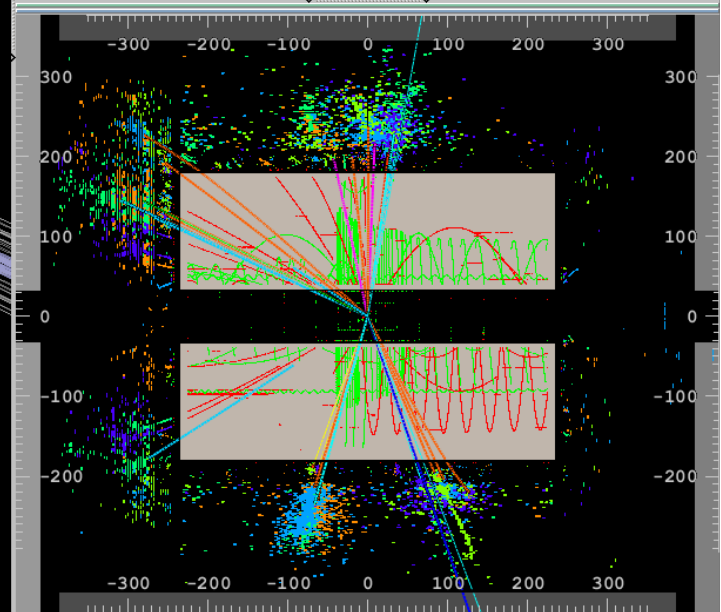
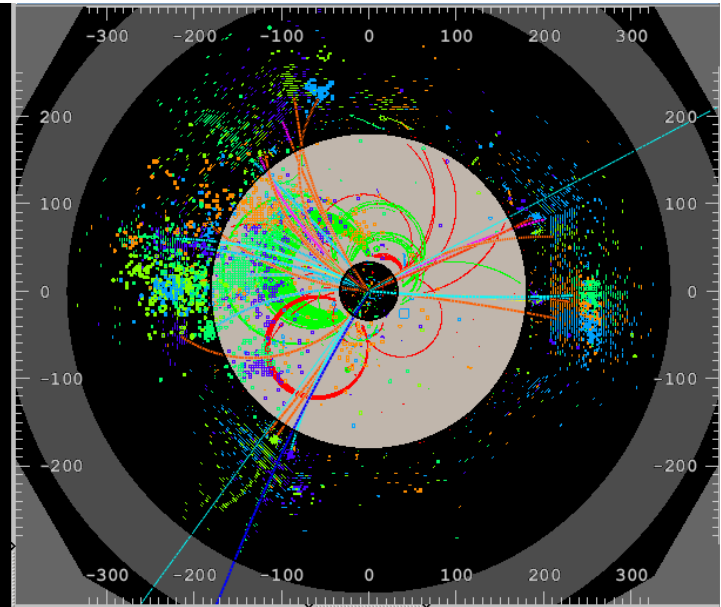
