Subject: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by Johannes Rauch on Mon, 01 Aug 2011 19:58:04 GMT
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Dear Pandarooters,

finally we fixed the issues we had with the ideal PID in the RiemannTrackingTask.

You can use ideal pid in the reco macros:

```
tpcSPR->SetMCPid(); // use ideal particle identification
```

Please test your reconstruction/analysis macros on a small sample and give feedback.
Then the tpc data on the grid should be reprocessed for the final analysis.

regards,

Johannes

Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by StefanoSpataro on Tue, 02 Aug 2011 09:20:04 GMT
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New TPC jobs were just submitted on the grid with the new august11 release, and the latest fixes in tpc reconstruction.
Le't see...

Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by Elisa Fioravanti on Tue, 02 Aug 2011 09:21:29 GMT
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Hello,

I have update pandaroot, and I have run the simulation ofr pi+pi- analysis using the macro in /macro/run/tdrct/npipi
I comment out the line
```
tpcSPR->SetMCPid(); // use ideal particle identification
```
in the reco macro.
But unfortunately I have this crash:

```
=====  PndPidCorrelator - Event: 822 - Number of tracks for pid 1 - Number of EMC Cluster for pid 27
-W- PndPidCorrelator::GetTrackInfo :: Failed backward propagation

*** Break *** floating point exception
```

Generating stack trace...
0x06136b40 in PndPidCandidate::PndPidCandidate(PndPidCandidate const&) at /home/fioravanti/fairsoft/pandaroot/pid/PidData/PndPidCandidate.h:31 from /home/fioravanti/fairsoft/buildPanda/lib/libPid.so
0x0612bfd2 in PndPidCorrelator::AddNeutralCandidate(PndPidCandidate*) at /home/fioravanti/fairsoft/pandaroot/pid/PidCorr/PndPidCorrelator.cxx:119 7 from /home/fioravanti/fairsoft/buildPanda/lib/libPid.so
0x061300a0 in PndPidCorrelator::ConstructNeutralCandidate() at /home/fioravanti/fairsoft/pandaroot/pid/PidCorr/PndPidCorrelator.cxx:663 from /home/fioravanti/fairsoft/buildPanda/lib/libPid.so
0x0613137e in PndPidCorrelator::Exec(char const*) at /home/fioravanti/fairsoft/pandaroot/pid/PidCorr/PndPidCorrelator.cxx:540 from /home/fioravanti/fairsoft/buildPanda/lib/libPid.so
0x0027e9e8 in TTask::ExecuteTasks(char const*) + 0x108 from /home/fioravanti/fairsoft/tools/root/lib/libCore.so.5.29
0x0027e3d9 in TTask::ExecuteTask(char const*) + 0x159 from /home/fioravanti/fairsoft/tools/root/lib/libCore.so.5.29
0x02a61d23 in FairRunAna::Run(int, int) at /home/fioravanti/fairsoft/pandaroot/base/FairRunAna.cxx:354 from /home/fioravanti/fairsoft/buildPanda/lib/libBase.so
0x02ac3a38 in <unknown> from /home/fioravanti/fairsoft/buildPanda/lib/libBase.so
0x00c45d7a in Cint::G__ExceptionWrapper(int (*)(G__value*, char const*, G__param*, int), G__value*, char*, G__param*, int) + 0x6a from /home/fioravanti/fairsoft/tools/root/lib/libCint.so.5.29
0x00d00786 in G__execute_call + 0x56 from /home/fioravanti/fairsoft/tools/root/lib/libCint.so.5.29
0x00d04d3d in G__call_cppfunc + 0x26d from /home/fioravanti/fairsoft/tools/root/lib/libCint.so.5.29
0x00cd7628 in G__interpret_func + 0x1458 from /home/fioravanti/fairsoft/tools/root/lib/libCint.so.5.29
0x00cc4cf8 in G__getfunction at func.cxx:0 from /home/fioravanti/fairsoft/tools/root/lib/libCint.so.5.29
0x00dc591c in G__getstructmem(int, G__FastAllocString&, char*, int, char*, int*, G__var_array*, int) + 0x5fc from /home/fioravanti/fairsoft/tools/root/lib/libCint.so.5.29
0x00dbb708 in G__getvariable at var.cxx:0 from /home/fioravanti/fairsoft/tools/root/lib/libCint.so.5.29
0x00c98f41 in G__getitem at expr.cxx:0 from /home/fioravanti/fairsoft/tools/root/lib/libCint.so.5.29
0x00ca29a9 in G__getexpr at expr.cxx:0 from /home/fioravanti/fairsoft/tools/root/lib/libCint.so.5.29
0x00d3638f in G__exec_statement at parse.cxx:0 from /home/fioravanti/fairsoft/tools/root/lib/libCint.so.5.29
0x00c8378b in <unknown> from /home/fioravanti/fairsoft/tools/root/lib/libCint.so.5.29
0x00c83ac6 in G__exec_tempfile + 0x16 from /home/fioravanti/fairsoft/tools/root/lib/libCint.so.5.29
0x00d47c26 in G__process_cmd at pause.cxx:0 from /home/fioravanti/fairsoft/tools/root/lib/libCint.so.5.29
0x002bb6d3 in TCint::ProcessLine(char const*, TInterpreter::EErrorCode*) + 0x3c3 from /home/fioravanti/fairsoft/tools/root/lib/libCore.so.5.29
0x002bb2ef in TCint::ProcessLineSynch(char const*, TInterpreter::EErrorCode*) + 0x9f from /home/fioravanti/fairsoft/tools/root/lib/libCore.so.5.29
0x002046c2 in TApplication::ExecuteFile(char const*, int*, bool) + 0x752 from

