Software update

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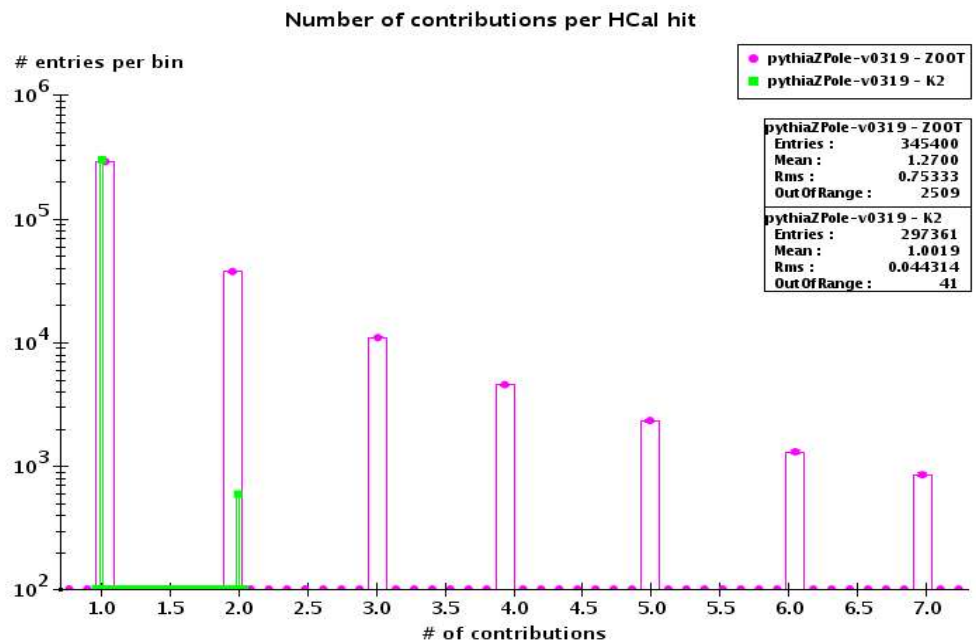
Post LCWS05 – things to do

Overall goal: detector optimization and PFA studies for Snowmass (August)

- org.lcsim: Official java framework for LCIO analysis
  - DigiSim port for java (under way, almost complete)
    Problem: raw hit classes not implemented in org.lcsim
  - Clustering algorithms - Superlayers (old) and neighborhood density (new)
  - Handlers for LCDG4 data
  - Non-projective geometries
- NP geometries into SLIC and LCCDD
- DigiSim
  - Crosstalk modifiers (started before LCWS)
  - CVS releases (DESY/C++ and java/SLAC)
- LCDG4 maintenance
  - Bug fixes (zoot vs. k2 cluster) (done)
  - CVS repository cleanup (done)
  - EMCal cell staggering (tests)
  - better LCIO compliance (sim status bits and decays inside calorimeters) (under tests)
  - Multiple primary vertices (diagnostics)

LCDG4 Status

- Problem with large average number of MC contributions to calorimeter hits.
- Problem started after LCIO upgrade (*ForLCS* to *v01-04*), with a behavior change in a SimCalorimeterHitImpl method



The fix was to replace a line:

