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Subject: Conditions Data framework

Posted by [gaede](#) on Mon, 31 Jan 2005 10:01:07 GMT

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Hi,

I just posted a proposal for a conditions data framework to the Prototypes/Calorimetry forum. As this software might be interesting for a wider audience, e.g. TPC groups, I am posting a reference here as well:

[http://forum.linearcollider.org/index.php?t=msg&goto=184 &rid=6#msg\\_184](http://forum.linearcollider.org/index.php?t=msg&goto=184&rid=6#msg_184)

Frank.

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Subject: Clustering

Posted by [nijusan](#) on Wed, 16 Mar 2005 23:45:15 GMT

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Hello,

I am trying to identify clusters from hits I've embedded in an event myself which lack any `MCParticle[]` and `ContributedEnergy[]` information. However, the only clustering algorithms I see reference material on are the `SimpleClusterBuilder` and `RadialClusterBuilder` both of which call on these lists for one reason or another. Is there any other algorithm I can use or a way I can stop them (preferably `SimpleClusterBuilder`) from trying to access said lists? The complaints are (of course) coming from a single function call to `calculateDerivedQuantities()` in the case of `SimpleClusterBuilder`. What if I recompiled `hep.lcd` with that call commented out? Any ideas would be appreciated.

-Brandon Drummond

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Subject: Re: Clustering

Posted by [NormanGraf](#) on Tue, 22 Mar 2005 19:37:20 GMT

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Hello Brandon,

Thanks for pointing this out. One should clearly be able to reconstruct information without needing Monte Carlo information. You do not want to simply comment out the call to `calculateDerivedQuantities()`. I'll fix the code and let you know when it is in cvs. Should happen as soon as LCWS05 is over.

Norman

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Subject: Problems using LCDG4 data with org.lcsim  
Posted by [lima](#) on Wed, 06 Apr 2005 22:32:12 GMT  
[View Forum Message](#) <> [Reply to Message](#)

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Hi,

I am porting DigiSim package to org.lcsim framework. I am now at a point which I need to run over some data for the next steps of development.

I tried to process some LCIO files produced by LCDG4 using SDJan03 geometry. org.lcsim crashes with the following message:

```
-----  
Exception in thread "main" java.lang.RuntimeException: Please see  
http://confluence.slac.stanford.edu/display/ilc/Conditions+d+at+abase  
-----
```

I think that SDJan03 geometry is available from org.lcsim, so I was wondering if there is something I need to do to be able to process LCDG4 events within org.lcsim? Maybe a LCDG4-specific handler a la LCD\_LCDG4\_Event and/or LCD\_LCDG4\_Detector classes in hep.lcd? Or maybe the run header info stored by LCDG4 needs to be adapted for org.lcsim?

Please advise. In the meantime, please point me to some LCIO data files I could run right away, without further changes to org.lcsim, so that I can continue with my DigiSim development.

TIA,  
Guilherme

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Subject: Re: Problems using LCDG4 data with org.lcsim  
Posted by [tonyj](#) on Thu, 07 Apr 2005 00:36:27 GMT  
[View Forum Message](#) <> [Reply to Message](#)

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Hi Guilherme, the sdjan03 geometry should be built-in to org.lcsim. Can you post the full stackdump for your error, which should include the name of the geometry that is actually being looked for (it is probably case sensitive, so if you put SDJan03 instead of sdjan03 that could be the problem, but it is easy to fix by creating an alias file as described at <http://confluence.slac.stanford.edu/display/ilc/Conditions+d+at+abase>)

There is some demo data made for the SLAC workshop, at:

ftp://ftp-lcd.slac.stanford.edu/lcd/slic-demo-data/

Tony

---

Subject: Re: Problems using LCDG4 data with org.lcsim

Posted by [lima](#) on Thu, 07 Apr 2005 23:37:54 GMT

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Hi Tony,

You are right, the full traceback shows that the invalid detector is SDJan03. I have setup the alias, and that problem is now solved.

Regarding the confluence page you pointed me to, there are two broken links on that page

Thanks,  
Gui

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Subject: Why org.lcsim.util.lcio.SIOSimCalorimeterHit is not public?!

Posted by [lima](#) on Fri, 22 Apr 2005 22:13:21 GMT

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Hi,

I am porting DigiSim to org.lcsim framework.

I was trying to create some RawCalHits from SimCalHits. There was no RawCalHit interface or SIORawCalHit class defined, so I created those myself, by starting from SimCalHit interface and SIOSimCalHit class. So far so good, I could compile and build a .jar file.

Next I tried to create some raw hits, and then I found that I cannot do this:

```
import org.lcsim.util.lcio.SIOSimCalorimeterHit;  
import org.lcsim.util.lcio.SIORawCalorimeterHit;
```

because the compilation gives me:



Hi Tony,

Ok, so I have to create a class implementing RawCalorimeterHit. I would like to have some example. Also, if you have a suggestion where to put such implementation class, please let me know.

Thanks,  
Gui

---

---

Subject: One block handler per RawCalHit class implementation?

Posted by [lima](#) on Mon, 25 Apr 2005 19:56:55 GMT

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---

Hi,

I have created my own implementation of the RawCalorimeterHit interface. Then I have stored many raw hits into a Vector<RawCalorimeterHits> and appended this collection into the EventHeader. So far so good.

Then LCIOWriter complains:

```
-----  
Apr 25, 2005 1:23:35 PM org.lcsim.util.lcio.LCIOWriter writeData  
WARNING: No handler found for block HADrawCollection of class  
org.lcsim.event.RawCalorimeterHit  
-----
```

I found that the BlockHandlers in org.lcsim.util.lcio do not handle any other class than the ones internal to that package, e.g. SIORawCalorimeterHit. I tried to copy the SimCalHit block handler to handle RawCalHits (by just replacing "Sim" to "Raw" everywhere in the new file), but I found that this just makes it able to handle SIORawCalorimeterHits, and not my own implementation of RawCalorimeterHit interface.

Does this mean I have to create another RawHitBlockHandler to handle my own version of the RawCalHit implementation?

Thanks in advance,  
Guilherme Lima

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Subject: Re: One block handler per RawCalHit class implementation?

Posted by [lima](#) on Mon, 25 Apr 2005 20:05:09 GMT

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Hi,

Well, it looks like I could solve my immediate problem by changing one line in my RawCalHit implementation:

```
from: public Class getClassForType() { return SIORawCalorimeterHit.class; }
```

```
to: public Class getClassForType() { return RawCalorimeterHit.class; }
```

I don't know yet if there is a problem with this change down the road, so please let me know if you foresee any problem here.

Thanks,  
Gui

---

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Subject: Re: One block handler per RawCalHit class implementation?

Posted by [tonyj](#) on Tue, 26 Apr 2005 17:55:07 GMT

[View Forum Message](#) <> [Reply to Message](#)

---

lima wrote on Mon, 25 April 2005 13:05Hi,

Well, it looks like I could solve my immediate problem by changing one line in my RawCalHit implementation:

```
from: public Class getClassForType() { return SIORawCalorimeterHit.class; }
```

```
to: public Class getClassForType() { return RawCalorimeterHit.class; }
```

I don't know yet if there is a problem with this change down the road, so please let me know if you foresee any problem here.

I assume you mean you made these changes in your RawCalHitBlockHandler class. Returning RawCalorimeterHit.class is the correct thing to do. I'm not sure why there are not already classes in org.lcsim.util.lcio for handling RawCalorimeterHit, I guess I just missed it. If you have already written one we should include it in org.lcsim.utio.lcio, otherwise I will add it.

Tony

---

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Subject: Re: One block handler per RawCalHit class implementation?

Posted by [lima](#) on Tue, 26 Apr 2005 18:12:23 GMT

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---

Hi Tony,

Yes, the change was in the RawCalHitBlockHandler.

I did come up with my versions for RawCalorimeterHit and LCRelation interfaces and SIO\* implementations, along with their block handlers. I can commit them back if I have the writing privileges. Please let me know if I should do the commits (should I use a branch or commit directly to the head?).

Thanks,  
Gui

---

Subject: Re: One block handler per RawCalHit class implementation?

Posted by [tonyj](#) on Tue, 26 Apr 2005 18:16:16 GMT

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---

Hi Guillerme, I would suggest just committing them to the HEAD of the org.lcsim CVS. You already have write access with your normal LCD CVS username/password.

Tony

---

Subject: Tracks in Wired4

Posted by [aplin](#) on Wed, 27 Apr 2005 09:48:34 GMT

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---

Does anybody know how to display tracks in Wired4 from an LCIO file.

The hits from the TPC are shown and whilst the tracks are there in the Event Browser they are not in the event display.

I am using the standard JAS3 JAS at DESY, DESY 0.7.7 build 2284.

---

Subject: Re: Tracks in Wired4

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Posted by [tonyj](#) on Wed, 27 Apr 2005 15:50:01 GMT  
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---

Can you send me a pointer to the LCIO file so I can take a look? I think we may have added support for ReconstructedParticle but not Tracks, but I should be able to add Track support quite easily.

Tony

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Subject: Re: Tracks in Wired4  
Posted by [aplin](#) on Wed, 27 Apr 2005 16:37:51 GMT  
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---

Here is the file.

cheers

Steve

#### File Attachments

---

1) [MyMarlin.slcio](#), downloaded 772 times

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Subject: Re: Tracks in Wired4  
Posted by [tonyj](#) on Fri, 29 Apr 2005 22:43:05 GMT  
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---

Hi, I'm working on this, but so far not much luck with getting the tracks to go through the points. Probably I just messed up the handling of the track parameters, but if you happen to know exactly what the definition of the track parameters you are using is (and the field) it would be useful.

Tony

#### File Attachments

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1) [wired4.png](#), downloaded 1331 times

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Subject: Re: Tracks in Wired4  
Posted by [aplin](#) on Mon, 02 May 2005 11:25:46 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

Thanks Tony the tracking code is rather raw, I'll check that the parameterisation is correct, independently. When I inquired I was hoping that wired would give me the answer

cheers

Steve

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Subject: Can't run \$LCIO/bin/dumpevent on the output of LCIOReadTest  
Posted by [lima](#) on Mon, 02 May 2005 17:42:13 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

Hi,

I had a similar problem in the output from DigiSim, but the standard LCIOReadTest also shows the same problem test.. I can't run \$LCIO/bin/dumpevent in the output file, because it does not contain a run header.

Is it possible to write a run header record using org.lcsim yet? Is there an example?

Thanks,  
Guilherme

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Subject: Re: Can't run \$LCIO/bin/dumpevent on the output of LCIOReadTest  
Posted by [tonyj](#) on Tue, 03 May 2005 02:08:16 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

Hi, you are right lcsim was not writing record headers for LCIO files. This has now been fixed (along with a few other things). Run headers are written automatically so you do not need to make any changes to your code. I checked and the digisim files produced by lcsim can now be displayed using dumpevent.

