Subject: [FIXED] FairEvtFilter problem with c++11
Posted by StefanoSpataro on Wed, 12 Nov 2014 17:16:38 GMT
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Trying to install pandaroot with the new external packages and git, in an Ubuntu 14.10 (gcc 4.9.1) I have seen that the code has problems with the C++11 options.
In particular:

```
In file included from
/home/lavezzi/git/pandaroot/pgenerators/eventFilter/FairFilteredPrimaryGenerator.h:27:0,
                 from
/home/lavezzi/git/pandaroot/pgenerators/eventFilter/FairFilteredPrimaryGenerator.cxx:1:
/home/lavezzi/git/pandaroot/pgenerators/eventFilter/FairEvtFilter.h:129:46: error: 'constexpr' needed for in-class initialization of static data member 'const Double_t FairEvtFilter::kNoChargeSpecified' of non-integral type [-fpermissive]
  static const Double_t kNoChargeSpecified = -999.9;
                                              ^
pgenerators/CMakeFiles/PGen.dir/build.make:497: recipe for target
'pgenerators/CMakeFiles/PGen.dir/eventFilter/FairFilteredPrimaryGenerator.cxx.o' failed
```

In c++11 static const of a non-integer number is not allowed, one should use constexpr. But if I use constexpr:

```
[  9%] Generating G__PGenDict.cxx
Error: Invalid type 'constexpr' in declaration of 'Double_t kNoChargeSpecified'
/home/lavezzi/git/pandaroot/pgenerators/eventFilter/FairEvtFilter.h:129:
Warning: Error occurred during reading source files
Warning: Error occurred during dictionary source generation
!!!Removing /home/lavezzi/git/pandaroot/cbuild/pgenerators/G__PGenDict.cxx
/home/lavezzi/git/pandaroot/cbuild/pgenerators/G__PGenDict.h !!!
Error: /home/lavezzi/git/fairsoft_jul14p3/externals/bin/rootcint: error loading headers...
pgenerators/CMakeFiles/PGen.dir/build.make:77: recipe for target
'pgenerators/G__PGenDict.cxx' failed
make[2]: *** [pgenerators/G__PGenDict.cxx] Error 1
```

Martin, can you fix this problem? This is present in several classes, including also FTS.
From some comments i read in the forum, what you are doing is a bit nasty and should be disegned in a different and safer way.

Thanks in advance.

Subject: Re: FairEvtFilter problem with c++11
Posted by MartinJGaluska on Wed, 12 Nov 2014 18:06:55 GMT
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Hi Stefano,

how do I install the new external packages in order to replicate the problem?

Do I just need to follow the instructions here?
https://github.com/FairRootGroup/FairSoft

Quote:From some comments i read in the forum, what you are doing is a bit nasty and should be disegned in a different and safer way.

From what you wrote it seems that you have already encountered a solution to the problem. Could you point me to this safer way which you are talking about?

Kind regards,
Martin

Subject: Re: FairEvtFilter problem with c++11
Posted by StefanoSpataro on Wed, 12 Nov 2014 18:20:49 GMT
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This is what I found:

http://stackoverflow.com/questions/9141950/initializing-const-member-wit
hin-class-declaration-in-c

In Ubuntu 14.10 there is gcc 4.9.1, most probably it is not just a matter to install new externals. I will try to setup a VM so that I can send it to you for tests.

Subject: Re: FairEvtFilter problem with c++11
Posted by MartinJGaluska on Wed, 12 Nov 2014 18:33:41 GMT
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Thank you. Tomorrow I will be gone, but I will start to implement the changes on Friday.