/home/fioravanti/fairsoft/tools/root/lib/libCore.so.5.29
 0x00204c5c in TApplication::ProcessFile(char const*, int*, bool) + 0x2c from
/home/fioravanti/fairsoft/tools/root/lib/libCore.so.5.29
 0x002015eb in TApplication::ProcessLine(char const*, bool, int*) + 0x86b from
/home/fioravanti/fairsoft/tools/root/lib/libCore.so.5.29
 0x00a5b8c4 in TRint::Run(bool) + 0x2e4 from
/home/fioravanti/fairsoft/tools/root/lib/libRint.so.5.29
 0x08048d93 in main + 0x83 from /home/fioravanti/fairsoft/tools/root/bin/root.exe
 0x01204e9c in __libc_start_main + 0xdc from /lib/libc.so.6
 0x08048bf1 in __gxx_personality_v0 + 0x65 from
/home/fioravanti/fairsoft/tools/root/bin/root.exe
Root >

Thanks,
Elisa

Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by Felix Boehmer on Tue, 02 Aug 2011 09:42:02 GMT
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Hi Elisa,

this looks to me like a crash in the FairGeanePro extrapolation inside pid/GetTrackInfo.cxx. Is this another random floating point exception from Geane? Can you verify that, Stefano?

Inside the TPC code we use genfit tracks (instead the PndTracks) and use another track representation (RKTrackRep) for our extrapolations. We had no such problems since then. But this is decoupled from the problem you see.

Cheers

Felix

Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by Lia Lavezzi on Tue, 02 Aug 2011 10:32:33 GMT
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Hi Elisa and Felix,

Quote:this looks to me like a crash in the FairGeanePro extrapolation inside pid/GetTrackInfo.cxx. Is this another random floating point exception from Geane? Can you verify that, Stefano?

I don' t think it is GEANE, from the backtrace it seems that the crash happens in the neutral candidate creation:

Quote:0x06136b40 in PndPidCandidate::PndPidCandidate(PndPidCandidate const&) at /home/fioravanti/fairsoft/pandaroot/pid/PidData/PndPidCandidate.h:31 from /home/fioravanti/fairsoft/buildPanda/lib/libPid.so
0x0612bfd2 in PndPidCorrelator::AddNeutralCandidate(PndPidCandidate*) at /home/fioravanti/fairsoft/pandaroot/pid/PidCorr/PndPidCorrelator.cxx:119 7 from /home/fioravanti/fairsoft/buildPanda/lib/libPid.so
0x061300a0 in PndPidCorrelator::ConstructNeutralCandidate() at /home/fioravanti/fairsoft/pandaroot/pid/PidCorr/PndPidCorrelator.cxx:663 from /home/fioravanti/fairsoft/buildPanda/lib/libPid.so

so if you run the pid correlator with SetEmcMode(0) it should skip this part and the crash should not happen anymore (I hope).

