



Panoramix: Interactive Data Visualization for LHCb

- ◆ Author: Guy Barrand (Framework)
- ◆ + contribution from many individuals
- ◆ Web page: <http://lhcb-comp.web.cern.ch/lhcb-comp/Frameworks/Visualization/>
- ◆ Tutorial: http://cern.ch/lhcb-reconstruction/Panoramix/Panoramix_intro.pdf

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■ Current version: **Panoramix v16r4**

■ Using: Gaudi v20r4, LBCOM_v6r26, PHYS_v8r1, ANALYSIS_v3r1, REC_v6r2, HLT_v5r1, ONLINE_v4r20, OSC v16r6

- For almost all purposes, it should be enough to setup environment using **SetupProject Panoramix**
 - ◆ No need for getpack, cvs checkouts, ...
- Panoramix is started using a special python “configurable” script (existed long before python configurables). Now mainly used for dealing with line commands, configuration done in PanoramixSysConf.

python \$myPanoramix -f InputFile -u addUserOptions

- ◆ python \$myPanoramix --help for more options
- ◆ MC 2008: **python \$myPanoramix --2008 ...**

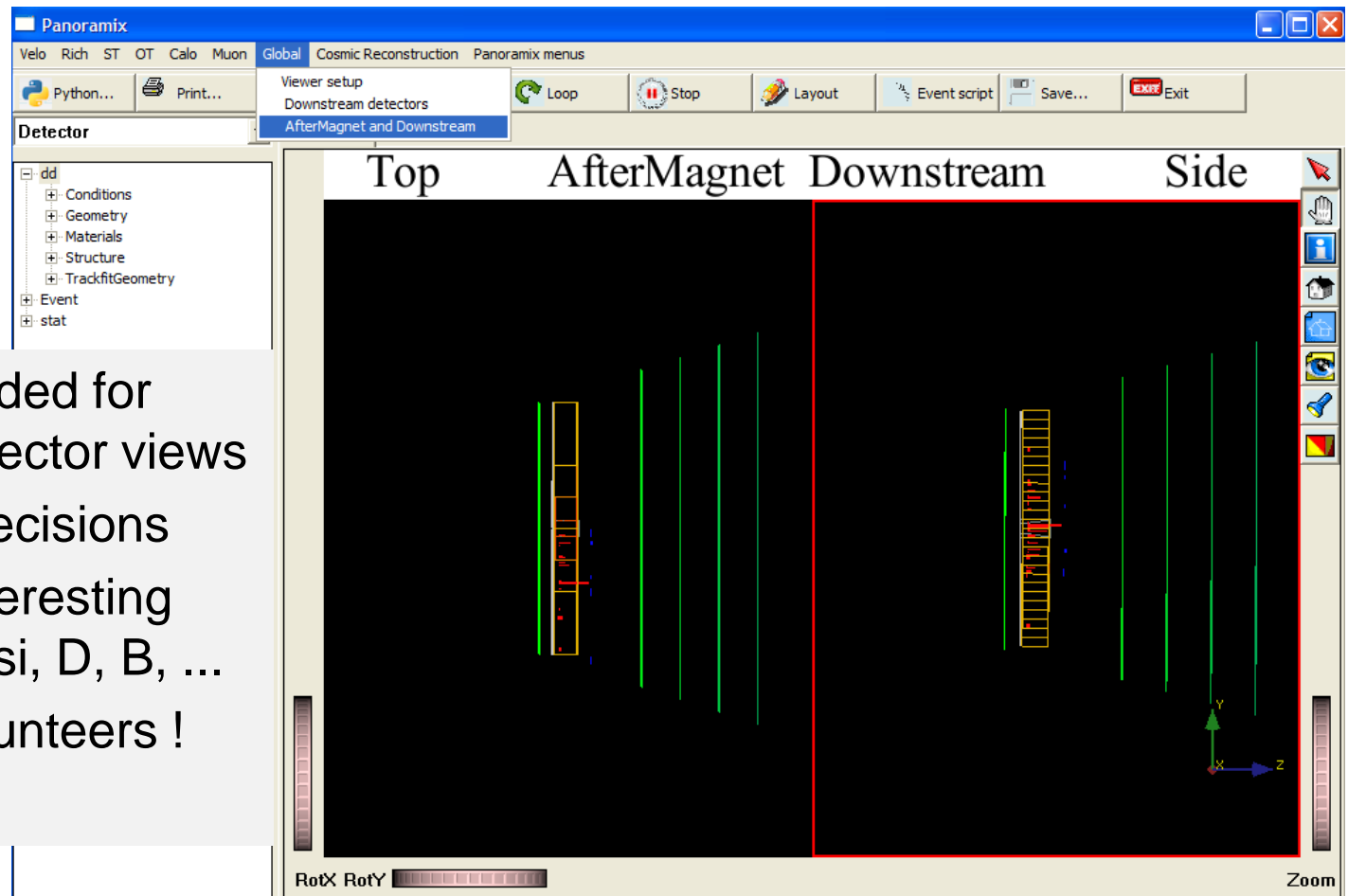
- ◆ Cosmic and beam data:

```
python $myPanoramix -f
/castor/cern.ch/grid/lhcb/data/2008/RAW/LHCb/BEAM/33062/033062_0000082835.r
aw --Cosmics
```