Let me know if you find more problems.

Tony

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Subject: Web viewer of lcsim CVS repository  
Posted by [lima](#) on Mon, 09 May 2005 16:27:17 GMT  
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Hi,

Is there a web viewer configured for the lcsim CVS repository?  
If so, what is the address?

Thanks,  
Gui

---

Subject: Re: Web viewer of lcsim CVS repository  
Posted by [tonyj](#) on Mon, 09 May 2005 18:17:15 GMT  
[View Forum Message](#) <> [Reply to Message](#)

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Hi, yes there is, at:

<http://source.freehep.org/>

It actually shows the source for a number of ILC projects including lcsim, lcdg4, SLIC, and LCIO. One reason I did not announce this new service (until now) is that currently when the view corresponds to the head of CVS, as opposed to a specific tag, the view has to manually refreshed (by me). Hopefully this will be fixed soon.

It is very easy to add new views to this web site, either new tags or new modules, so if you would like to see more please let me know.

Tony

---

Subject: Random number generator with Poisson distribution  
Posted by [lima](#) on Thu, 12 May 2005 20:12:03 GMT  
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---

Hi,

I need to use random numbers following a Poisson distribution. Google tells me that there is such a class in Colt library, `cern.jet.random.Poisson`:

<http://hoschek.home.cern.ch/hoschek/colt/V1.0.3/doc/cern/jet/random/Poisson.html>

Can I use this Poisson class within org.lcsim? This would add the dependency on Colt library...

If not, what else I could use? Or should I create my own class for this?

Thanks,  
Guilherme

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Subject: Re: Random number generator with Poisson distribution  
Posted by [tonyj](#) on Thu, 12 May 2005 20:22:32 GMT  
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---

Hi, actually the latest version of Colt is at:

<http://dsd.lbl.gov/~hoschek/colt/>

We cannot use it directly since it contains very old versions of AIDA which conflict with other stuff that we use. I would suggest just including the source (unmodified) for any routines you want to use directly into the org.lcsim repository for now, as we do for Jama. We can always switch to using it as an external dependency later.

Tony

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Subject: Re: Random number generator with Poisson distribution  
Posted by [NormanGraf](#) on Thu, 12 May 2005 20:36:10 GMT  
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---

Hello Guilherme,

I've been looking at the Jakarta Commons Math libraries and like the way they are set up. Please take a look at

<http://jakarta.apache.org/commons/math/>

specifically:

<http://jakarta.apache.org/commons/math/userguide/distribution.html>

Norman

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---

Subject: Re: Random number generator with Poisson distribution  
Posted by [lima](#) on Thu, 12 May 2005 21:07:56 GMT  
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---

Norman,

Indeed the jakarta library seems to be quite easy to use.  
I would like to give it a try, how should I proceed? Should I download the .jar and leave it at my CLASSPATH until Tony sets up the project.properties to include this dependency, or as Tony suggested, just copy the source code into the lcsim tree?

Thanks,  
Guilherme

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Subject: Re: Random number generator with Poisson distribution  
Posted by [tonyj](#) on Thu, 12 May 2005 21:33:12 GMT  
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---

This doesn't suffer from the same compatibility problems as colt, so it should be fine to add it as a dependency. I will add it to the maven dependencies.

Tony

---

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Subject: Re: Random number generator with Poisson distribution  
Posted by [tonyj](#) on Thu, 12 May 2005 21:43:20 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

OK, it is added.

For future reference using mevenide in netbeans (or presumably eclipse) makes it trivial to add new dependencies, just click on project, choose Properties, choose dependencies, choose Add, Click Repository to browse all the maven repositories and find the library you want to add, and then click OK.

(Also if you are using Netbeans, netbeans 4.1 was just release this week, and seems to work very well with org.lcsim and mevenide.)

Tony

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Subject: How to get info about a detector component  
Posted by [lima](#) on Thu, 12 May 2005 23:02:42 GMT  
[View Forum Message](#) <> [Reply to Message](#)

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Hi,

Now I need to randomly pick a cell for noise or hot/dead channel simulations. So given an LCIO event, and a String (collection name), I would like to know how many layers there are, and given a layer, how many theta,phi bins.

What's the easier way to get this information? A pointer to some example is enough.

Thanks,  
Guilherme

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Subject: Re: How to get info about a detector component  
Posted by [tonyj](#) on Fri, 13 May 2005 18:48:30 GMT  
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Hi, good question, I don't think the current API gives access to all the information you need. We have a way to get the number of layers for a particular detector, but not an easy way to find the number of phi, theta bins (assuming it is even binned in phi, theta).

I will remind myself how the detector API currently works and get back to you with a suggested addition to support what you want early next week.

Tony

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Subject: Nonprojective calorimeter support  
Posted by [lima](#) on Thu, 26 May 2005 11:24:10 GMT  
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---

Hello,

I got some time to work on the non-projective geometry in org.lcsim + GeomConverter. I was wondering what is the current status and what needs to be done at this point. My goal is to be able to do PFA studies on org.lcsim framework. Your suggestions and comments are welcome.

Thanks,  
Guilherme

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Subject: Calorimeter Optimization for LC Detector Concepts

Posted by [SMagill](#) on Fri, 27 May 2005 21:57:53 GMT

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I have looked at several HCAL options, comparing both absorber and active media types.

I first compared HCAL versions with identical scintillator readout, one version had 0.7 cm W absorber per layer and one had 2 cm SS as the absorber. In both versions, the HCAL was 4 nuclear interaction lengths thick, 55 layers of W/Scin compared to 34 layers SS/Scin. My specific finding was that the W/Scin HCAL performed better than the SS/Scin HCAL both for single particle energy resolution and for PFA results - both perfect PFA and the actual algorithm. Showers in W were more compact than showers in SS - confirming results I had seen from H. Videau earlier. My main motivation for this study was to see if a more compact HCAL could be built using a dense absorber, thus saving  $R^{**2}$  which presumably contributes to the cost of the magnet. My general conclusion was that not only was this goal achieved, but that the W/Scin HCAL even performed better (PFA and single particles) than the SS version.

Next I looked at 2 version of HCAL with W absorber, one with scintillator and one with RPC as active media. Both of these were analyzed as digital calorimeters. My specific findings here were that the W/Scin digital HCAL and the W/RPC digital HCAL had similar performance as determined by calculating perfect PFA. The scintillator version had slightly better PFA resolution, presumably because of the higher number of hits per GeV for neutrals which, in digital mode, translates directly into better resolution.

Despite this, the SiD detector concept chose as its HCAL 2 cm SS absorber with RPC readout. I then looked at the perfect PFA performance of this detector and found that it performed worse than both the W/Scintillator and the W/RPC HCALs. In fact, the SiD combines the absorber with worse properties with the active media with fewer hits, so it was no surprise that the perfect PFA performance was so poor. In fact, it is impossible to obtain 30%/sqrt(E) resolution for the SiD detector with this option.

I then made suggestions as to how the performance of the SS/RPC HCAL could be improved based on all of my observations and found that these improvements led to a larger volume for the HCAL. I then suggested that maybe the optimal use of RPCs (generally gas HCAL) would be found in a larger volume, lower B-field detector concept than the compact, higher B-field SiD. It seems to me, supported by the simulated detectors that I analyzed, that the optimal HCAL configuration for a compact, high B-field detector should have a dense absorber combined with a solid (or maybe liquid) active media. This optimizes (means minimizes) the outer radius of the HCAL which directly saves magnet costs as mentioned above while maintaining good resolution for the neutral component of jets. Of course, things like transverse segmentation and the minimum calorimeter radius affect the final PFA performance of the detector and are used to ultimately determine if a particular concept is viable - but, as I showed, the best perfect PFA performance I got for a compact, high B-field detector was with a W/Scin HCAL. It also seems to

me that there might be a different optimal HCAL for the compact detector than for a large, low B-field detector. I wouldn't be surprised if it turned out that a W or SS/RPC HCAL would be a good choice for the LDC detector and that a W/Scintillator HCAL would be better for the SiD. I would recommend that the LDC consider a 0.5 cm W or 1 cm SS absorber/1.2 mm RPC per layer HCAL. A 4 lambda deep HCAL of this construction would have 77 layers of W/RPC or 67 layers of SS/RPC and would be ~100 cm or ~120 cm from IR to OR respectively. By thinning the absorber, I think the resulting neutral particle resolution obtained in a PFA would allow the 30%/sqrt(E) goal to be obtained.

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Subject: Bug? - Material or element reference not found: Carbon\_e

Posted by [lima](#) on Tue, 05 Jul 2005 17:33:25 GMT

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---

Hi,

I am doing development for nonprojective geometries.  
Since my last update from the CVS repository yesterday,  
I am getting crashes with this message:

```
-----  
Exception in thread "main" java.lang.RuntimeException: Error reading detector  
    at org.lcsim.util.event.DetectorConditionsConverter.getData(DetectorConditionsConverter.java:29)  
    at org.lcsim.util.event.DetectorConditionsConverter.getData(DetectorConditionsConverter.java:16)  
    at org.lcsim.conditions.CachedConditionsImplementation.getCachedData(CachedConditionsImplementation.java:19)  
    at org.lcsim.util.event.BaseLCSimEvent.getDetector(BaseLCSimEvent.java:58)  
    at org.lcsim.digisim.CalHitMapMgr.setEvent(CalHitMapMgr.java:51)  
    at org.lcsim.digisim.CalHitMapDriver.process(CalHitMapDriver.java:40)  
    at org.lcsim.digisim.DigiSimMain.process(DigiSimMain.java:47)  
    at org.lcsim.util.Driver.process(Driver.java:120)
```

(...)

```
Caused by: org.jdom.JDOMException: Material or element reference not found: Carbon_e  
    at org.lcsim.material.XMLMaterialManager.addReferences(XMLMaterialManager.java:527)  
    at org.lcsim.material.XMLMaterialManager.addReferences(XMLMaterialManager.java:609)  
    at org.lcsim.material.XMLMaterialManager.addReferencesFromCompact(XMLMaterialManager.java:736)  
    at org.lcsim.geometry.compact.CompactReader.setupMaterials(CompactReader.java:137)  
    at org.lcsim.geometry.compact.CompactReader.read(CompactReader.java:80)
```

at org.lcsim.geometry.GeometryReader.read(GeometryReader.java:2 6)  
at org.lcsim.util.event.DetectorConditionsConverter.getData(DetectorConditionsConverter.java:25)  
... 11 more  
-----

Things were working fine before yesterday's CVS update.  
Does anyone know how to fix or work around this error?