Cheers,
Lia.

Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by Sverre Dørheim on Tue, 02 Aug 2011 11:03:27 GMT
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Hi Lia

I implemented the fix you proposed, this makes the pid-macro crash at a later event with the following stack trace. This points towards geane, as it crashed during propagation using geane.

Best regards
Sverre

*** Break *** floating point exception

==========
There was a crash (#7 0xb71bee3d in SigHandler(ESignals) ()).
This is the entire stack trace of all threads:
==========
#0 0xb76ed424 in __kernel_vsyscall ()
#1 0xb6580003 in __waitpid_nocancel ()
at ../sysdeps/unix/syscall-template.S:82
#2 0xb6521e63 in do_system (line=<value optimized out>)
at ../sysdeps/posix/system.c:149
#3 0xb663d3bd in system (
line=0x30d42650 "

/nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/etc/gdb-backtrace.sh 12515 1>&2")
    at pt-system.c:29
#4 0xb71b933d in TUnixSystem::Exec(char const*) ()
   from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#5 0xb71bf91a in TUnixSystem::StackTrace() ()
   from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#6 0xb71bed2f in TUnixSystem::DispatchSignals(ESignals) ()
   from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#7 0xb71bee3d in SigHandler(ESignals) ()
   from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#8 0xb71b5ee2 in sighandler(int) ()
   from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#9 <signal handler called>
#10 0xb0b8ce9d in FairGeanePro::Propagate (this=0x30d44cc8, TParam=0x30d44a38,
    TEnd=0x30d44f70, PDG=-211)
    at /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
geane/FairGeanePro.cxx:143
#11 0xaffdeb1f in PndPidCorrelator::GetTrackInfo (this=0x9e56b70,
    track=0x2c38ba38, pidCand=0x30979d10)
    at /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
pid/PidCorr/PndPidTrackInfo.cxx:47
#12 0xaffd46c1 in PndPidCorrelator::ConstructChargedCandidate (this=0x9e56b70)
    at /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
pid/PidCorr/PndPidCorrelator.cxx:594
#13 0xaffd411f in PndPidCorrelator::Exec (this=0x9e56b70, option=0xb3671540 "")
    at /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
pid/PidCorr/PndPidCorrelator.cxx:538
#14 0xb713fe78 in TTask::ExecuteTasks(char const*) ()
   from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#15 0xb713f15e in TTask::ExecuteTask(char const*) ()
   from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#16 0xb35ba9d4 in FairRunAna::Run (this=0x944baa8, Ev_start=0, Ev_end=1000)
    at /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
base/FairRunAna.cxx:353
#17 0xb361602d in G__FairDict_894_0_5 (result7=0xbfa0b6b8,
    funcname=0x9c1aa58 "", libp=0xbfa01074, hash=0)
    at /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
build/base/FairDict.cxx:13775
#18 0xb6a2ae97 in Cint::G__ExceptionWrapper(int (*)(G__value*, char const*, G__param*,
int), G__value*, char*, G__param*, int) ()
   from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#19 0xb6ad9c8f in G__execute_call ()
   from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root