- ◆ Fest data:

```
python $myPanoramix --Fest
```

- Some basic views exist for individual subdetectors
- Global views currently aimed for cosmics, OT/Calo/Muon



- More work needed for specialized detector views
- Views for Hlt decisions
- Selection of interesting events Ks, J/psi, D, B, ...
- Looking for volunteers !

Some latest AddOns 2009

- Requires PanoramixSys HEAD, Panoramix HEAD and a patch for DaVinci
- Marrying Panoramix with Brunel or DaVinci configurable:
 - ◆ Until next release
 - ▶ SetupProject Panoramix v16r5 --dev --runtime-project Brunel
 - ▶ Or SetupProject Panoramix v16r5 --dev --runtime-project DaVinci
 - ◆ Then:
 - ▶ SetupProject Panoramix --runtime-project Brunel
 - ▶ Or SetupProject Panoramix --runtime-project DaVinci
 - ◆ Executing
 - ▶ `python $myPanoramix -u runBrunel.py -f someDstfile.dst`
 - ▶ with `runBrunel.py` :

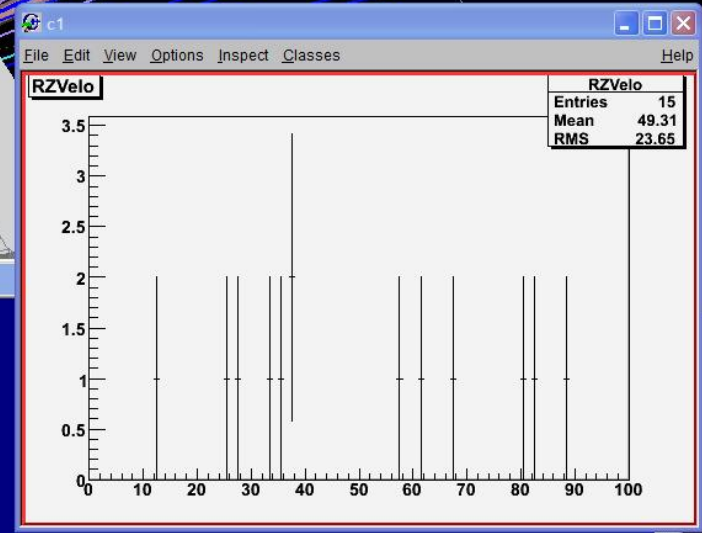
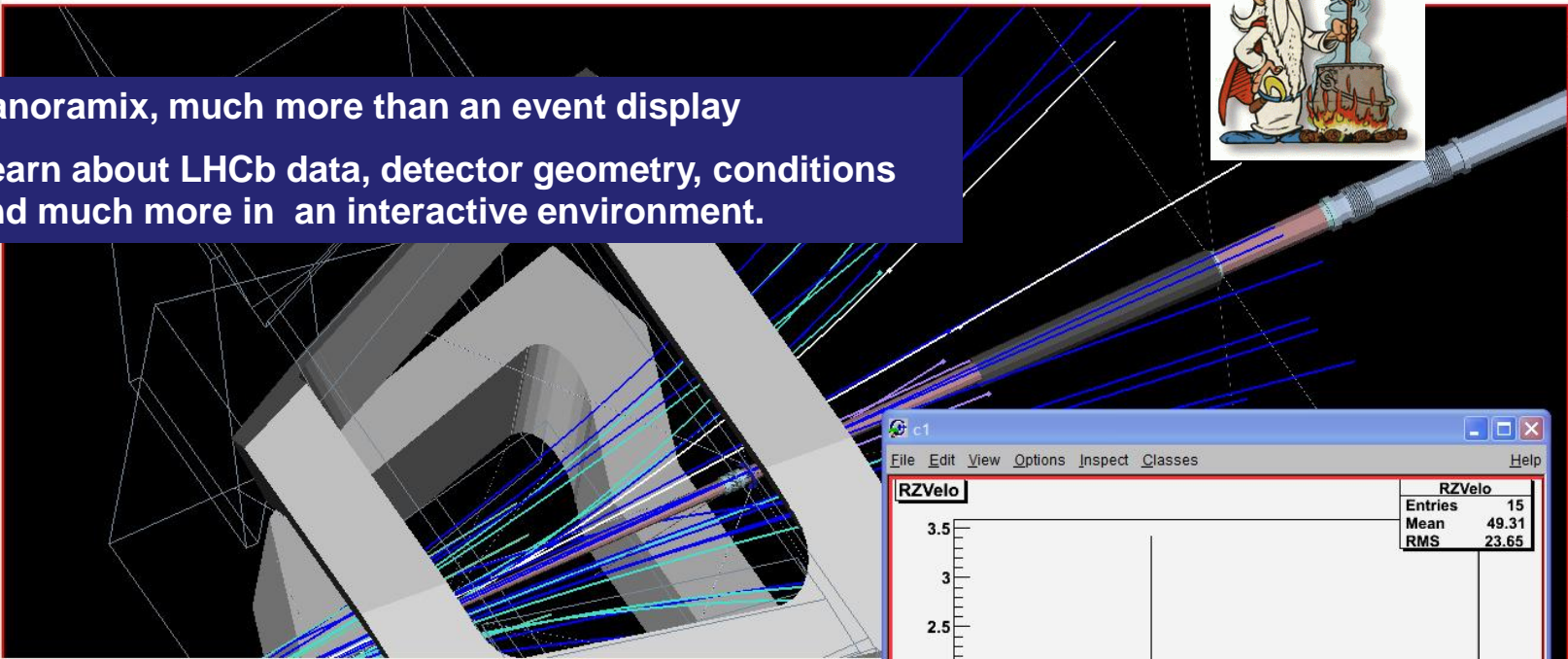

```
from Gaudi.Configuration import *
from Configurables import Brunel
Brunel().DataType          = "DC06"
Brunel().InputType        = "DST"
Brunel().WithMC           = True
```