Thanks,  
Guilherme

---

Subject: Re: Bug? - Material or element reference not found: Carbon\_e  
Posted by [jeremy](#) on Tue, 05 Jul 2005 17:44:06 GMT  
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Hi, Guilherme.

I changed the method by which elements are referenced in compact descriptions. For example, the element 'Carbon\_e' changed to 'C'.

I think the problem should go away if you update to GeomConverter CVS head and rebuild LCSim.

Please post as to whether or not this works for you.

---

Subject: Re: Bug? - Material or element reference not found: Carbon\_e  
Posted by [lima](#) on Tue, 05 Jul 2005 18:49:30 GMT  
[View Forum Message](#) <> [Reply to Message](#)

Hi Jeremy,

Indeed, there were some missing directories in geomconverter.  
A cvs update -Pd fixed those, then I rebuilt GeomConverter and lcsim. Several lcsim tests were still failing, however they were all fixed by a "maven clean" before rebuilding.

Thanks!



Subject: conditions example

Posted by [jeremy](#) on Wed, 06 Jul 2005 04:47:31 GMT

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Hi.

I updated the conditions example on Confluence with a Java code example and also details about properties files.

<http://confluence.slac.stanford.edu/display/ilc/Conditions+d+atabase>

I also show how to print the retrieved values and convert to int, double and String.

Suggestions welcome. (Or just add improvements yourself if you have access.)

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Subject: org.lcsim weekly release

Posted by [tonyj](#) on Wed, 06 Jul 2005 05:24:59 GMT

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Our weekly release of org.lcsim analysis/reconstruction software is now available. For more details on org.lcsim please see:

<http://lcsim.org/software/index.html#reco.java.lcsim>

Highlights of this release include:

Release Notes - org.lcsim - Version 0.7

-----  
Bug

[LCSIM-11] - Remove duplicate SDJan03 detector

[LCSIM-16] - ZvUtilTest fails and I have a fix for it

Improvement

[LCSIM-5] - LCSim FastMC needs to create Reconstructed Particles

[LCSIM-21] - Make cache dir configurable

Release Notes - GeomConverter - Version 0.4

-----  
New Feature

[GC-11] - commandline interface for converters

Improvement

[GC-30] - Cannot run GeomConverter (tests) without network access

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Subject: Re: org.lcsim weekly release

Posted by [tonyj](#) on Thu, 21 Jul 2005 01:08:35 GMT

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Not quite weekly, but release 0.8 of org.lcsim is now available and tagged in CVS

Release Notes - org.lcsim - Version 0.8

-----  
Bug

[LCSIM-17] - LCSim Event Browser does not show calorimeter hit positions for GridXYZ segmentation.

[LCSIM-28] - sdfeb05 detector geometry appears to not work

[LCSIM-30] - Driver.process should be public

Improvement

[LCSIM-18] - FixedConeClusterTester uses gigantic test data file

[LCSIM-24] - replace hardcoded RL values with ones from corresponding Material

Release Notes - GeomConverter 0.6

-----  
Bug

[GC-37] - overlaps in ForwardDetector

[GC-43] - Trackers need to use materials engine.

[GC-44] - material is null in slice

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Subject: DigiSim announcement

Posted by [lima](#) on Fri, 05 Aug 2005 20:15:39 GMT

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Dear colleagues,

We would like to announce the "release" of DigiSim for wider use within the org.lcsim framework. Please find the updated documentation posted at <http://nicadd.niu.edu/digisim> . There are usage instructions in the documentation.

We are currently trying to adapt the NearestNeighborCluster algorithm to do clustering using the digitized CalorimeterHits instead of using the SimCalorimeterHits. I will post another announcement when this example is ready.

Please note that an update of the C++ version will be made available later, hopefully in few weeks.

Cheers,  
Guilherme

---

Subject: Finding the subdetector positions  
Posted by [mcharles](#) on Tue, 04 Oct 2005 00:42:14 GMT  
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---

Hello,

I'm writing some clustering code for the calorimeters. I'd like to be able to extract geometrical information. The first bit is this:

(1) Which subdetector, if any, is point (x,y,z) inside?

That will get me some way, but eventually I will also need to know things like:

(2a) What are the boundaries of the calorimeter subsystems, and  
(2b) What are the intercepts of a trajectory with those subsystems?

Given (2a) and our reasonably simple geometry (concentric cylinders lined up on the z-axis), I can get to (2b) fairly easily.

I'm really not sure where to start with this. In a Driver I have access to the EventHeader, from which I can get to the Detector and the IDDecoder, but I can't see how to go further with those. I think I'm missing something obvious -- any suggestions?

Thanks,

Mat.

---

---

Subject: Re: Finding the subdetector positions  
Posted by [NormanGraf](#) on Tue, 04 Oct 2005 07:31:44 GMT  
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---

Hello Mat,

Answering (1) in a general way is very complicated. We have not yet solved the problem.  
For detectors defined within the org.lcsim environment you can obtain the calorimeter subsystem boundaries from the compact description xml file.  
For simple shapes such as cylinders and z planes, you can use the helical swimmer  
org.lcsim.util.swim.HelixSwimmer

Norman

---

---

Subject: Re: conditions example  
Posted by [NormanGraf](#) on Fri, 14 Oct 2005 20:21:17 GMT  
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---

This page is now at:

<http://confluence.slac.stanford.edu/display/ilc/Conditions+Database+Overview>

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Subject: How to get calorimeter cell indices from a segmentation class?  
Posted by [lima](#) on Mon, 05 Dec 2005 20:34:11 GMT  
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---

Hi,

I am trying to develop the neighbour finding code in the non-projective endcaps (GridXYZ segmentation class). For testing, I am using sidaug05\_tcmt geometry with some muons in the endcaps, and using the NearestNeighborClusterDriver. As expected, the GridXYZ.getNeighbourIDs() method gets called. So far so good.

Inside this method, I need to know what are the cell IDs, ilay,ix,iy, so I have this piece of code:

-----

```

public long[] getNeighbourIDs(int layerRange, int xRange, int yRange)
{
    System.out.println("Nonproj neighbs: "+ layerRange+ " "+xRange+ " "+yRange);

    int klay = this.getValue("layer");    // <== NullPointerException
    System.out.println("klay="+klay);
    int kx  = this.getValue("x");
    int ky  = this.getValue("y");
    int kz  = this.getValue("z");
    System.out.println("NeighborID: ref="+klay+ " "+kx+ " "+ky+ " "+kz
    +" (hex "+Long.toHexString(saveID)+)");
}
-----

```

The line indicated produces a NullPointerException.  
 What's the right way of retrieving the cell indices from inside GridXYZ.getNeighbourIDs() method?

Thanks,  
 Guilherme

Subject: How to get calorimeter cell indices from a segmentation class?  
 Posted by [lima](#) on Mon, 05 Dec 2005 20:37:23 GMT  
[View Forum Message](#) <> [Reply to Message](#)

Hi,

I am trying to develop the neighbour finding code in the non-projective endcaps (GridXYZ segmentation class). For testing, I am using sidaug05\_tcmt geometry with some muons in the endcaps, and using the NearestNeighborClusterDriver. As expected, the GridXYZ.getNeighbourIDs() method gets called. So far so good.

Inside this method, I need to know what are the cell IDs, ilay,ix,iy, so I have this piece of code:

```

-----
public long[] getNeighbourIDs(int layerRange, int xRange, int yRange)
{
    System.out.println("Nonproj neighbs: "+ layerRange+ " "+xRange+ " "+yRange);

    int klay = this.getValue("layer");    // <== NullPointerException
    System.out.println("klay="+klay);
    int kx  = this.getValue("x");
    int ky  = this.getValue("y");
}

```

```
int kz = this.getValue("z");
System.out.println("NeighborID: ref="+klay+" "+kx+" "+ky+" "+kz
+" (hex "+Long.toHexString(saveID)+)");
```

---

The line indicated produces a NullPointerException.

What's the right way of retrieving the cell indices from inside GridXYZ.getNeighbourIDs() method?

Thanks,  
Guilherme

---

---

Subject: Re: How to get calorimeter cell indices from a segmentation class?

Posted by [lima](#) on Mon, 05 Dec 2005 20:39:31 GMT

[View Forum Message](#) <> [Reply to Message](#)

---

Never mind, I found how to do this:

```
-----
int klay = values[layerIndex];
int kx = values[xIndex];
int ky = values[yIndex];
System.out.println("NeighborID: ref="+klay+" "+kx+" "+ky
+" (hex "+Long.toHexString(saveID)+)");
```

---

Sorry for the inconvenience,  
Guilherme

---

---

Subject: Problem with Marlin 0.9.4

Posted by [faucci](#) on Fri, 21 Apr 2006 17:38:03 GMT

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---

I have a problem running Marlin 0.9.4, the new version of Wolf ask for a GEAR parameter that is unavaible. I receive the this message:

```
gear::UnknowParameterException
```

```
what(): gear::UnknowParameterException: BField
```

I looked in the Gear file and there's no filed with this name, I tried to add this line:

```
<BField value="4" />
```

but the error persist.

I searched in the gear files and I discovered that there are no BField parameter.  
Do I need a new version of GEAR? I have GEAR 0.2  
Cheers,  
Michele

---

---

Subject: Re: Problem with Marlin 0.9.4  
Posted by [NormanGraf](#) on Fri, 21 Apr 2006 17:46:25 GMT  
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---

Hello Michele,  
I don't have an answer to your question, but you might get a quicker response if you post to the Marlin-specific forum under "Software Tools".  
Norman

---

---

Subject: Re: Problem with Marlin 0.9.4  
Posted by [gaede](#) on Mon, 24 Apr 2006 07:26:33 GMT  
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---

Hi Michele,

please add a line with the B field to the TPC section of your gear file:

```
<parameter name="BField" type="double"> 4.0 </parameter>
```

Gear doesn't have the B field yet and so Wolf uses the 'optional user parameter' mechanism to specify the field in the Gear file.  
I hope this helps.

Cheers, Frank.

PS: Please use the Marlin specific forum for such 'technical' questions.

---

---

Subject: MC association  
Posted by [fabio](#) on Fri, 19 May 2006 09:23:38 GMT  
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---

Hello,

I'm trying to get a MC association in order to associate reco photons to Monte Carlo ones. My idea is to start from reco gamma, trying to get the corresponding reco clusters and so the reco calorimeter hits.

At this point it is possible to utilize the function "getRawHit()" of "CalorimeterHit" to get the Sim calorimeter hits and so all infos about the corresponding MC particle that caused these hits.