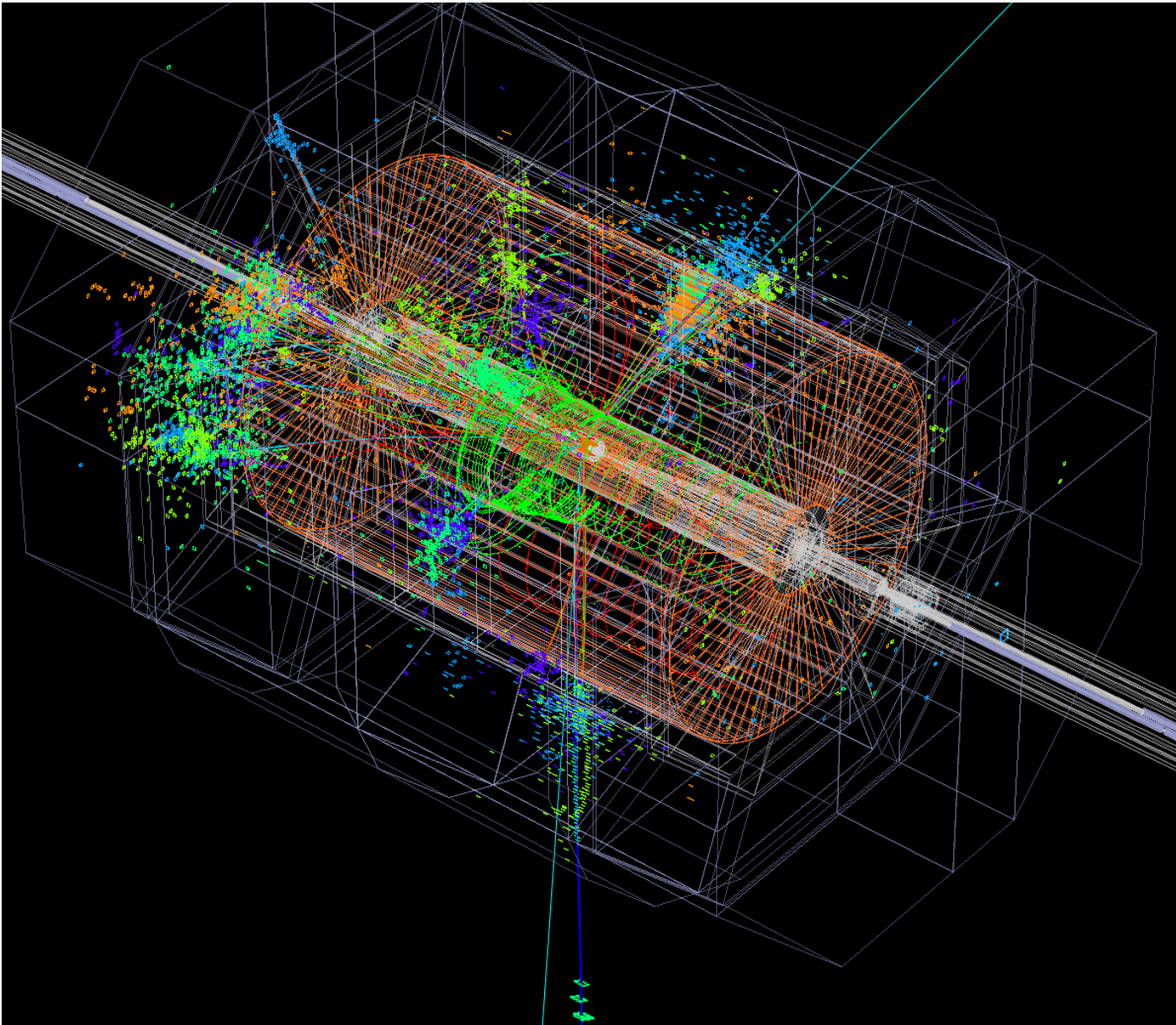
