
Subject: Ideal Tracking Tasks

Posted by [Ralf Kliemt](#) on Wed, 20 Mar 2013 12:21:20 GMT

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Dear trackers.

There are now two ideal tracking tasks. The concept is to match hits from STT or FTS to MC tracks and adding MVD+GEM hits afterwards.

The packages & classes are:

```
sttmvdtracking/PndSttMvdGemTrackingIdeal  
fts/PndFtsTrackerIdeal
```

Set your track output branch with:

```
SetTrackOutput("...")
```

Smearing can be introduced by:

```
SetMomentumSmearing(spx,spy,spz)  
SetRelativeMomentumSmearing(dp/p)  
SetVertexSmearing(svx,svy,svz)  
SetTrackingEfficiency(epsilon)
```

One can deactivate the additional detectors by:

```
SetMvdActivity(kFALSE)  
SetGemActivity(kFALSE)
```

Cheers.

Ralf

Subject: Re: Ideal Tracking Tasks

Posted by [Stefano Spataro](#) on Thu, 21 Mar 2013 17:50:35 GMT

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Hi Ralf,

I have added a ideal reconstruction macro under pandaroot/macro/run/recoideal_complete.C

I put there:

```
PndSttMvdGemTrackingIdeal* trackStt = new PndSttMvdGemTrackingIdeal();  
trackStt->SetRelativeMomentumSmearing(0.05);  
trackStt->SetVertexSmearing(0.05, 0.05, 0.05);
```

```
trackStt->SetTrackingEfficiency(1.);
trackStt->SetTrackOutput("SttMvdGemIdealTrack");
fRun->AddTask(trackStt);
```

What I find strange is that if I run muons (13) at 1 GeV, with a momentum smearing of 5%, once I plot:

```
cbmsim.Draw("-1./SttMvdGemIdealTrack.fTrackParamLast.fQp>>aa(200,-1.5,0.5)","SttMvdGemIdealTrack.fRefIndex==0")
```

I obtain a width of 37 MeV instead of 50. Vertices seem fine.

Could you please check also in your case?

The second thing I found is that half of the track are failing with the kalman, which sounds a bit strange. But this I could check more deeply later.

Subject: Re: Ideal Tracking Tasks
Posted by [Ralf Kliemt](#) on Mon, 25 Mar 2013 10:13:47 GMT
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Hi Stefano.

I found that to be a bug indeed. Fixed in SVN.

Ralf

Subject: Re: Ideal Tracking Tasks
Posted by [Stefano Spataro](#) on Tue, 26 Mar 2013 08:29:55 GMT
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Hi Ralf,
thanks for the fix, I have tried and now the resution seems correct.
Still I have problems in the kalman, half of the tracks fail the fit. Is it possible that the candidate is not sorted in the proper way? If you run the recoideal_complete.C, after the fit in substance I do not see any momentum improvement.

Subject: Re: Ideal Tracking Tasks
Posted by [Ralf Kliemt](#) on Tue, 26 Mar 2013 09:24:51 GMT
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Hm.

Doesn't sorting occur in the interface of GenFit?

Ralf

Subject: Re: Ideal Tracking Tasks
Posted by [Ralf Kliemt](#) on Tue, 26 Mar 2013 10:12:45 GMT
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Hi.

I modified the sorting parameter to be $\rho=(x*x+y*y)$
Should be better now.

Ralf

Subject: Re: Ideal Tracking Tasks
Posted by [Stefano Spataro](#) on Tue, 26 Mar 2013 16:38:34 GMT
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Hi Ralf,
now it breaks:

```
===PndRecoKalmanFit::Init() finished
=====
-I- PndMCTrackAssociator::Init
[INFO ] Branch: STTHitMix not found in Tree
[INFO ] Branch: STTHitMix not found in Tree
-W- PndMCTrackAssociator::Init: Using STTHit array
[INFO ] Branch: MVDHitsStripMix not found in Tree
[INFO ] Branch: MVDHitsStripMix not found in Tree
-W- PndMCTrackAssociator::Init: Using MVDHitsStrip array
[INFO ] Branch: MVDHitsPixelMix not found in Tree
[INFO ] Branch: MVDHitsPixelMix not found in Tree
-W- PndMCTrackAssociator::Init: Using MVDHitsPixel
[INFO ] The number of entries in chain is 1000
```

*** Break *** segmentation violation

=====

There was a crash.

This is the entire stack trace of all threads:

```
=====
#0 0x00007fb69d05b43e in __libc_waitpid (pid=<optimized out>, stat_loc=0x7fffb1524580,
options=0) at ../sysdeps/unix/sysv/linux/waitpid.c:32
#1 0x00007fb69cfe129e in do_system (line=0x10d73550
"/home/spataro/sep12/fairbuild/etc/gdb-backtrace.sh 28302 1>&2") at
../sysdeps/posix/system.c:149
#2 0x00007fb69df18787 in TUnixSystem::StackTrace() () from
/home/spataro/sep12/fairbuild/lib/root/libCore.so.5.34
#3 0x00007fb69df1b063 in TUnixSystem::DispatchSignals(ESignals) () from
/home/spataro/sep12/fairbuild/lib/root/libCore.so.5.34
#4 <signal handler called>
#5 0x00007fb691d20c82 in FairHit::GetX (this=0x0) at
```