In particular such a process is simply:

```
***** **
// loop over all RC gamma of the event
for(int i=0; i< num_RC_gamma ; i++){ ReconstructedParticleImpl* rp =
dynamic_cast<ReconstructedParticleImpl*>( RCcol->getElementAt( i ) );
RecoClusters = rp->getClusters();
for( std::vector<Cluster*>::const_iterator cl =
RecoClusters.begin(); cl != RecoClusters.end(); cl++){
RecoCaloHits = (*cl)->getCalorimeterHits();

// loop over all Reco Cluster Hits
for( std::vector<CalorimeterHit*>::const_iterator ch = RecoCaloHits.begin(); ch !=
RecoCaloHits.end(); ch++){
LCObject* CSimhit = (*ch)->getRawHit();
SimCalorimeterHit* CRawHit = dynamic_cast<SimCalorimeterHit*> (CSimhit) ;

} // end for const_iterator ch
} // end for const_iterator cl
} // end for num_RC_gamma
```

```
***** **
```

this code has been compiled without any problems... but when I try to execute it (qqbar collections) I have a segmentation violation..  
In particular, using some printouts, CRawHit returns a pointer to 0...

- 1) Is it possible to arrange a MC association in this way? Has the calorimeter hit an associated RawCalorimeter hit?
- 2) how to associate CalorimeterHits to MCParticles?

Thanks in advance,  
Fabio.

---

Subject: Re: MC association



Posted by [lima](#) on Fri, 19 May 2006 13:16:58 GMT

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---

Hi Fabio,

At this point it is unlikely that you are using DigiSim upstream of your analysis code. Without DigiSim, there are no RawCalHits. If this is the case, all you need to do is to cast the CalorimeterHit\* to a SimCalorimeterHit\* and take it from there:

```
// loop over all Reco Cluster Hits
for( std::vector<CalorimeterHit*>::const_iterator ch = RecoCaloHits.begin(); ch !=
RecoCaloHits.end(); ch++){
    // LCOBJECT* CSimhit = (*ch)->getRawHit();
    SimCalorimeterHit* simHit = dynamic_cast<SimCalorimeterHit*>(*ch) ;
    int nMCcont = simHit->getNMCParticles();
    //... and so on...
}
```

Please let us know if this does not work.

Good luck,  
Guilherme

---

Subject: Re: MC association

Posted by [gaede](#) on Fri, 19 May 2006 14:07:33 GMT

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---

Hi Fabio,

I don't know which program has created the LCIO file that you are analyzing - however if it is writing 'proper' LCIO your code should fail where you try to cast a raw hit to a SimCalorimeterHit:

```
LCOBJECT* CSimhit = (*ch)->getRawHit();
SimCalorimeterHit* CRawHit = dynamic_cast<SimCalorimeterHit*>(CSimhit) ;
```

This is only by convention - of course technically one could create CalorimeterHit objects where the pointer to a raw hit is in facta SimCalorimeterHit (clearly not a raw hit...).

The basic idea is that there is no direct link between MC Truth objects (MCParticle, SimCalorimeterHit, SimTrackerHit) and the higher level objects, such as Cluster, CalorimeterHit etc. but that rather LCRelation is used between the MC Truth hits (SimCalorimeterHit ) and the data hits ( CalorimeterHit ).

The following is a code snippet from the cluster cheater in MarlinReco (where the digitizer module has created the LCRelation collection beforehand):

```
relcol = evt->getCollection("RelationCaloHit");

LCRelationNavigator navigate(relcol);

for (unsigned int j=0; j < col->getNumberOfElements(); ++j)
{
    CalorimeterHit * calhit = dynamic_cast<CalorimeterHit*>(col->getElementAt(j));

    const LCObjectVec& objectVec = navigate.getRelatedToObject(calhit);

    if (objectVec.size() > 0) {

        SimCalorimeterHit * simhit=dynamic_cast<SimCalorimeterHit*>( objectVec[0] );

        // use simhit ...

    }
}
```

I hope this helps.

Cheers, Frank.

PS: Guilherme, I don't think your suggestion can work since dynamic\_cast<SimCaloHit\*> will always be 0 for anything that is not a SimCaloHit such as CaloHit...

Subject: Re: MC association  
Posted by [lima](#) on Fri, 19 May 2006 16:09:22 GMT  
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---

Frank,

You are right, the SimCalorimeterHit object is not a CalorimeterHit in the LCIO library. In org.lcsim, SimCalorimeterHit extends CalorimeterHit indeed, and I had this relationship in mind when answering Fabio's question.

Sorry for the inconvenience,  
Guilherme

---

Subject: Re: MC association  
Posted by [fabio](#) on Mon, 22 May 2006 14:06:25 GMT  
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---

Hi Frank,  
your suggestion has been really useful..  
Thanks to LCRRelation I can access to SimCalorimeterHit infos.  
I have now a new question:  
in the corresponding class of SimCalorimeterHit there are several memb functions related to the possibility to get the number of MC contributions to the hit and the PDG code of the shower particle that caused each contribution.  
The problem is that the number of MC contributions to the hit can be sometimes really large..  
Among all these contributions how is it possible (if it is possible..) to establish the only MC particle responsible of the hit?

Thanks again,  
Fabio.

---

Subject: Re: MC association  
Posted by [gaede](#) on Mon, 22 May 2006 15:44:16 GMT  
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---

Quote:Among all these contributions how is it possible (if it is possible..) to establish the only MC particle responsible of the hit?

There can (and often will) be more than one particle contributing to one cell, i.e. one SimCalorimeterHit. If the collection parameter LCIO.CHBIT\_PDG==0 then every MCContribution corresponds to one particle entering the calorimeter. To define the one that you want to use in your relation depends on your algorithm - you might simply take the particle with the largest contribution or you could keep the weights for your MC truth assignment.

If LCIO.CHBIT\_PDG==1 then all simulator steps' contributions to the hit are stored, i.e. every shower particle is stored with it's PDG and energy - however the link getParticleCont() will still be to the MCParticle that entered the calorimeter - in this case you have to sum up all contributions for every particle to find the one that dominates...

The following code snippet should work in either case:

```
SimCalorimeterHit* sh =
    dynamic_cast<SimCalorimeterHit*>( calVec->getElementAt(j) );

typedef std::map<MCParticle*,double> MCPMap ;

MCPMap mcpMap ;

for( int ii=0 ;ii< sh->getNMCCContributions() ; ++ii){
    mcpMap[ sh->getParticleCont(ii) ] += sh->getEnergyCont(ii) ;
}

double eMax(0.) ;
MCParticle* mcp ;

for( MCPMap::iterator it = mcpMap.begin() ; it != mcpMap.end() ; ++it ){

    if( it->second > eMax ) {
        mcp = it->first ;
        eMax = it->second ;
    }
}

std::cout << " largest contribution " << eMax << " GeV from particle "
    << mcp << std::endl ;
```

Probably code like this should go into some sort of utility method in a future LCIO release ...

Frank.

---

---

Subject: Re: MC association

Posted by [fabio](#) on Mon, 29 May 2006 11:51:40 GMT

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---

Hi frank,

your suggestion works really fine for a MC association between reco particles (with associated reco cluster) and simulated ones..

Imagine now to arrange a similar MC association for reco particles with tracks (for example electrons).

Using the same approach it is possible to follow a similar chain to get associated sim info:

reco electrons -> reco trak associated -> reco track hits -> sim track hits -> MC particle

Again, in principle, it can be possible that for the same reco track more than one MC particle is associated.

how to establish the only one responsible of the track hit?

Is it possible to study again a contribution in energy/momentum?

Or, we should simply analyse the frequency of appearance of a particular MC particle among all related to different sim hits?

Is somewhere already an implemented code that can work about it?

Thanks again,

Fabio

---

Subject: org.lcsim Tracking Examples

Posted by [benjeffery](#) on Wed, 03 Oct 2007 19:35:50 GMT

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---

Hi,

Can anyone point me to examples of how to use the various tracking options in org.lcsim? For example which ones work well together and are relatively mature and how to swap in cheating etc?

Thanks,

Ben

---

Subject: Problem installing Marlin 0.9.9

---

Posted by [salvator](#) on Tue, 06 Nov 2007 16:15:44 GMT

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---

Hi,

I seem to have a problem installing Marlin v00-09-09. When Marlin is linked I have the following error message:

```
/usr/bin/ld: Warning: alignment 4 of symbol `fkfile_' in
/home/salvator/Marlin/0.9.9/packages/MarlinReco/lib/libMarlinReco.a(MaterialDB.o) is smaller
than 16 in /home/salvator/Marlin/0.9.9/packages/MarlinReco/lib/libMarlinReco.a(MaterialDB.o)
/home/salvator/Marlin/0.9.9/lib/libMarlin.a(SimpleParticleFactory.o)(.text+0x358): In function
`marlin::SimpleParticleFactory::getCharge(int)':
/home/salvator/Marlin/0.9.9/src/SimpleParticleFactory.cc:75: undefined reference to
`HepPDT::ParticleID::threeCharge() const'
/home/salvator/Marlin/0.9.9/packages/MarlinUtil/lib/libMarlinUtil.a(MarlinCED.o)(.text+0x1271): In
function `MarlinCED::drawMCParticle(EVENT::MCParticle*, bool, EVENT::LCEvent*, int, int,
unsigned, unsigned, double, double, double, double, double, bool)':
/home/salvator/Marlin/0.9.9/packages/MarlinUtil/src/MarlinCED.cc:288: undefined reference to
`HepPDT::ParticleID::threeCharge() const'
collect2: ld returned 1 exit status
make[1]: *** [/home/salvator/Marlin/0.9.9/bin/Marlin] Error 1
make[1]: Leaving directory `/home/salvator/Marlin/0.9.9/src'
make: *** [bin] Error 2
```

Put aside the first message ('alignment of symbol....' what does it mean !!!), what I don't understand is the 'undefined reference' to HepPDT::ParticleID::threeCharge() . If I look in \$CLEHEP/include/CLHEP/HepPDT I can see the ParticleID.hh header file with the reference to the invoked method and I've checked that all the CLHEP libraries are where they are supposed to be. I've included the \$CLHEP/lib to the \$LD\_LIBRARY\_PATH and \$CLHEP/include to \$PATH. Did I miss anything else ?

Thanks for the help !

Fab

---

Subject: Re: Problem installing Marlin 0.9.9

Posted by [salvator](#) on Tue, 06 Nov 2007 16:21:57 GMT

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---

Sorry for the spamming ! I've just realized I posted this message to the wrong forum ! I've re-posted it to the correct one.

Apologise for the mistake !

Fab

---

Subject: How can I get helix parameters from some track hits?  
Posted by [hokim](#) on Fri, 09 Nov 2007 12:39:17 GMT  
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Hello all

I have simulated track hits(SimTrackerHit) using slic.  
How can I get helix parameters from them?  
Eventually I want to get transverse momentum of a track.  
Simple example code will be more helpful to me.