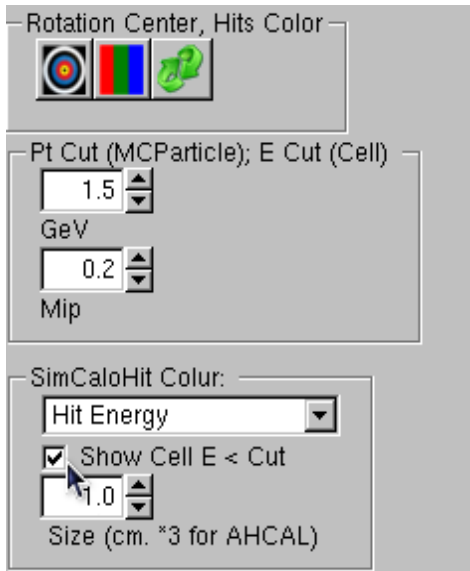
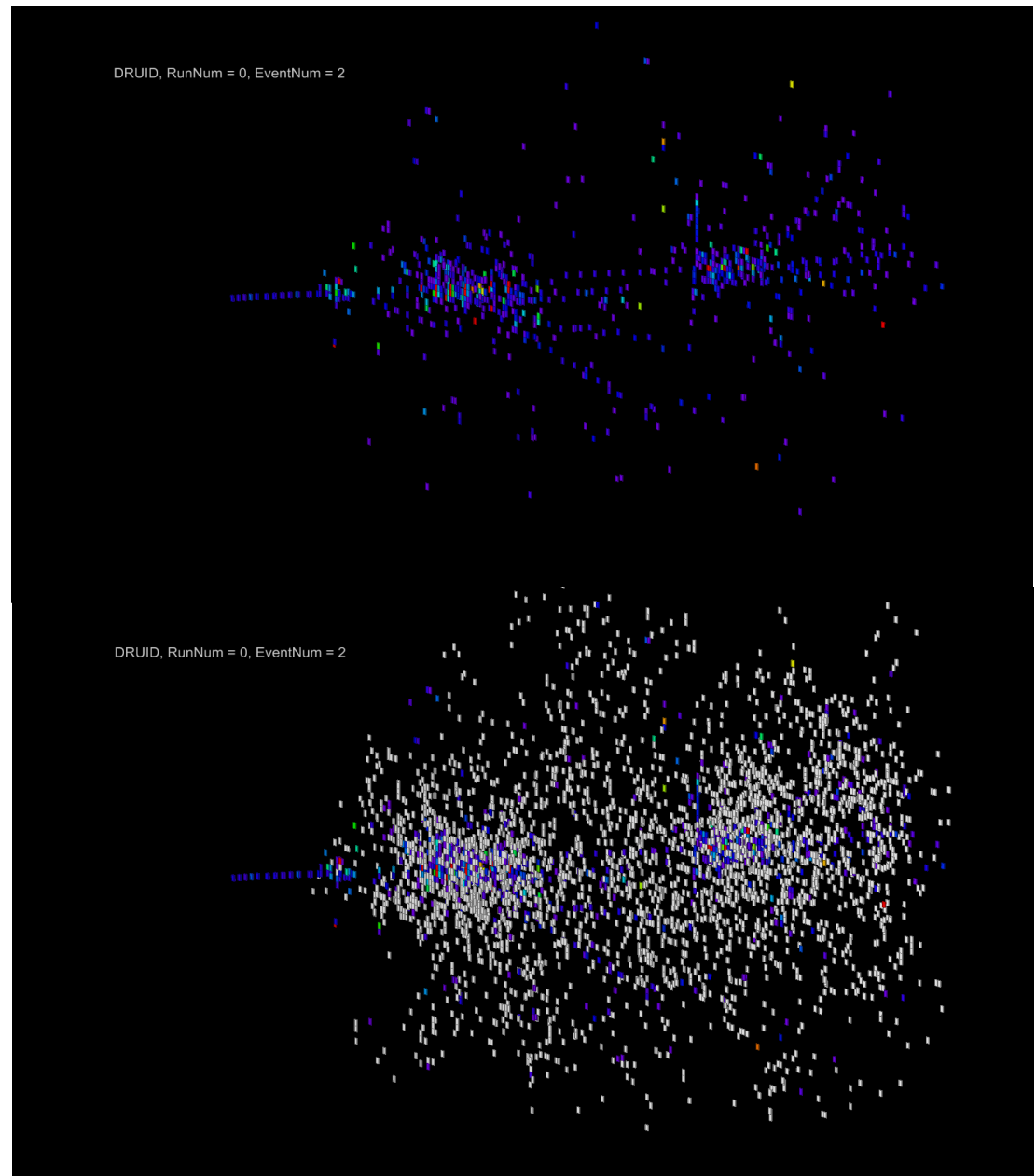