_5.28d_qt_custom_TH2Poly/lib/libCint.so
#20 0xb6adab2a in G__call_cppfunc ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#21 0xb6ab51a5 in G__interpret_func ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#22 0xb6aa267d in G__getfunction ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#23 0xb6b9e004 in G__getstructmem(int, G__FastAllocString&, char*, int, char*, int*,
G__var_array*, int) ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#24 0xb6b93d09 in G__getvariable ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#25 0xb6a7b618 in G__getitem ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#26 0xb6a81c17 in G__getexpr ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#27 0xb6b09d74 in G__exec_statement ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#28 0xb6a670cd in G__exec_tempfile_core ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#29 0xb6a673bb in G__exec_tempfile ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#30 0xb6b1e124 in G__process_cmd ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#31 0xb717adcb in TCint::ProcessLine(char const*, TInterpreter::EErrorCode*) ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#32 0xb717a911 in TCint::ProcessLineSynch(char const*, TInterpreter::EErrorCode*) ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#33 0xb70c9e8a in TApplication::ExecuteFile(char const*, int*, bool) ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#34 0xb70ca2dc in TApplication::ProcessFile(char const*, int*, bool) ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#35 0xb70c777f in TApplication::ProcessLine(char const*, bool, int*) ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#36 0xb67bd821 in TRint::Run(bool) ()
  from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root

```
_5.28d_qt_custom_TH2Poly/lib/libRint.so
#37 0x08048eaf in main ()
#38 0xb64ffc76 in __libc_start_main (main=0x8048e40 <main>, argc=7,
    ubp_av=0xbfa14a64, init=0x8049040 <__libc_csu_init>,
    fini=0x8049030 <__libc_csu_fini>, rtld_fini=0xb76fc040 <_dl_fini>,
    stack_end=0xbfa14a5c) at libc-start.c:228
#39 0x08048d71 in _start ()
==========================================================


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.
==========================================================
#10 0xb0b8ce9d in FairGeanePro::Propagate (this=0x30d44cc8, TParam=0x30d44a38,
    TEnd=0x30d44f70, PDG=-211)
    at  /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
geane/FairGeanePro.cxx:143
#11 0xaffdeb1f in PndPidCorrelator::GetTrackInfo (this=0x9e56b70,
    track=0x2c38ba38, pidCand=0x30979d10)
    at  /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
pid/PidCorr/PndPidTrackInfo.cxx:47
#12 0xaffd46c1 in PndPidCorrelator::ConstructChargedCandidate (this=0x9e56b70)
    at  /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
pid/PidCorr/PndPidCorrelator.cxx:594
#13 0xaffd411f in PndPidCorrelator::Exec (this=0x9e56b70, option=0xb3671540 "")
    at  /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
pid/PidCorr/PndPidCorrelator.cxx:538
#14 0xb713fe78 in TTask::ExecuteTasks(char const*) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#15 0xb713f15e in TTask::ExecuteTask(char const*) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#16 0xb35ba9d4 in FairRunAna::Run (this=0x944baa8, Ev_start=0, Ev_end=1000)
    at  /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
base/FairRunAna.cxx:353
==========================================================
```

Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by StefanoSpataro on Tue, 02 Aug 2011 11:33:41 GMT
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The neutral candidate problem is related to memory issues appearing seldomly only in few distributions/compiler versions, and it does not affect grid production.
I can only suggest to comment out the call to the functioning the pid correlator.

Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by Lia Lavezzi on Tue, 02 Aug 2011 12:18:26 GMT
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Hi Sverre,
this is the same crash Johannes experienced some days ago (see here: http://forum.gsi.de/index.php?t=tree&th=3300&start=0&rid=993 &S=714ce46ffd2aeca38d39ebfd37e21456).

It would be helpful to understand what happens it you could post the helix parameters using the FairTrackParH::Print() function, i.e. if you could put the line:

helix->Print();

in PndPidTrackInfo.cxx, before the Propagate function that crashes and run the pid again.

Cheers,
Lia.

Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by Dima Melnychuk on Tue, 02 Aug 2011 12:50:24 GMT
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Hi,

I have rerun tpc reconstruction for eta_c with ideal pid in TpcRiemannTrackingTask and results are very close to what I showed yesterday with pion hypothesis (http://panda-wiki.gsi.de/pub/Tracking/TdrPreliminary/eta_c01.08.2011.pdf).

In both cases 5000 events were analysed with the same simulated data.

So eta_c reconstruction efficiency is 28.0% (ideal pid) vs 27.9% (pion), sigma(eta_c)=12.5 MeV (ideal pid) vs 12.3 MeV (pion), sigma(phi)=3.4 MeV (ideal pid) vs sigma(phi)=3.5 MeV (pion).