Thanks in advance

---

Subject: Re: How can I get helix parameters from some track hits?  
Posted by [jfstrube](#) on Fri, 09 Nov 2007 19:18:56 GMT  
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I am not quite sure what it is you are trying to do, but unless you want to get additional information from the MCParticle, a SimTrackerHit does not have enough information to uniquely determine a helix.

The Track interface in org.lcsim.event has facilities to get Helix parameters from a given momentum at a point in space, when charge and B Field are known, so you probably find what you are looking for in there.

Jan

---

Subject: Neighbour-finding at large angles  
Posted by [mcharles](#) on Mon, 26 Nov 2007 18:36:52 GMT  
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Hello,

One routine that's used quite a lot in calorimeter clustering is `getNeighbourIDs()`. For example, the nearest-neighbour clustering routine in `org.lcsim.recon.cluster.nn.NearestNeighborCluster` uses a snippet like:

```
Quote:IDDecoder decoder = hit.getIDDecoder();
CalorimeterHit c = hits.get(i);
decoder.setID(c.getCellID());
long[] neighbors = decoder.getNeighbourIDs(dLayer, dU, dV);
```

For a non-projective detector the neighbour-finding across layers is tricky. Guilherme implemented these routines in `org.lcsim.geometry.segmentation` a while back and the code works pretty nicely. There's one case where I'm not quite sure what the right thing to do is, though. (Maybe Guilherme has thought this through already and can explain it?)

Right now, finding neighbours in layer *m* given a hit in layer *n* in the barrel looks roughly like this:

- 1) Find theta, phi of original hit in layer *n*
- 2) Get the radius *r<sub>m</sub>* of layer *m*
- 3) Compute the point in 3D with (*r<sub>m</sub>*, theta, phi), i.e. project from layer *n* to layer *m*.
- 4) Find the hit containing that point.
- 5) Find that hit's grid neighbours in layer *m*.

I was looking at a case of a shower in the HCAL with  $\cos(\theta) \gg 0$  and was initially confused when I saw hits that were not flagged as neighbours despite being close (e.g. 3D separation 30mm) even though there were neighbours with larger 3D separations (e.g. 40mm). But after thinking about step 3 a bit more, I realized this was working as intended: the hits were spatially close but not so close in (theta, phi).

I'm not actually sure what the ideal thing to do here is. The projective approach is simple and works well in a lot of cases (most primaries are more or less projective), and the places where it's non-intuitive are usually when clustering very tightly (e.g. 1,1,1). On the other hand, secondaries lose a lot of the initial direction, so projective clustering isn't really the best for them -- I can see this biting from time to time.

Any thoughts?

Mat.

---

---



Subject: Re: Neighbour-finding at large angles  
Posted by [lima](#) on Mon, 26 Nov 2007 20:30:57 GMT  
[View Forum Message](#) <> [Reply to Message](#)

---

Hi Mat,

Thanks for looking into alternatives to improve the efficiency of neighbor-finding-based clustering. The logic for non-projective (NP) neighbor-finding is based on the assumption that high-energy clusters point to the origin, which as you pointed out, is not true for some cases (like loopers). Note that this behavior mimics the original (projective) neighbor-finding implementation.

A possible extension which could be useful would be a new method allowing the user to provide (theta,phi) for reference, rather than assuming the origin as reference. This is easy to implement for NP geometries, as most of the infrastructure is already there. However, an equivalent method (with same interface) should also be made available for the projective segmentations as well -- Tony/Norman may want to comment on that.

Moreover, the clustering algorithm will have to provide the theta,phi reference as input to neighbor-finding method, and this requires new clusterers (preferable) or changes to the existing clusterers.

Other alternatives could, for instance, be based on the cluster energy and/or position and/or shape + direction w.r.t. the origin. Then the neighborhood window could be expanded, say from (1,1,1) to (1,3,3) or more. Again, this should be managed by the clustering algorithm, not the neighbor-finding method.

What do you think?

Guilherme

---

---

Subject: reconstruction particles  
Posted by [rwaliczek](#) on Thu, 12 Jun 2008 11:37:56 GMT  
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---

Hello everybody,

I am a student at Institute of Nuclear Physics in Cracow and I am trying to get some information from my collections. I simulated  $e+e \rightarrow t\bar{t}$  beam at 500GeV in CMS (pythia generator + mokka). Now I'm studying Marlin and I need some help about this software. I used a "example\_steering\_file\_LDC01\_05Sc.xml" from \$ILCSoft/PandoraPFA folder. I obtain "output\_file.slcio" which has a lot of collections.

My questions are the following:

1. I need information about momentum reconstructed particles. I know that this info include "MCParticle" collection(getMomentum()), but there is info about simulated particles, which caused hit. Where can I obtain info about momentum reconstructed particles in order to histogramming and compare with simulated?
2. I understand that all "Sim.." collections are simulated from Mokka and using to other processors as primary input collections to further reconstruction. There is info about position (getPostion())- Does this function return "x,y,z" or "r,phi,z" in polar coordinate system?
3. Can I get info about momentum particles from "TrackerHit" and "Track" collections? Do exist any method to compute it from this collection?
4. In "ReconstructedParticle" collection I find a getMomentum() function, but there is only few low energy particles(pi+,pi-,neutrons,photons) - Is it correct?? Does collection "ReconstructedParticle" is the only, which contain reconstructed particles from name? i.e. Does Pandora is such intelligent that can reconstructed W+W- bosons from ttbar and tell me: there are W bosons ??
5. How can I obtain total energy distribution reconstructed particles? Which collections include such information?

The last most lamers question: What kind of information I can get from reconstructed collection (what is the most ineteresting in this type of simulations: e+e- -> ttbar)?

Thanks in advance

Subject: reconstruction particles  
 Posted by [rwaliczek](#) on Thu, 12 Jun 2008 11:40:00 GMT  
[View Forum Message](#) <> [Reply to Message](#)

Hello everybody,

I am a student at Institute of Nuclear Physics in Cracow and I am trying to get some information from my collections. I simulated e+e-->ttbar beam at 500GeV in CMS (pythia generator + mokka).Now I`m studying Marlin and I need some help about this software. I used a "example\_steering\_file\_LDC01\_05Sc.xml" from \$ILCSoft/PandoraPFA folder. I obtain "output\_file.slcio" which has a lot of collections.

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and compare with simulated?

2. I understand that all "Sim.." collections are simulated from Mokka and using to other processors as primary input collections to further reconstruction. There is info about position (getPosition())- Does this function return "x,y,z" or "r,phi,z" in polar coordinate system?

3. Can I get info about momentum particles from "TrackerHit" and "Track" collections? Do exist any method to compute it from this collection?

4. In "ReconstructedParticle" collection I find a getMomentum() function, but there is only few low energy particles( $\pi^+$ , $\pi^-$ ,neutrons,photons) - Is it correct?? Does collection "ReconstructedParticle" is the only, which contain reconstructed particles from name? i.e. Does Pandora is such intelligent that can reconstructed  $W+W^-$  bosons from  $t\bar{t}$  and tell me: there are  $W$  bosons ??

5. How can I obtain total energy distribution reconstructed particles? Which collections include such information?

The last most lamers question: What kind of information I can get from reconstructed collection (what is the most interesting in this type of simulations:  $e^+e^- \rightarrow t\bar{t}$ )?

Thanks in advance

---

Subject: Re: reconstruction particles  
Posted by [gaede](#) on Fri, 20 Jun 2008 11:01:18 GMT  
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---

Hi,

there has been a fair amount of developments in reconstruction code recently. So please use the latest ilcsoft release v01-03-05. With this release you also get a package called StandardConfig that has a configuration file stdreco.xml.

Please download the current HEAD version of this package:

If you use this steering file, you will get to output files - one complete file with all simulated, digitized and reconstructed objects and a much smaller 'DST' file which is what you probably should use for your analysis.

There is a lot of documentation available online at [that](#) you should browse to get some overview on the tools.

Here are some quick answers to your questions:

1. `ReconstructedParticle::getMomentum()` and `econstructedParticle::getEnergy()` give you the 4-momentum of the reconstructed particles - taken from the track for charged particles.

2. `Sim...Hit::getPposition()` returns the position in x,y,z in mm

3. see 1.

4. the PandoraPFO collection has all reconstructed particles as found by Pandora. To get the W+W- candidates you need to look at the Jet collections - for ttbar you probably want 'FTFinal\_6Jets'. Details depend on your analysis.

5. see 1.

Details of the LCIO event data model are described in the online documentation:

This should get you started.

-Frank.

---

Subject: A naive question about the output of marlin.  
Posted by [fengy](#) on Thu, 18 Dec 2008 07:35:22 GMT  
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---

Hi all,

Sorry for bothering you with such a naive question, but which part of the output of marlin are the reconstructed particles?

I saw a several reconstructed particles classified by jets, but couldn't see an overall list.

I am using the ilcsoft-1.5.02 release, with stdreco.xml and a mumuh event file.

The output is dumped with dumpevent. (Are there any better way to examine the outputs?)

Yu

---

---

Subject: muon never reconstructed?

Posted by [fengy](#) on Sun, 04 Jan 2009 18:24:12 GMT

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Hi, experts:

I am confused that the reconstructed particles related(given by MC Truth Link) to muons always have a mass 0.140 -- but that's the mass of pion.

Can anyone give me some hints?

Yu

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Subject: Re: muon never reconstructed?

Posted by [bjasper](#) on Fri, 23 Jan 2009 16:48:24 GMT

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What reconstruction driver are you using? I know that Steve Magill's PFA assumes charged particles to be pions

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Subject: Bug in MarlinReco/PFOID/src/Histogram.cc

Posted by [sailer](#) on Fri, 12 Jun 2009 17:20:02 GMT

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Hello Everyone,

I noticed that some of my reconstruction Jobs with Marlin crashed somewhat randomly. I finally

was motivated enough to figure out why, and I think I found the problem. I hope this is the right place to post.

Running on 64 bit slc5:

gcc (GCC) 4.1.2 20080704 (Red Hat 4.1.2-44)

Quote:

[ VERBOSE "MyPFOID" ] WARNING!! This particle has no cluster

(no debugging symbols found)

Attaching to program: /proc/12992/exe, process 12992

(no debugging symbols found)...done.