- 3D display + **Projections**
- Geometry:
  - **Less** dependency: gear supporting dropped
  - **More** detector models supported: ILD00, ILD00\_Dhcal, clic01\_ild, sidloi3, clic\_sid\_cdr\_b, CALICE TBs...
- New Options:
  - Cut on calo hits energy
  - Hit time display
- **Faster:** cleaning & acceleration

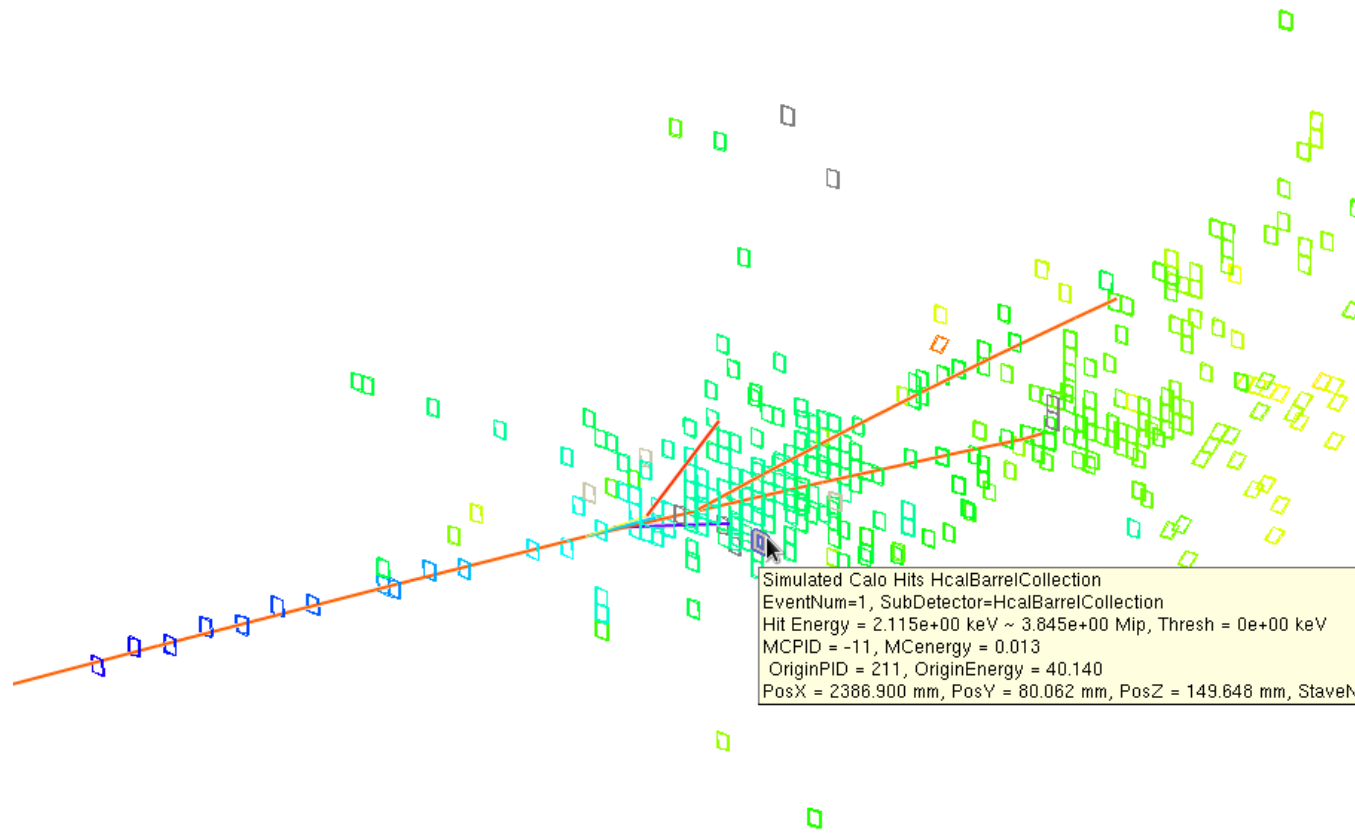




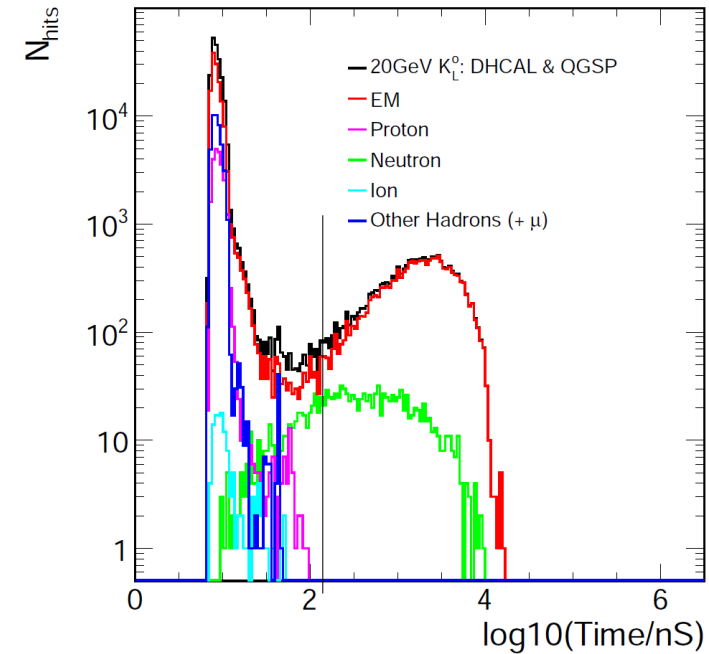
- Tunable Cut on Hit energy: in Mips
- Hide low energy hits as default. If shown, coloured with grey.
- *Example:*  
*Simulated CALICE TB event with Scintillator HCAL:*  
*50GeV Pion event with/without default energy cut at 0.2 Mip*



DRUID, RunNum = 0, EventNum = 1



Simulated Calo Hits HcalBarrelCollection  
 EventNum=1, SubDetector=HcalBarrelCollection  
 Hit Energy = 2.115e+00 keV ~ 3.845e+00 Mip, Thresh = 0e+00 keV  
 MCPID = -11, MCenergy = 0.013  
 OriginPID = 211, OriginEnergy = 40.140  
 PosX = 2386.900 mm, PosY = 80.062 mm, PosZ = 149.648 mm, StaveNum = 6, Originindex = 0, HitTime = 989.602ns