Subject: Re: FairEvtFilter problem with c++11
Posted by StefanoSpataro on Fri, 14 Nov 2014 10:19:48 GMT
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I fixed in the code and committed in svn.
Simply you cannot assign the value of a static const in the header, but you need to move it to the .cxx (thanks Mohammad and Florain for the help).
A good question is why you are defining pi, instead of using TMath::Pi().
You can find below the changes I did.

```
pandauser@panda-VirtualBox:~/fairsoft_jul14p3/pandaroot$ svn diff fts/FtsTracking/
Index: fts/FtsTracking/PndFtsHoughTrackFinder.cxx
===================================================================
--- fts/FtsTracking/PndFtsHoughTrackFinder.cxx (revision 26438)
+++ fts/FtsTracking/PndFtsHoughTrackFinder.cxx (working copy)
```

```
@@ -4,8 +4,10 @@

 ClassImp(PndFtsHoughTrackFinder);

+const Double_t PndFtsHoughTrackFinder::meinpi = 3.14159265359;
+const Double_t PndFtsHoughTrackFinder::fZLineParabola = 368.;
+const Double_t PndFtsHoughTrackFinder::fZParabolaLine = 605.;

-
 PndFtsHoughTrackFinder::PndFtsHoughTrackFinder(PndFtsHoughTrackerTask *trackerTask)
:
   fTrackerTask(trackerTask),

Index: fts/FtsTracking/PndFtsHoughTrackFinder.h
===================================================================
--- fts/FtsTracking/PndFtsHoughTrackFinder.h (revision 26438)
+++ fts/FtsTracking/PndFtsHoughTrackFinder.h (working copy)
@@ -164,10 +164,10 @@
  // std::vector<PndTrackCand> fTrackCand; // resulting track candidates, also used for
returning PndTracks


- static const Double_t meinpi = 3.14159265359;
+ static const Double_t meinpi;
  ///< sets where the apex of the parabola is supposed to be
- static const Double_t fZLineParabola = 368.; // the value should coincide with the start of the
dipole field // 368. was ok
- static const Double_t fZParabolaLine = 605.; // the value should coincide with the end of the
dipole field // TODO determine this value
+ static const Double_t fZLineParabola; // the value should coincide with the start of the dipole
field // 368. was ok
+ static const Double_t fZParabolaLine; // the value should coincide with the end of the dipole
field // TODO determine this value



pandauser@panda-VirtualBox:~/fairsoft_jul14p3/pandaroot$ svn diff pgenerators/eventFilter/
Index: pgenerators/eventFilter/FairEvtFilter.cxx
===================================================================
--- pgenerators/eventFilter/FairEvtFilter.cxx (revision 26438)
+++ pgenerators/eventFilter/FairEvtFilter.cxx (working copy)
@@ -5,8 +5,8 @@

 #include "FairEvtFilter.h"

+const Double_t FairEvtFilter::kNoChargeSpecified = -999.9;

-
 // -----   Default constructor   -------------------------------------------
 FairEvtFilter::FairEvtFilter()
 : TNamed(), fEventNr(0), fVerbose(0), fTestMode(0)
Index: pgenerators/eventFilter/FairEvtFilter.h
```

```
===================================================================
--- pgenerators/eventFilter/FairEvtFilter.h (revision 26438)
+++ pgenerators/eventFilter/FairEvtFilter.h (working copy)
@@ -126,7 +126,7 @@
  TDatabasePDG* fdbPdg;
  // constant holding a double number which is not a valid charge
  // this serves to indicate that the value has not been specified by the user
- static const Double_t kNoChargeSpecified = -999.9;
+ static const Double_t kNoChargeSpecified;

  TClonesArray* fParticleList; // list of particles in the event which was generated
  Int_t fVerbose; // level of commenting output for your filter, between 0 and 12
```

Subject: Re: FairEvtFilter problem with c++11
Posted by MartinJGaluska on Fri, 14 Nov 2014 11:17:56 GMT

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Thank you for fixing the problem.

I assume that either a compiler flag or the standard behavior of gcc was changed as I found this information:

Quote:
> Initializing static member variables other than const int types is not standard C++ prior C++11. The gcc compiler will not warn you about this (and produce useful code nonetheless) unless you specify the -pedantic option.

Good to know that the constants can be initialised in the cxx file. I assumed that I would need to initialise them in the constructors' initialisation lists, for instance here:

```
FairEvtFilter::FairEvtFilter()
: TNamed(), fEventNr(0), fVerbose(0), fTestMode(0)
```

Kind regards,
Martin

Subject: Re: FairEvtFilter problem with c++11
Posted by StefanoSpataro on Fri, 14 Nov 2014 11:50:56 GMT

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Indeed with new base packages C++11 is used, and few modifications are needed.