[Thread debugging using libthread\_db enabled]

[New Thread 0x2ae3d7ad2150 (LWP 12992)]

0x00000039cfc99335 in waitpid () from /lib64/libc.so.6

#1 0x00000039cfc3c2e1 in do\_system () from /lib64/libc.so.6

#2 0x00002ae3d2df9476 in TUnixSystem::StackTrace ()

from /data/sailer/root/install5.22.00-patches/lib/libCore.so.5.22

#3 0x00002ae3d2df72b3 in TUnixSystem::DispatchSignals ()

from /data/sailer/root/install5.22.00-patches/lib/libCore.so.5.22

#4 <signal handler called>

#5 0x00002ae3d8bf5e53 in Histogram::GetNormContent ()

from /afs/cern.ch/eng/clic/work/sailer/sl5/ilcsoft/v01-06/MarlinReco/HEAD/lib/libMarlinReco.so

#6 0x00002ae3d8bf9d64 in PDF::GetLikelihood ()

from /afs/cern.ch/eng/clic/work/sailer/sl5/ilcsoft/v01-06/MarlinReco/HEAD/lib/libMarlinReco.so

#7 0x00002ae3d8c01f4b in PFOID::processEvent ()

from /afs/cern.ch/eng/clic/work/sailer/sl5/ilcsoft/v01-06/MarlinReco/HEAD/lib/libMarlinReco.so

#8 0x00002ae3d274f57a in marlin::ProcessorMgr::processEvent ()

from /afs/cern.ch/eng/clic/work/sailer/sl5/ilcsoft/v01-06/Marlin/v00-10-04/lib/libMarlin.so.0.10

#9 0x00002ae3d1600f39 in SIO::SIOReader::readStream ()

from /afs/cern.ch/eng/clic/work/sailer/sl5/ilcsoft/v01-06/lcio/v01-11/lib/liblcio.so.1.11

#10 0x00002ae3d15ff032 in SIO::SIOReader::readStream ()

from /afs/cern.ch/eng/clic/work/sailer/sl5/ilcsoft/v01-06/lcio/v01-11/lib/liblcio.so.1.11

#11 0x000000000406f6d in main ()

The program is running. Quit anyway (and detach it)? (y or n) [answered Y; input not from terminal]

Detaching from program: /proc/12992/exe, process 12992

in MarlinReco/v00-15/PFOID/src/Histogram.cc

in Function Histogram::GetNormContent(VObject \*VO)

there is:

```
if (mind>totNoOfBins-1)
    mind = totNoOfBins-1;
```

But if totNoOfBins == 0, then this will cause mind to become negative, the output said mind = -806020496

which crashed then in this line

```
double result = content[mind]/norm;
```

When I added these lines

```
if (mind < 0) {
    mind = 0;
}
```

The Segmentation violation did not happen anymore, but I have no idea what the function is doing, so there probably should be a better way to solve this issue?

I hope I explained well enough, what I think the problem is...

Cheers,  
André

---

Subject: Matching

Posted by [bweinert](#) on Wed, 22 Jul 2009 13:54:50 GMT

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Hi, I tried to create a matching program between virtual hits and real hits in order to get the tracks.

I did this by trying to match the cartesian coordinates, but it doesn't seem to produce the right results. It only matches a few hits every few events. Is there anything wrong with the code?

-Ben

```
double [] VirtPos = new double [3];
```

```

.
.
.

VirtPos[0] = rpVect[0];

VirtPos[1] = rpVect[1];

VirtPos[2] = rpVect[2];

VirtPosList.add(VirtPos);
.
.
.

    if(subdetName.equals(hcalSubdetName))
    {
List<CalorimeterHit> hits = null;
    try {
        hits = event.get( CalorimeterHit.class, hcalHitmapName);
    }
    catch (Exception e) {}
    if(hits==null) return;

    for( int i = 0; i<hits.size(); ++i ) {
        CalorimeterHit ihit = hits.get(i);
        matchHitsXYZ(ihit.getPosition());}
    }
.
.
.

else if(subdetName.equals(ecalSubdetName))
    {
List<CalorimeterHit> hitsE1 = null;
    try {
        hitsE1 = event.get( CalorimeterHit.class, ecalHitmapName);
    }
    catch (Exception e) {}
    if(hitsE1==null) return;

```



```

for( int i = 0; i<hitsE1.size(); ++i ) {
    CalorimeterHit ihit = hitsE1.get(i);
    matchHitsXYZ(ihit.getPosition());
}
.
.
.

protected void matchHitsXYZ(double [] realPos)
{

    AIDA aida = AIDA.defaultInstance();
    int nhitsTotal = 0;

// loop through virtual hits
for (double [] virtPos : VirtPosList) {

    if (((realPos[0]-1)<=virtPos[0] && virtPos[0]<=((realPos[0])+1))
    {
        if(((realPos[1]-1)<=virtPos[1] && virtPos[1]<=((realPos[1])+1))
        {
            if( ((realPos[2]-1)<=virtPos[2] && virtPos[2]<=((realPos[2])+1))
            {
                System.out.println("Matched Hit at: (" + realPos[0] + "," + realPos[1] + "," + realPos[2] +)");

                aida.cloud2D("Y vs. X Matched").fill(realPos[1], realPos[0]);
                MatchedPosList.add(realPos);
                    foundHits.add(new BasicHep3Vector(realPos[0], realPos[1], realPos[2]));

                            nhitsTotal++;
                MatchedPosList.add(realPos);
                System.out.println("Number of virtual hits : " + VirtPosList.size() + " Number of real hits : "
+nhitsTotal);
            }
        }
    }
}
}
}
}

```



Subject: Skip events & LCFI package  
Posted by [vouts](#) on Mon, 18 Jan 2010 16:08:14 GMT  
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---

Hello everybody,

I am analyzing higgsstrahlung data using the steering file stdreco.xml, from /afs/desy.de/group/ilcsoft/StandardConfig/v02-00-00/mc200 8/. While in general the output seems ok when I try to skip some events (using SkipNEvents parameter of the steering file - no matter how many events) I am taking the following message from the FlavourTagProcessor for each jet:

FlavourTagProcessor - Warning: Unexpected multiplicity of 0.164409!  
FlavourTagProcessor - Warning: b tag output has size 0. Putting invalid output value of -1 in the LCIO file.  
FlavourTagProcessor - Warning: c tag output has size 0. Putting invalid output value of -1 in the LCIO file.  
FlavourTagProcessor - Warning: c tag (b background only) output has size 0. Putting invalid output value of -1 in the LCIO file.

As I understand the multiplicity refers to the number of reconstructed vertices. So is giving a non natural number of vertices, which is apparently wrong, so finally is putting an invalid output to the neural nets.

Finally job is crashing with a segmentation error.

Is something else I need to do in order to use SkipNEvents parameter?

Any comment would be welcome,  
thank you

Yorgos

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Subject: Re: Skip events & LCFI package  
Posted by [harderk](#) on Mon, 18 Jan 2010 16:32:37 GMT  
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---

Hi Yorgos,  
The FlavourTag processor in LCFIVertex relies on configuration information stored in the LCIO Run Header to identify the flavour tag variables properly. When you skip events using the SkipNEvents parameter, unfortunately you also skip the run header, leaving the FlavourTag processor without its vital info. Skipping a run header in the process of skipping events is

something quite counter-intuitive to most people who have worked with actual high energy physics data (which is one of the reasons why LCFIVertex relies on the presence of a run header at all times), but seemingly this behaviour was a deliberate design choice for LCIO. The only workaround that I remember was to implement skipping of events in a small simple processor rather than using the SkipNEvents parameter. There was at least one such processor around, but unfortunately I don't remember where.

Cheers,  
Kristian

---

---

Subject: RecoMCTruthLinker  
Posted by [grenier](#) on Fri, 09 Mar 2012 15:42:29 GMT  
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---

Hi,

I don't know what the RecoMCTruthLinker processor is doing in details.  
In the standard config (ILDConfig v02-00), it is used and it requires a collection of LCRRelation between the SimCalorimeterHit and the Calorimeterhit.

In my setup, I'm producing one LCRRelation for HCAL and one for ECAL. So to feed the RecoMCTruthLinker properly, I need to merge these 2 collections in one.

Is there a processor that can do such a merge ?

---

---

Subject: LCalReco processor  
Posted by [bkrupa](#) on Tue, 09 Apr 2013 11:40:40 GMT  
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---

Hello,

I need to get the reconstruction of particles registered by the LumiCal detector. From what I could figure out a processor that would perform this reconstruction is not available. I am rather novice user of the Marlin and therefore I have a question for examples of how to write such processor.

Thank you in advance,  
Beata

---

Subject: Re: LCalReco processor  
Posted by [gaede](#) on Wed, 10 Apr 2013 08:21:50 GMT  
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---

Hello Beata,

the LumiCal reconstruction is done in PandoraPFA. You can check the resulting clusters in the "PandoraClusters" collection by using `Cluster::getSubdetectorEnergies()[3]` for contributions from the LCal - see collection parameter (w/ dumpevent):

parameter ClusterSubdetectorNames [string]: ecal, hcal, yoke, lcal, lhcal, bcal,

For the details you should refer to the Pandora code.

Cheers, Frank.

---

---

Subject: Re: LCalReco processor  
Posted by [bkrupa](#) on Fri, 12 Apr 2013 07:58:36 GMT  
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---

Hello Frank,

Thank you for your tips. I got acquainted with PandoraPFA. And if I have any further questions, let me ask for help again.

Cheers,  
Beata

---

---

Subject: collection not in event:TPCSpacePointCollection  
Posted by [jfstrube](#) on Thu, 20 Mar 2014 02:36:26 GMT  
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---

Dear reco experts,

I'm trying to reconstruct a couple of files that I generated with physsim at KEK. I can run them through Mokka using ILCDirac (application version 080003, see also [/afs/cern.ch/user/j/jfstrube/work/public/HiggsRecoil/Mokka/di racmokka.py](#)).