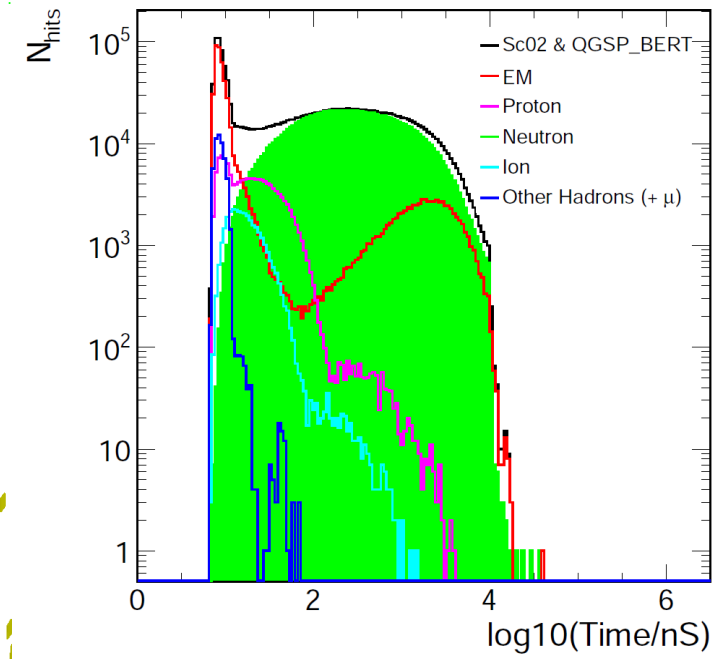
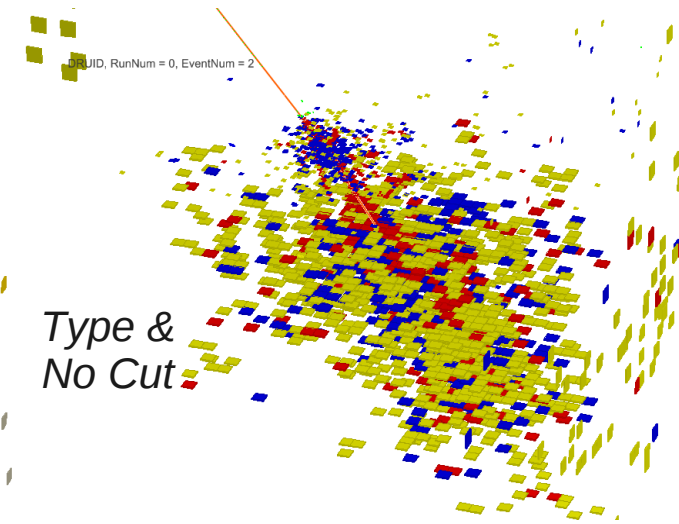
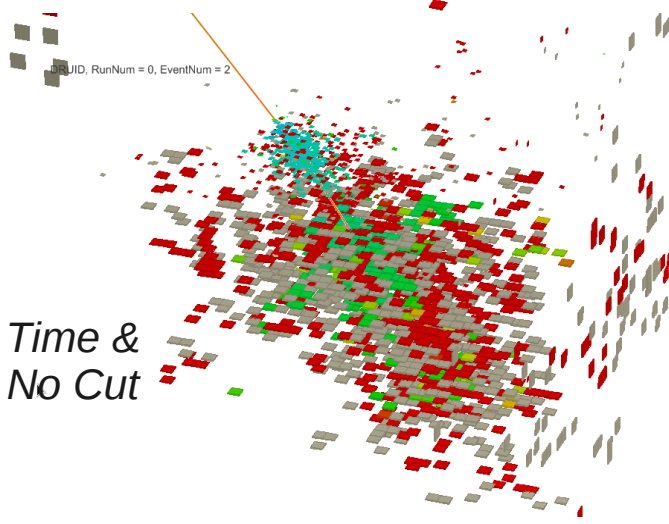
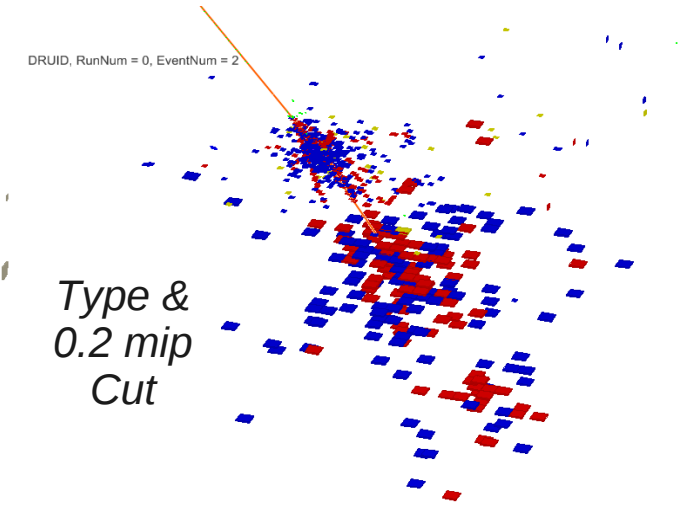
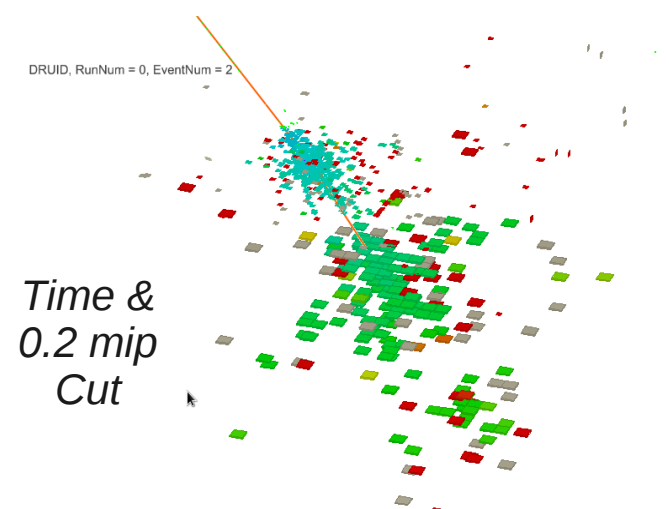
7.2% hits comes after 150 ns:  
 0.3% hits comes at 500 – 650 ns

