 3 2
SiVertexBarrelHits 0 3 2
SiVertexEndcapHits 0 3 2

Tracks 0 3 3

SelectedPandoraPFOCollection 0 3 4
LooseSelectedPandoraPFOCollection 0 3 5
TightSelectedPandoraPFOCollection 0 3 6
PandoraPFOCollection 0 3 7

MCParticles_signal 0 3 9
MCParticle 0 3 0
</parameter>
```

- Adaptable to arbitrary collection of data
 - Specify which collection to draw
 - 1 number - shape
 - 2 number - size
 - 3 number - key on keyboard
- Wide variety of color schemes



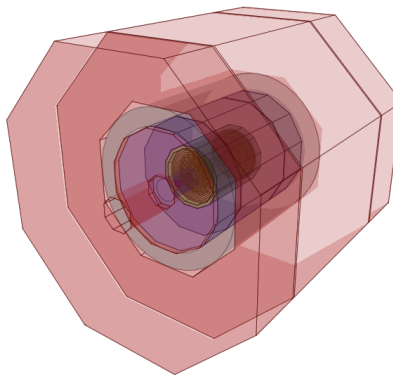
Remote usage

- Can also be used remotely
 - install CED and ILCTools on your machine
 - independent of other ILCSoft
- On the server side

```
./glced -trust pclcd24
```
- On the client side

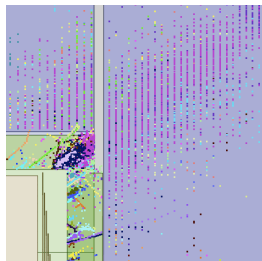
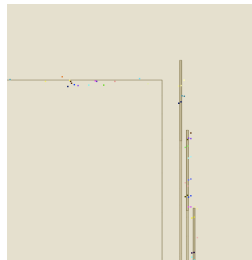
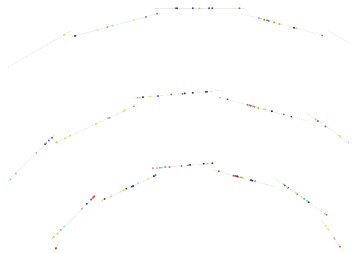
```
export CED_HOST=server_ip
export CED_PORT=7286
```
- Run Marlin with the template as to conform to Marlin steering layout

```
Marlin template.xml --global.LCIOInputFiles=YOUR.slcio
```
- No need for ILCSoft or LCIO files to on your machine
- All you need OpenGL and GLUT



Precision

- Vertex detector precise visualization – single wafers
- For performance reasons → outer detectors polyhedral tubes

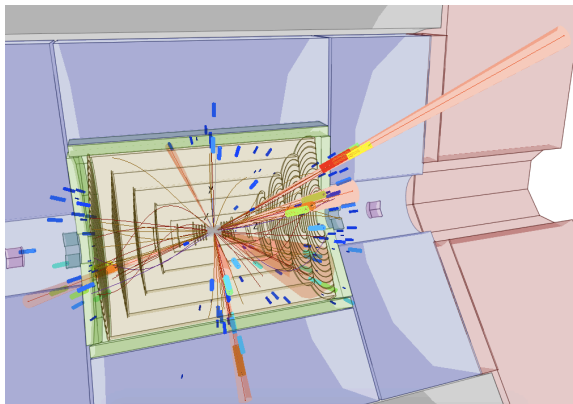
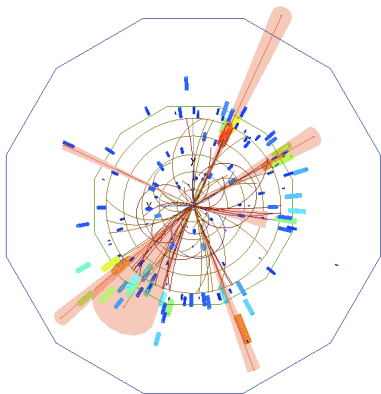


DST Viwer

- Different viewer to visualize jets

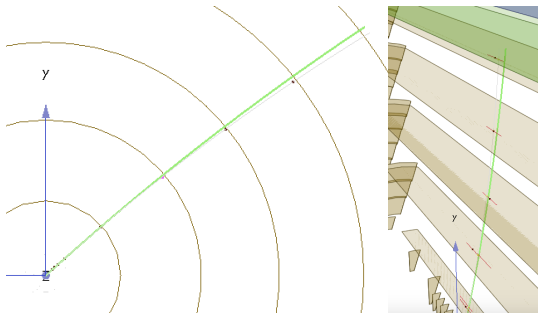
```
ced2go -v DSTViewer -d gear.xml -t template.xml ...
```

- Provide your jet collection in parameter JetCollection



Outlook

- Migration to DD4hep ongoing
- Output files created with DD4Hep compatible with geometry description



- Plan to support event display in DD4hep – in the meantime :
 - a Provide GEAR file for each new release of geometry
 - b Provide a DD4hep plugin for GEAR file extraction

Demo