This gives me files like this (replicas at CERN and KEK):

```
/ilc/user/j/jstrube/test/HiggsCP/slci/ILD_01_v05/250GeV/rec  
oil/ilc-user-j-jstrube-test-HiggsCP/physsim_zh.ID_01_ze1e1.eL.pR.anom_bTilde303_SIM.slci
```

When trying to run this file through what I think is the official DBD reco xml (see attached).

```
Using: Marlin --global.LCIOInputFiles="{filename}"  
--MyLCIOOutputProcessor.LCIOOutputFile="{recfilename}"  
--DSTOutput.LCIOOutputFile="{dstfilename}" --BgOverlay.InputFileNames="{helpervar}"  
--BgOverlay.expBG="{bgAverage[{energy}]}"  
--MyBCalReco.BackgroundFilename="{bcalFiles[{energy}]}" stdreco.xml
```

<snip>

```
<!-- steering file parameter: [ global.LCIOInputFiles ] will be OVERWRITTEN with value: [ "  
/hsm/ilc/grid/storm/user/j/jstrube/test/HiggsCP/slci/ILD_01  
_v05/250GeV/recoil/ilc-user-j-jstrube-test-HiggsCP/physsim_z  
h.ID_01_ze1e1.eL.pR.anom_bTilde303_SIM.slci " ] -->  
<!-- steering file parameter: [ MyLCIOOutputProcessor.LCIOOutputFile ] will be OVERWRITTEN  
with value: [ "physsim_zh.ID_01_ze1e1.eL.pR.anom_bTilde303_REC.slci" ] -->  
<!-- steering file parameter: [ DSTOutput.LCIOOutputFile ] will be OVERWRITTEN with value:  
[ "physsim_zh.ID_01_ze1e1.eL.pR.anom_bTilde303_DST.slci" ] -->  
<!-- steering file parameter: [ BgOverlay.InputFileNames ] will be OVERWRITTEN with value: [ "  
/group/ilc/users/miyamoto/mcprod/130422-Reco/sim/250-TDR_ws/  
aa_lowpt/sv01-14-01-p03.mILD_o1_v05.E250-TDR_ws.Paa_lowpt.I1  
06725.eL80.pR30-00004.slci /group/ilc/users/miyamoto/mcprod/130422-Reco/sim/250-TDR_ws/  
aa_lowpt/sv01-14-01-p03.mILD_o1_v05.E250-TDR_ws.Paa_lowpt.I1  
06725.eL80.pR30-00005.slci " ] -->  
<!-- steering file parameter: [ BgOverlay.expBG ] will be OVERWRITTEN with value: [ "0.2" ] -->  
<!-- steering file parameter: [ MyBCalReco.BackgroundFilename ] will be OVERWRITTEN with  
value: [ " bg_aver.sv01-14-01-p00_fieldX02.mILD_o1_v05.E250-TDR_ws.PBea  
mstr-pairs.I270000.root " ] -->
```

</snip>

I get (at event 88):

```
*****
```

A runtime error occurred - (uncaught exception):

Icio::Exception: Icio::DataNotAvailableException: LCEventImpl::getCollection: collection not in event:TPCSpacePointCollection

The LCIO file seems to have a corrupted EventHeader that doesn't list all the collections in the event properly

Marlin will have to be terminated, sorry.

\*\*\*\*\*

This is using ILCSoft v01-16 (no patch, as installed at KEK).  
I have not seen this error before. Any hint as to what's causing this is appreciated.

---

## File Attachments

1) [stdreco.xml](#), downloaded 260 times

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Subject: Re: collection not in event:TPCspacePointCollection  
Posted by [jfstrube](#) on Thu, 20 Mar 2014 13:43:10 GMT  
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---

Just to add some more information:  
This appears to work if I only specify one instead of two overlay files. That is a workaround, not a solution.

---

---

Subject: Re: collection not in event:TPCspacePointCollection  
Posted by [gaede](#) on Thu, 20 Mar 2014 13:53:21 GMT  
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---

Hi Jan,

I am afraid this is a 'feature' of the Overlay processor.  
It uses direct access in LCIO, which only works with one file.  
If you need more than one background file, you will have to merge them in a pre-processing job.

We clearly need to change the Overlay processor to only take one file as input argument to avoid such confusion in the future...

Cheers, Frank.

---

---

Subject: Problem with Marlin  
Posted by [bkrupa](#) on Wed, 23 Apr 2014 07:49:59 GMT  
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---

Hallo All,

I have a problem with Marlin. When I try to use it I get messages like this:

\*\*\* Break \*\*\* segmentation violation

```
=====
There was a crash.
This is the entire stack trace of all threads:
=====
#0 0x00000033dd0ac8be in waitpid () from /lib64/libc.so.6
#1 0x00000033dd03e909 in do_system () from /lib64/libc.so.6
#2 0x00007fab167b3958 in TUnixSystem::StackTrace (this=0x23032d0) at
/home/ilcsoft/Downloads/root/root/core/unix/src/TUnixSystem.cxx:2403
#3 0x00007fab167b27d3 in TUnixSystem::DispatchSignals (this=0x23032d0,
sig=kSigSegmentationViolation) at /home/ilcsoft/Downloads/root/root/core/unix/src/TUnixSystem.
cxx:1279
#4 <signal handler called>
#5 0x00007fab0a02f9cb in Histogram::GetNormContent (this=0x3a112c0, VO=<value optimized
out>) at /ilcsoft/v01-17-05/MarlinReco/v01-09/PFOID/src/Histogram.cc: 360
#6 0x00007fab0a02c835 in PDF::GetLikelihood (this=0x36d2f10, CatName="electron") at
/ilcsoft/v01-17-05/MarlinReco/v01-09/PFOID/src/PDF.cc:277
#7 0x00007fab0a028a35 in PFOID::processEvent (this=0x2ae2c80, evt=<value optimized out>)
at /ilcsoft/v01-17-05/MarlinReco/v01-09/PFOID/src/PFOID.cc:222
#8 0x00007fab16fc5301 in marlin::ProcessorMgr::processEvent (this=0x25bf0a0,
evt=0x81dff060) at /ilcsoft/v01-17-05/Marlin/v01-05/source/src/ProcessorMgr.cc: 420
#9 0x00007fab185c248e in SIO::SIOReader::readStream (this=0x2b40b80,
maxRecord=2147483647) at /ilcsoft/v01-17-05/lcio/v02-04-03/src/cpp/src/SIO/SIOReader. cc:719
#10 0x00007fab185c0582 in SIO::SIOReader::readStream (this=<value optimized out>) at
/ilcsoft/v01-17-05/lcio/v02-04-03/src/cpp/src/SIO/SIOReader. cc:647
#11 0x0000000000408e2b in main (argc=<value optimized out>, argv=0x7fff00000000) at
/ilcsoft/v01-17-05/Marlin/v01-05/source/src/Marlin.cc:483
=====
```

The lines below might hint at the cause of the crash.  
If they do not help you then please submit a bug report at  
<http://root.cern.ch/bugs>. Please post the ENTIRE stack trace  
from above as an attachment in addition to anything else  
that might help us fixing this issue.

#5 0x00007fab0a02f9cb in Histogram::GetNormContent (this=0x3a112c0, VO=<value optimized out>) at /ilcsoft/v01-17-05/MarlinReco/v01-09/PFOID/src/Histogram.cc: 360  
#6 0x00007fab0a02c835 in PDF::GetLikelihood (this=0x36d2f10, CatName="electron") at /ilcsoft/v01-17-05/MarlinReco/v01-09/PFOID/src/PDF.cc:277  
#7 0x00007fab0a028a35 in PFOID::processEvent (this=0x2ae2c80, evt=<value optimized out>) at /ilcsoft/v01-17-05/MarlinReco/v01-09/PFOID/src/PFOID.cc:222  
#8 0x00007fab16fc5301 in marlin::ProcessorMgr::processEvent (this=0x25bf0a0, evt=0x81dff060) at /ilcsoft/v01-17-05/Marlin/v01-05/source/src/ProcessorMgr.cc: 420  
#9 0x00007fab185c248e in SIO::SIOReader::readStream (this=0x2b40b80, maxRecord=2147483647) at /ilcsoft/v01-17-05/lcio/v02-04-03/src/cpp/src/SIO/SIOReader.cc:719  
#10 0x00007fab185c0582 in SIO::SIOReader::readStream (this=<value optimized out>) at /ilcsoft/v01-17-05/lcio/v02-04-03/src/cpp/src/SIO/SIOReader.cc:647  
#11 0x0000000000408e2b in main (argc=<value optimized out>, argv=0x7fff00000000) at /ilcsoft/v01-17-05/Marlin/v01-05/source/src/Marlin.cc:483

=====

I don't know what is the problem. I simulated the process:  $e^+ e^- \rightarrow \gamma \gamma \rightarrow e^+ e^- X$ . Here X is the leptonic or hadronic final state. Have you any idea what is wrong? Every time such error occurs for another event in the same sample.

Thank you for any help.

Cheers,  
Beata

---

Subject: Re: Bug in MarlinReco/PFOID/src/Histogram.cc  
Posted by [bkrupa](#) on Fri, 25 Apr 2014 08:59:52 GMT  
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Hallo Andre,

I have perhaps a similar problem with Marlin. When I try to use it I get messages like this:

\*\*\* Break \*\*\* segmentation violation

=====

There was a crash.

This is the entire stack trace of all threads:

=====



```

#0 0x00000033dd0ac8be in waitpid () from /lib64/libc.so.6
#1 0x00000033dd03e909 in do_system () from /lib64/libc.so.6
#2 0x00007fab167b3958 in TUnixSystem::StackTrace (this=0x23032d0) at
/home/ilcsoft/Downloads/root/root/core/unix/src/TUnixSystem. cxx:2403
#3 0x00007fab167b27d3 in TUnixSystem::DispatchSignals (this=0x23032d0,
sig=kSigSegmentationViolation) at
/home/ilcsoft/Downloads/root/root/core/unix/src/TUnixSystem. cxx:1279
#4 <signal handler called>
#5 0x00007fab0a02f9cb in Histogram::GetNormContent (this=0x3a112c0, VO=<value
optimized out>) at
/ilcsoft/v01-17-05/MarlinReco/v01-09/PFOID/src/Histogram.cc: 360
#6 0x00007fab0a02c835 in PDF::GetLikelihood (this=0x36d2f10,
CatName="electron") at /ilcsoft/v01-17-05/MarlinReco/v01-09/PFOID/src/PDF.cc:277
#7 0x00007fab0a028a35 in PFOID::processEvent (this=0x2ae2c80, evt=<value
optimized out>) at /ilcsoft/v01-17-05/MarlinReco/v01-09/PFOID/src/PFOID.cc:222
#8 0x00007fab16fc5301 in marlin::ProcessorMgr::processEvent (this=0x25bf0a0,
evt=0x81dff060) at
/ilcsoft/v01-17-05/Marlin/v01-05/source/src/ProcessorMgr.cc: 420
#9 0x00007fab185c248e in SIO::SIOReader::readStream (this=0x2b40b80,
maxRecord=2147483647) at
/ilcsoft/v01-17-05/lcio/v02-04-03/src/cpp/src/SIO/SIOReader. cc:719
#10 0x00007fab185c0582 in SIO::SIOReader::readStream (this=<value optimized
out>) at /ilcsoft/v01-17-05/lcio/v02-04-03/src/cpp/src/SIO/SIOReader. cc:647
#11 0x0000000000408e2b in main (argc=<value optimized out>,
argv=0x7fff00000000) at /ilcsoft/v01-17-05/Marlin/v01-05/source/src/Marlin.cc:483
=====