/home/spataro/sep12/pandaroot/base/FairHit.h:37
#6 0x00007fb68d01fb91 in PndSttMvdGemTrackingIdeal::Exec (this=0x24ecda0, option=0x7fb691d33360 "") at
/home/spataro/sep12/pandaroot/sttmvdtracking/PndSttMvdGemTrackingIdeal.cxx:190
#7 0x00007fb69deaed23 in TTask::ExecuteTasks(char const*) () from
/home/spataro/sep12/fairbuild/lib/root/libCore.so.5.34
#8 0x00007fb69deaf356 in TTask::ExecuteTask(char const*) () from
/home/spataro/sep12/fairbuild/lib/root/libCore.so.5.34
#9 0x00007fb691c5ad34 in FairRunAna::Run (this=0x1989cf0, Ev_start=0, Ev_end=1000) at
/home/spataro/sep12/pandaroot/base/FairRunAna.cxx:549
#10 0x00007fb691ccd991 in G__G__BaseDict_998_0_6 (result7=0x7fffb1532e40, funcname=0x19849a0 "", libp=0x7fffb1528430, hash=0) at
/home/spataro/sep12/build/base/G__BaseDict.cxx:14861
#11 0x00007fb69c44d9ab in Cint::G__ExceptionWrapper(int (*)(G__value*, char const*, G__param*, int), G__value*, char*, G__param*, int) () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#12 0x00007fb69c4f32e1 in G__execute_call () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#13 0x00007fb69c4f36ce in G__call_cppfunc () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#14 0x00007fb69c4d4077 in G__interpret_func () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#15 0x00007fb69c4c0546 in G__getfunction () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#16 0x00007fb69c5ac180 in G__getstructmem(int, G__FastAllocString&, char*, int, char*, int*, G__var_array*, int) () from /home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#17 0x00007fb69c5a364e in G__getvariable () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#18 0x00007fb69c499b92 in G__getitem () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#19 0x00007fb69c4a02a4 in G__getexpr () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#20 0x00007fb69c523c76 in G__exec_statement () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#21 0x00007fb69c4d21c7 in G__interpret_func () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#22 0x00007fb69c4c05ae in G__getfunction () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#23 0x00007fb69c49a331 in G__getitem () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#24 0x00007fb69c4a02a4 in G__getexpr () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#25 0x00007fb69c4abfac in G__calc_internal () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#26 0x00007fb69c5336df in G__process_cmd () from
/home/spataro/sep12/fairbuild/lib/root/libCint.so.5.34
#27 0x00007fb69dee2b2a in TCint::ProcessLine(char const*, TInterpreter::EErrorCode*) () from /home/spataro/sep12/fairbuild/lib/root/libCore.so.5.34
#28 0x00007fb69ded9523 in TCint::ProcessLineSynch(char const*, TInterpreter::EErrorCode*) () from /home/spataro/sep12/fairbuild/lib/root/libCore.so.5.34
#29 0x00007fb69de49b94 in TApplication::ExecuteFile(char const*, int*, bool) () from
/home/spataro/sep12/fairbuild/lib/root/libCore.so.5.34

```
#30 0x00007fb69de488cf in TApplication::ProcessLine(char const*, bool, int*) () from
/home/spataro/sep12/fairbuild/lib/root/libCore.so.5.34
#31 0x00007fb69daa080a in TRint::Run(bool) () from
/home/spataro/sep12/fairbuild/lib/root/libRint.so.5.34
#32 0x0000000000400f6c in main ()
```

=====
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 0x00007fb691d20c82 in FairHit::GetX (this=0x0) at  
/home/spataro/sep12/pandaroot/base/FairHit.h:37  
#6 0x00007fb68d01fb91 in PndSttMvdGemTrackingIdeal::Exec (this=0x24ecda0,  
option=0x7fb691d33360 "") at  
/home/spataro/sep12/pandaroot/sttmvdtracking/PndSttMvdGemTrackingIdeal.cxx:190  
#7 0x00007fb69deaed23 in TTask::ExecuteTasks(char const*) () from  
/home/spataro/sep12/fairbuild/lib/root/libCore.so.5.34  
#8 0x00007fb69deaf356 in TTask::ExecuteTask(char const*) () from  
/home/spataro/sep12/fairbuild/lib/root/libCore.so.5.34  
#9 0x00007fb691c5ad34 in FairRunAna::Run (this=0x1989cf0, Ev_start=0, Ev_end=1000) at  
/home/spataro/sep12/pandaroot/base/FairRunAna.cxx:549  
=====
```

Root > Function recoideal_complete() busy flag cleared

Subject: Re: Ideal Tracking Tasks
Posted by [Ralf Kliemt](#) on Wed, 27 Mar 2013 08:49:29 GMT
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Strange.

I fixed it. However I see often messages that something in GEANE aborts or GenFit cannot converge. Might be just due to one of the tracks going into a "bad" region...

Ralf

Subject: Re: Ideal Tracking Tasks
Posted by [Stefano Spataro](#) on Wed, 27 Mar 2013 09:33:30 GMT
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Much better now, thanks, now most (98%) of the primary tracks tracks are fitted, and I obtain some reasonable momentum resolution.
Many thanks.