Dima

Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by Sverre Dørheim on Tue, 02 Aug 2011 13:25:44 GMT
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Hi Lia

I implemented the printout in the PndPidTrackInfo.cxx:

```
    helix->Print();
    Bool_t rc =  fPro0->Propagate(helix, fRes, fPidHyp*charge);
```

Here is the print out from the last track before the crash. The elements in the Covariance matrix seems very small.

```
0x2a09cd08
Position : (-1.9e+03, 6.5e+02, 1.5e+02)
Angles : Lambda = 0.018, Phi = -0.34
q/p = 1.2
fCovMatrix[0] = 0x2a09cd08 -1.2e+58
fCovMatrix[1] = 0x2a09cd08 6.3e+55
fCovMatrix[2] = 0x2a09cd08 1.7e+57
fCovMatrix[3] = 0x2a09cd08 -1.7e+60
fCovMatrix[4] = 0x2a09cd08 -6.1e+57
fCovMatrix[5] = 0x2a09cd08 -1.9e+53
fCovMatrix[6] = 0x2a09cd08 -3.3e+54
fCovMatrix[7] = 0x2a09cd08 5.9e+57
fCovMatrix[8] = 0x2a09cd08 2.7e+55
fCovMatrix[9] = 0x2a09cd08 -1.6e+56
fCovMatrix[10] = 0x2a09cd08 1.4e+59
fCovMatrix[11] = 0x2a09cd08 -2.1e+57
fCovMatrix[12] = 0x2a09cd08 -1.3e+62
fCovMatrix[13] = 0x2a09cd08 -2.1e+59
fCovMatrix[14] = 0x2a09cd08 -6.5e+57

 *** Break *** floating point exception
```

```
==========================================================
There was a crash (#7 0xb724ce3d in SigHandler(ESignals) ()).
This is the entire stack trace of all threads:
==========================================================
#0  0xb777b424 in __kernel_vsyscall ()
#1  0xb660e003 in __waitpid_nocancel ()
    at ../sysdeps/unix/syscall-template.S:82
#2  0xb65afe63 in do_system (line=<value optimized out>)
    at ../sysdeps/posix/system.c:149
#3  0xb66cb3bd in system (
    line=0x28dc7f28 "
/nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/etc/gdb-backtrace.sh 31010 1>&2")
    at pt-system.c:29
#4  0xb724733d in TUnixSystem::Exec(char const*) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#5  0xb724d91a in TUnixSystem::StackTrace() ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#6  0xb724cd2f in TUnixSystem::DispatchSignals(ESignals) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
```

```
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#7  0xb724ce3d in SigHandler(ESignals) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#8  0xb7243ee2 in sighandler(int) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#9  <signal handler called>
#10 0xb0c1ae9d in FairGeanePro::Propagate (this=0x2a4c7d18, TParam=0x2a09cd08,
    TEnd=0x2a4c7fc0, PDG=211)
    at  /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
geane/FairGeanePro.cxx:143
#11 0xb006cb33 in PndPidCorrelator::GetTrackInfo (this=0x9755bb0,
    track=0x287db218, pidCand=0x2b6112c0)
    at  /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
pid/PidCorr/PndPidTrackInfo.cxx:47
#12 0xb00626c1 in PndPidCorrelator::ConstructChargedCandidate (this=0x9755bb0)
    at  /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
pid/PidCorr/PndPidCorrelator.cxx:594
#13 0xb006211f in PndPidCorrelator::Exec (this=0x9755bb0, option=0xb36ff540 "")
    at  /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
pid/PidCorr/PndPidCorrelator.cxx:538
#14 0xb71cde78 in TTask::ExecuteTasks(char const*) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#15 0xb71cd15e in TTask::ExecuteTask(char const*) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#16 0xb36489d4 in FairRunAna::Run (this=0x8d4aaa8, Ev_start=0, Ev_end=1000)
    at  /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
base/FairRunAna.cxx:353
#17 0xb36a402d in G__FairDict_894_0_5 (result7=0xbfa4ce78,
    funcname=0x9519a88 "", libp=0xbfa42834, hash=0)
    at  /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
build/base/FairDict.cxx:13775
#18 0xb6ab8e97 in Cint::G__ExceptionWrapper(int (*)(G__value*, char const*, G__param*,
int), G__value*, char*, G__param*, int) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#19 0xb6b67c8f in G__execute_call ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#20 0xb6b68b2a in G__call_cppfunc ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#21 0xb6b431a5 in G__interpret_func ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#22 0xb6b3067d in G__getfunction ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#23 0xb6c2c004 in G__getstructmem(int, G__FastAllocString&, char*, int, char*, int*,
```

```
G__var_array*, int) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#24 0xb6c21d09 in G__getvariable ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#25 0xb6b09618 in G__getitem ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#26 0xb6b0fc17 in G__getexpr ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#27 0xb6b97d74 in G__exec_statement ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#28 0xb6af50cd in G__exec_tempfile_core ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#29 0xb6af53bb in G__exec_tempfile ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#30 0xb6bac124 in G__process_cmd ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCint.so
#31 0xb7208dcb in TCint::ProcessLine(char const*, TInterpreter::EErrorCode*) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#32 0xb7208911 in TCint::ProcessLineSynch(char const*, TInterpreter::EErrorCode*) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#33 0xb7157e8a in TApplication::ExecuteFile(char const*, int*, bool) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#34 0xb71582dc in TApplication::ProcessFile(char const*, int*, bool) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#35 0xb715577f in TApplication::ProcessLine(char const*, bool, int*) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#36 0xb684b821 in TRint::Run(bool) ()
   from  /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libRint.so
#37 0x08048eaf in main ()
#38 0xb658dc76 in __libc_start_main (main=0x8048e40 <main>, argc=7,
    ubp_av=0xbfa56224, init=0x8049040 <__libc_csu_init>,
    fini=0x8049030 <__libc_csu_fini>, rtld_fini=0xb778a040 <_dl_fini>,
    stack_end=0xbfa5621c) at libc-start.c:228
#39 0x08048d71 in _start ()
=============================================================
```