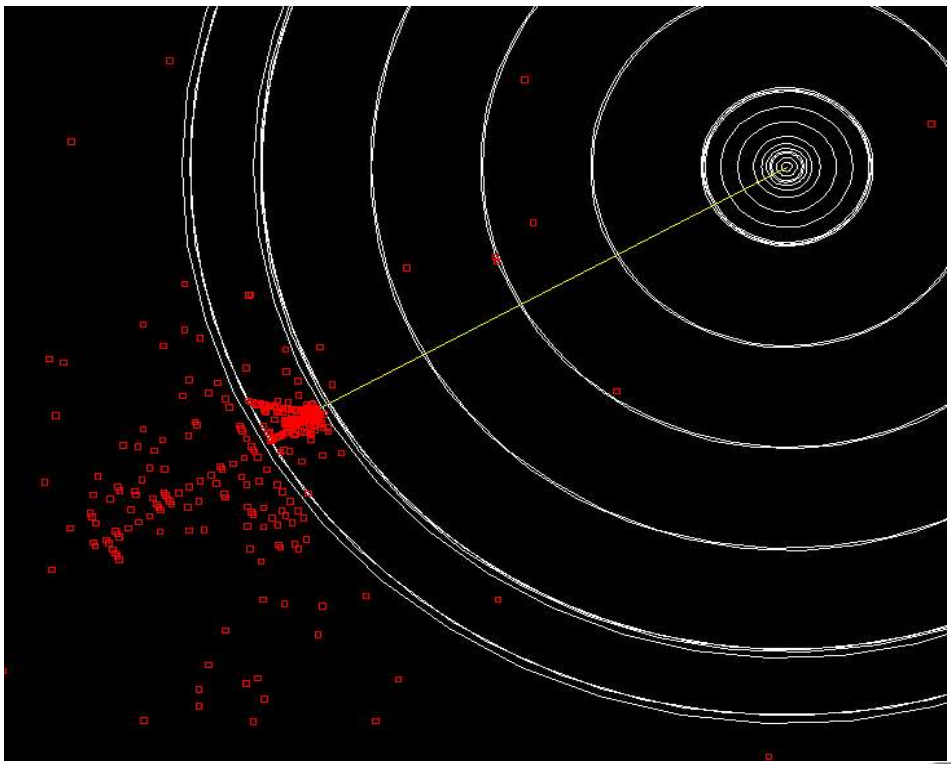
```
outhit->addMCParticleContribution( ppart, energy, time, pdgid);
```

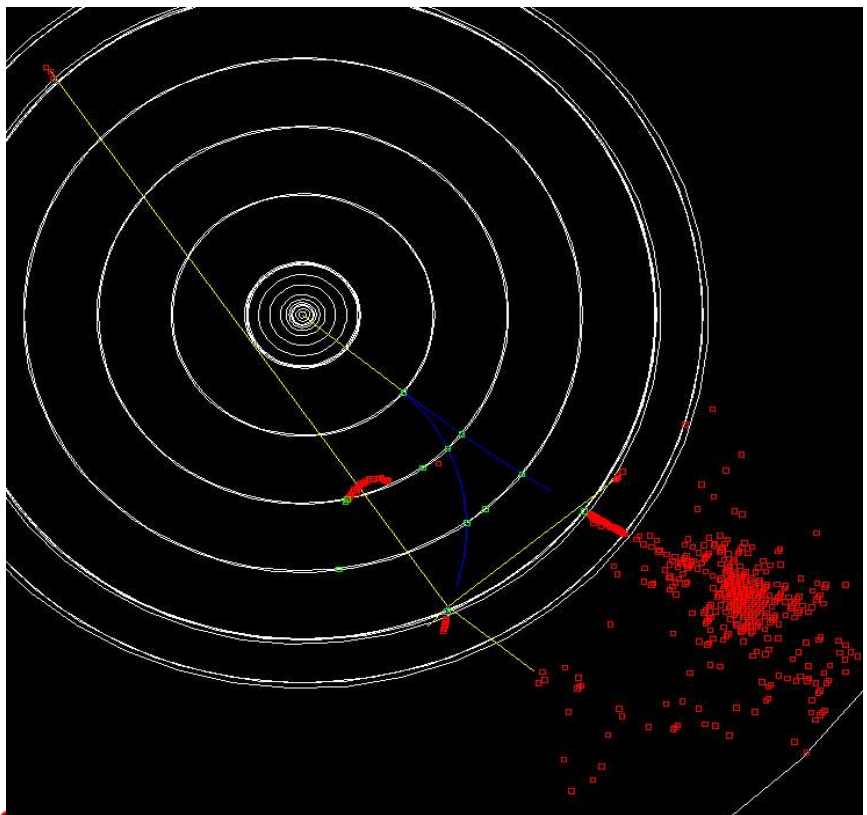
with

```
outhit->addMCParticleContribution( ppart, energy, time, 0);
```

LCDG4 Status (cont.)

- Other features implemented:
  - Workaround to pythia feature of having X(doc) into X(non-doc) “decays” (in for v03-20, 21, removed for v03-22, back since v03-23).
  - Discard preassigned decay products when decay occurs inside calorimeters





LCDG4 Status

- Some physics samples submitted to latest version (main goal was still to look for bugs remaining)
  - Z into hadrons at 91GeV: 1/20 bad
  - ttbar at 350 GeV: 6/10 bad
  - tautau at 500 GeV: 2/20 bad
  - WW at 500 GeV: 11/20 bad
  - ZH at 500 or 1000 GeV: 25/48 bad
- Good news is that all 45 crashed jobs failed with the same problem