- Detector
 - dd
 - Conditions
 - Geometry
 - Materials
 - Structure
 - TrackfitGeometry
 - Event
 - DAQ
 - Gen
 - Hit
 - Hit1
 - Link
 - MC
 - Next
 - Prev
 - PrevPrev
 - pSim
 - Raw
 - Rec
 - Calo
 - Header
 - Muon
 - ProtoP
 - Rich
 - Status
 - Track
 - Best
 - Muon
 - Vertex
 - Trig
 - stat
 - CaloPIDs
 - HistoBeamCrossing
 - CaloEt
 - CaloEt_threshold
 - PUMult
 - PUMult_threshold

3d view



- ◆ Panoramix, much more than an event display
- ◆ Learn about LHCb data, detector geometry, conditions and much more in an interactive environment.



```

ROOT session
<TCanvas::MakeDefCanvas>: created default TCanvas with name c1
>>> toui()
File "<stdin>", line 1
  toui()
  ^
SyntaxError: invalid syntax
>>> toui()
Panoramix_tree_select : /stat/Hlt1RecoVelo/Velo
OnXSvc WARNING Error creating graphical representations
>>> hist['Hlt1RecoVelo/RZVelo'].Draw()
<TCanvas::MakeDefCanvas>: created default TCanvas with name c1
>>> t5=evt['Rec/Track/Best'][5].momentum()
>>> t6=evt['Rec/Track/Best'][6].momentum()
>>> dir(t5)
['Coordinates', 'Cross', 'Dot', 'Eta', 'GetCoordinates', 'Mag2', 'Perp2', 'Phi', 'R', 'Rho', 'SetCoordinates', 'SetEta',
 'SetPhi', 'SetR', 'SetRho', 'SetTheta', 'SetX', 'SetXYZ', 'SetY', 'SetZ', 'Theta', 'Unit', 'X', 'Y', 'Z', '__add__',
 '__class__', '__delattr__', '__dict__', '__div__', '__doc__', '__eq__', '__ge__', '__getattr__', '__gt__', '__hash__',
 '__iadd__', '__imod__', '__imul__', '__init__', '__isub__', '__le__', '__lshift__', '__module__', '__mul__', '__ne__',
 'new', 'nonzero', 'reduce', 'reduce_ex', 'repr', 'setattr', '__str__', '__sub__', '__weakref__', 'x',
 'y', 'z', 'mag2', 'perp2', 'phi', 'r', 'rho', 'theta', 'unit', 'x', 'y', 'z']
>>> t5.Dot(t6)/(t5.r()*t6.r())
0.99685236234981323
>>> hist['Hlt1RecoVelo/RZVelo'].Draw()
  
```