```

The lines below might hint at the cause of the crash.  
If they do not help you then please submit a bug report at  
<http://root.cern.ch/bugs>. Please post the ENTIRE stack trace  
from above as an attachment in addition to anything else  
that might help us fixing this issue.

```

=====
#5 0x00007fab0a02f9cb in Histogram::GetNormContent (this=0x3a112c0, VO=<value
optimized out>) at
/ilcsoft/v01-17-05/MarlinReco/v01-09/PFOID/src/Histogram.cc: 360
#6 0x00007fab0a02c835 in PDF::GetLikelihood (this=0x36d2f10,
CatName="electron") at /ilcsoft/v01-17-05/MarlinReco/v01-09/PFOID/src/PDF.cc:277
#7 0x00007fab0a028a35 in PFOID::processEvent (this=0x2ae2c80, evt=<value
optimized out>) at /ilcsoft/v01-17-05/MarlinReco/v01-09/PFOID/src/PFOID.cc:222
#8 0x00007fab16fc5301 in marlin::ProcessorMgr::processEvent (this=0x25bf0a0,
evt=0x81dff060) at

```

```
/ilcsoft/v01-17-05/Marlin/v01-05/source/src/ProcessorMgr.cc: 420
#9 0x00007fab185c248e in SIO::SIOReader::readStream (this=0x2b40b80,
maxRecord=2147483647) at
/ilcsoft/v01-17-05/lcio/v02-04-03/src/cpp/src/SIO/SIOReader. cc:719
#10 0x00007fab185c0582 in SIO::SIOReader::readStream (this=<value optimized
out>) at /ilcsoft/v01-17-05/lcio/v02-04-03/src/cpp/src/SIO/SIOReader. cc:647
#11 0x0000000000408e2b in main (argc=<value optimized out>,
argv=0x7fff00000000) at /ilcsoft/v01-17-05/Marlin/v01-05/source/src/Marlin.cc:483
=====
```

Every time such error occurs for another event in the same sample. I don't know if my problem is the same as described by you. Probably this issue was solved by then. But the error which I got seems to be similar, if I am not wrong.

Have you any idea what I should do?

Thank you for any help.

Cheers,  
Beata

---

Subject: Re: Bug in MarlinReco/PFOID/src/Histogram.cc  
Posted by [sailer](#) on Fri, 25 Apr 2014 09:48:09 GMT  
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Hi Beata,

I wanted to say the issue has been fixed, but actually only in a different function.  
<https://svnsrv.desy.de/viewvc/marlinreco/MarlinReco/tags/v01-09/PFOID/src/Histogram.cc?annotate=1445>  
(I don't even know if this change is due to this post of because someone else encountered the bug themselves...)  
So the bug still exists and it seems you stumbled across it as well.

If you are using your own installation of Marlin you could just fix the bug in your installation.

Just add the line  
if ( mind<0 ) mind = 0;  
after line 358 and before line 360 into the MarlinReco/PFOID/src/Histogram.cc

and then recompile and install MarlinReco

make sure to source the ILCSoft environment  
cd MarlinReco/<VERSION>/build ## this folder should exist already  
make install

If you are not using your own installation, which installation of Marlin are you using?

And we should make sure this is fixed in the new version of MarlinReco. Though I still don't understand when this bug shows up and the "mind=0" cures the symptom but not the disease.

Cheers,  
Andre

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Subject: Re: Bug in MarlinReco/PFOID/src/Histogram.cc  
Posted by [bkrupa](#) on Fri, 25 Apr 2014 13:47:37 GMT  
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Thank you.  
I am using my own installation so I added this line into Histogram.cc. And now it seems to work.

Cheers,  
Beata

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Subject: Re: Problem with Marlin  
Posted by [bkrupa](#) on Mon, 28 Apr 2014 07:53:33 GMT  
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Dear All,

The problem is fixed now.

Cheers,  
Beata

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Subject: Alternative to using org.lcsim "TrackSubdetectorHitNumbers" driver  
Posted by [oliverReardonSmith](#) on Wed, 27 Aug 2014 13:39:01 GMT

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Hi all,

Flavour tagging with lfcIPlus seems to require the track.subdetector\_hits list to be filled (I get crazy results without it). However the only org.lcsim driver I know that fills these lists is

"org.lcsim.recon.util.TrackSubdetectorHitNumbersDriver" (attached).

Unfortunately this driver only works on sidloi3 as rather than reading the geometry given it has a hardcoded length for the vertex barrel.

Does anyone know of an alternate driver or have any advice on rewriting this driver in a better way? I'm tempted to just make a new version that takes the detector barrel length as a parameter in the steering file but it'd be nicer to do this by reading the detector geometry directly.

Many thanks,

Oli

#### File Attachments

1) [TrackSubdetectorHitNumbersDriver.java](#), downloaded 312 times

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Subject: Re: Alternative to using org.lcsim "TrackSubdetectorHitNumbers" driver  
Posted by [jfstrube](#) on Wed, 27 Aug 2014 13:50:03 GMT  
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LCFIPlus makes track selections based on quality cuts in different subdetectors. In SiD we have the convention that we specify subdetectors by identifier. Unfortunately, there is also the option to use an arbitrary number, which is what LCFIPlus chose to do. This is very fragile, and ILD has different "numbers" than SiD, not to mention that they have a TPC and SiD doesn't.

Feel free to modify the driver such that it works for you.

If you can make it work by reading the detector geometry directly, that would be very helpful.

Ideally, LCFIPlus should be modified to read the detector geometry directly, but since this is currently in flux, any change there is unlikely to live very long, either.

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Subject: Re: Alternative to using org.lcsim "TrackSubdetectorHitNumbers" driver

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Posted by [oliverReardonSmith](#) on Wed, 27 Aug 2014 13:55:02 GMT  
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Thanks. I'll look into altering the driver then.

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Subject: Re: Alternative to using org.lcsim "TrackSubdetectorHitNumbers" driver  
Posted by [jfstrube](#) on Wed, 27 Aug 2014 14:50:17 GMT  
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Great, thank you.  
If you post it back here, we can check it in for future releases.

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Subject: Re: Alternative to using org.lcsim "TrackSubdetectorHitNumbers" driver  
Posted by [gaede](#) on Wed, 27 Aug 2014 15:12:53 GMT  
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Hi Jan,

Quote:

LCFIPlus makes track selections based on quality cuts in different subdetectors. In SiD we have the convention that we specify subdetectors by identifier. Unfortunately, there is also the option to use an arbitrary number, which is what LCFIPlus chose to do. This is very fragile, and ILD has different "numbers" than SiD, not to mention that they have a TPC and SiD doesn't.

I agree that the way the subdetectorHitNumbers() are currently stored, is not optimal, as it makes assumptions about the order and type of tracking detectors. However, this is a feature of the LCIO EDM and not really of LCFIPlus, which simply uses LCIO.

A possible improvement would be to change the way the subdetectorHitNumbers are stored in LCIO to a map like structure, e.g. a vector of pairs of ints, one being the subDetectorID and one being the number hits from that sub-detector.

This would also have the effect, that no geometry would be needed for filling this information, as it could be done entirely based on the cellID (which has the sub-detectorID) of the TrackerHit.

-Frank.

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Subject: Re: Alternative to using org.lcsim "TrackSubdetectorHitNumbers" driver  
Posted by [jfstrube](#) on Wed, 27 Aug 2014 15:43:50 GMT  
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In the future, I would anticipate that vertex finding would need track states at different hits. For this, one would probably need the geometry information, unless all of the required track states are stored in LCIO. This might still be possible, but I couldn't say for sure right now.

I would prefer if the track quality cuts, on the other hand, were moved out of LCFIPlus into a "TrackPreparationDriver" or similar. One might want / need to do sophisticated selections. This should not require modifications to the vertex finding code.

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Subject: Re: Alternative to using org.lcsim "TrackSubdetectorHitNumbers" driver  
Posted by [oliverReardonSmith](#) on Thu, 28 Aug 2014 15:02:56 GMT  
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I've got a modified version that seems to be working based on the inside method of this class. I'll post it here once I've tested and polished it a bit more.

It depends on the detector having subdetectors named "SiVertexEndcap" and "SiVertexBarrel" in order to work but I don't think there's an easy way around this.

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Subject: Re: Alternative to using org.lcsim "TrackSubdetectorHitNumbers" driver  
Posted by [oliverReardonSmith](#) on Fri, 29 Aug 2014 15:36:36 GMT  
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This is what I have. It isn't massively elegant but it does do the job.

I was surprised by there being hits in the "SiTrackerForward" detector which come with type == 1 but I've not been able to find any way to translate between the type and the detector so I don't know if this is intended behavior. I've tagged these as tracker hits.

If there's anything you'd like changing then let me know.

## File Attachments

1) [TrackSubdetectorHitNumbersDriver.java](#), downloaded 272 times

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Subject: Re: Alternative to using org.lcsim "TrackSubdetectorHitNumbers" driver  
Posted by [jfstrube](#) on Mon, 01 Sep 2014 05:30:52 GMT  
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I've taken a look at this and have no objections, but I have not had the time to test.  
If you can confirm that this version does still work with sidloi3 as before, then I will  
check it into the repository.

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Subject: Re: Alternative to using org.lcsim "TrackSubdetectorHitNumbers" driver  
Posted by [oliverReardonSmith](#) on Mon, 01 Sep 2014 08:22:10 GMT  
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I've only tested its effect on flavour tagging so if the numbers are used anywhere else there may  
be problems. As far as I can tell it does work correctly with LCFI though.

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Subject: Re: Alternative to using org.lcsim "TrackSubdetectorHitNumbers" driver  
Posted by [jfstrube](#) on Mon, 01 Sep 2014 08:50:41 GMT  
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That's all it's used for. We shouldn't encourage using it for anything else.

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Subject: Re: Alternative to using org.lcsim "TrackSubdetectorHitNumbers" driver  
Posted by [oliverReardonSmith](#) on Mon, 01 Sep 2014 09:12:30 GMT  
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In that case the new driver should work fine.

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Subject: 250 GeV DBD samples  
Posted by [poeschl](#) on Sat, 20 Dec 2014 10:51:14 GMT

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Dear Colleagues,

we would like to look at b quark production in the 250 GeV samples as produced for the DBD, e.g.

`lfc-ls /grid/ilc/prod/ilc/mc-dbd/ild/rec/250-TDR_ws/2f_Z_hadronic/ILD_o1_v05/v01-16-p10_250`

We are wondering whether these files were produced with or without gamma gamma background. I assume that they are with the background as there is nowhere a corresponding label. Does there exist also files w/o gamma gamma background? From a quick scan through the grid directories, I could not figure out corresponding files but maybe I have missed something.

We (or better said Sviatoslav) are capable of running the reconstruction ourselves but would of course prefer centrally produced files.

Thanks in advance for advice and help and Merry Christmas,

Roman

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