## Neutron @ Gaseous Calorimeter:

*Direct hits: very few*

*Indirect hits: Electromagnetic hits illuminated by Neutrons – iron interaction,  $T > 100$  ns  
 ( Ongoing study: affection on energy resolution )*

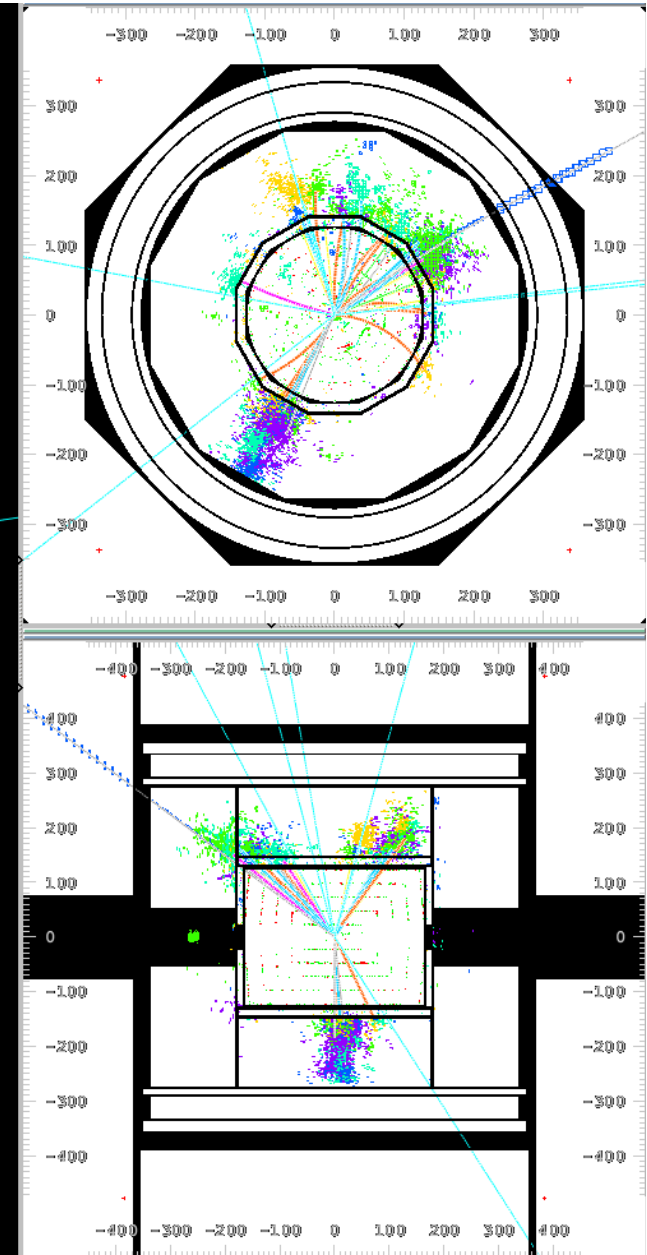
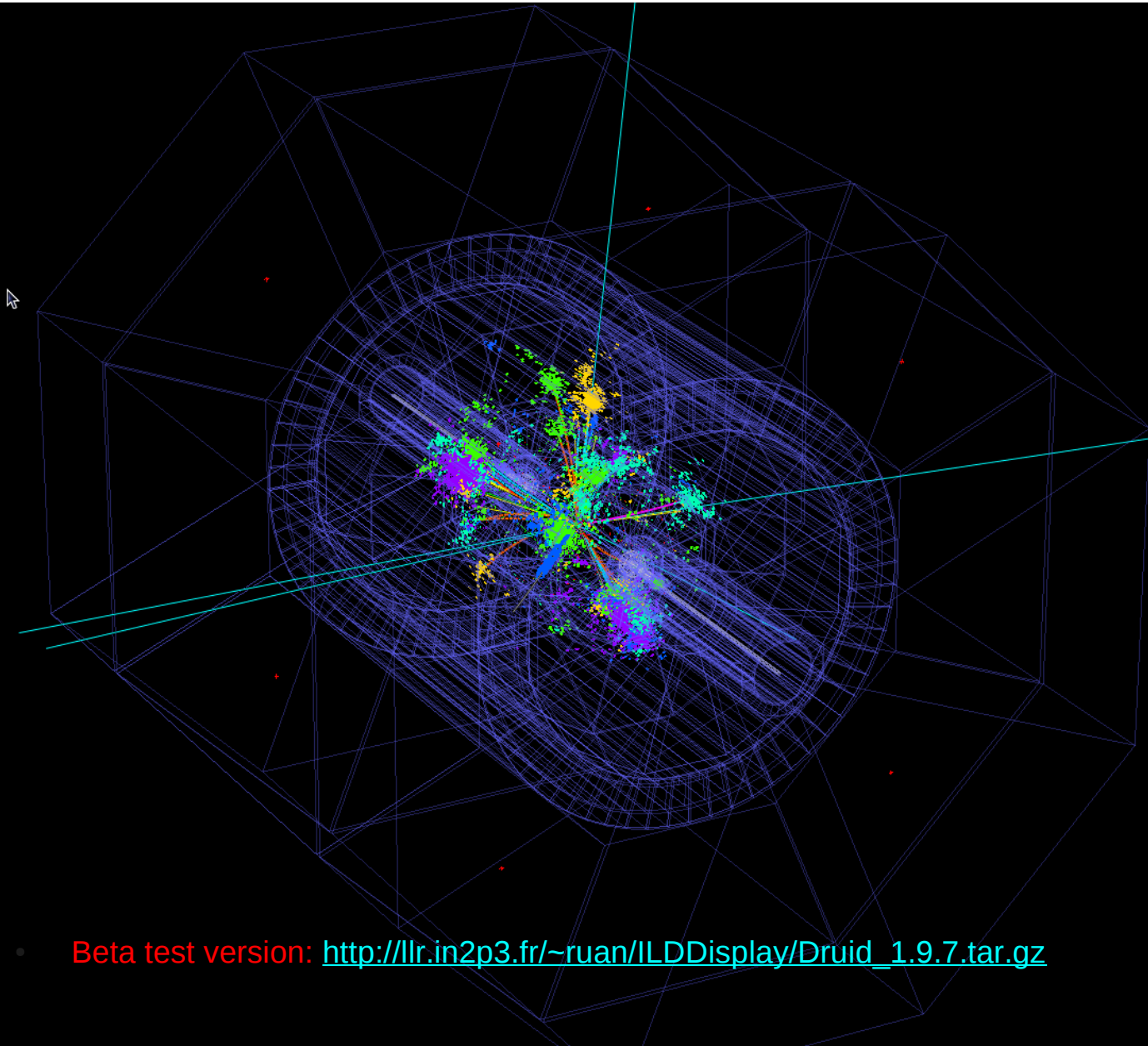
# Hit time @ AHCAL:



43% hits/6% energy comes after 150 ns

## Neutron @ Scintillator Calorimeter:

Huge statistic, most with energy < 0.2 mip, occurs during the whole duration (~ 10k ns), and illuminate late EM hits

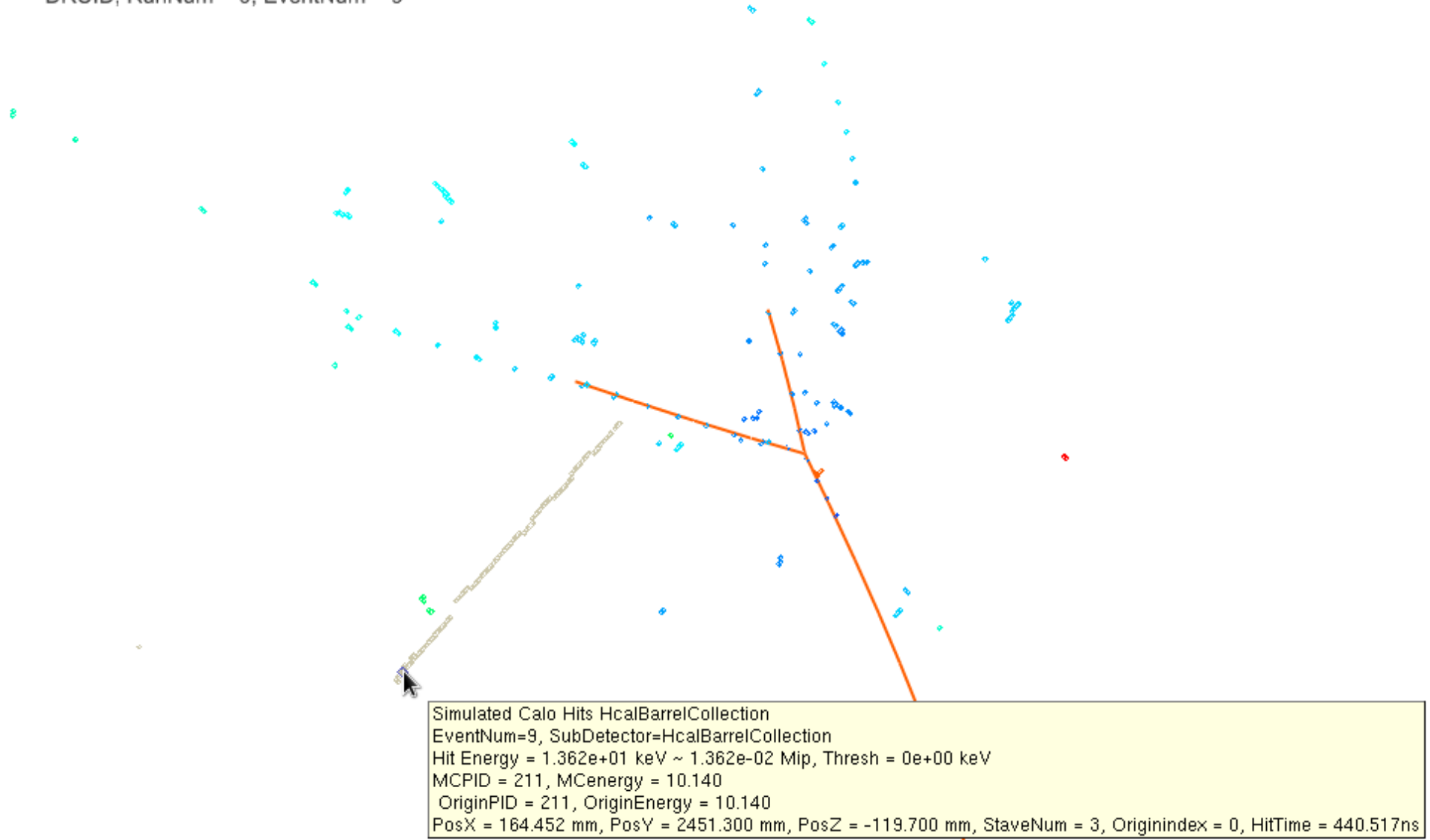


Beta test version: [http://lir.in2p3.fr/~ruan/ILDDisplay/Druid\\_1.9.7.tar.gz](http://lir.in2p3.fr/~ruan/ILDDisplay/Druid_1.9.7.tar.gz)

# To Improve: clean string noise



DRUID, RunNum = 0, EventNum = 9



- Hadronic Shower = **MIPs** + **EM** core ( *leaves?* )
- MIPs: loose ~ smaller Fractal Dimension  
EM: compact ~ large Fractal Dimension
- EM/MIP Ratio/Correlation changes at different scale
- *Possibility & method of identify EM/MIP at reconstruction?*

DRUID, RunNum = 0, EventNum = 12