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.
==========
#10 0xb0c1ae9d in FairGeanePro::Propagate (this=0x2a4c7d18, TParam=0x2a09cd08,
    TEnd=0x2a4c7fc0, PDG=211)
    at /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
geane/FairGeanePro.cxx:143
#11 0xb006cb33 in PndPidCorrelator::GetTrackInfo (this=0x9755bb0,
    track=0x287db218, pidCand=0x2b6112c0)
    at /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
pid/PidCorr/PndPidTrackInfo.cxx:47
#12 0xb00626c1 in PndPidCorrelator::ConstructChargedCandidate (this=0x9755bb0)
    at /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
pid/PidCorr/PndPidCorrelator.cxx:594
#13 0xb006211f in PndPidCorrelator::Exec (this=0x9755bb0, option=0xb36ff540 "")
    at /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
pid/PidCorr/PndPidCorrelator.cxx:538
#14 0xb71cde78 in TTask::ExecuteTasks(char const*) ()
   from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#15 0xb71cd15e in TTask::ExecuteTask(char const*) ()
   from /nfs/hicran/project/panda/SIM/FAIRRoot/fairsoft_release_may11/tools/root
_5.28d_qt_custom_TH2Poly/lib/libCore.so
#16 0xb36489d4 in FairRunAna::Run (this=0x8d4aaa8, Ev_start=0, Ev_end=1000)
    at /nfs/hicran/project/panda/SIM/sdorheim/Programming/pandaROOT/cleanTrunk/
base/FairRunAna.cxx:353
==========

I hope it helps

Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by StefanoSpataro on Tue, 02 Aug 2011 13:29:38 GMT
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If I read the position values at the beginning, they seem meters far from the interaction point. I suppose those parameters are completely screwed for some reason, well before the backward extrapolation.

Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by Lia Lavezzi on Tue, 02 Aug 2011 14:37:24 GMT
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I agree with Stefano. Also the covariance matrix elements are too big (10 to +54/55/60!). GEANE fails because the input is wrong.

Lia.

Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by Sverre Dørheim on Tue, 02 Aug 2011 14:56:35 GMT
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Hello Lia.

I agree as well, and I am looking into the source for these weird start values.

Even though, the code should not segment, the back propagation should fail ...

Best Regards
Sverre

Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by Lia Lavezzi on Tue, 02 Aug 2011 15:43:01 GMT
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In principle I agree, but it would require to touch again the GEANE fortran code and patch the external packages, it is better to fix this crash in the C++ code before entering GEANE (at least for now).
Lia.

Subject: Re: TpcRiemannTrackingTask - ideal PID now working - please rerun reconstruction
Posted by Sverre Dørheim on Tue, 02 Aug 2011 18:49:03 GMT
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Hello Stefano, Lia

To study the problem a bit closer I took a look at the output of the fits in the TPC+MVD+GEM before the conversion to PndTracks.

In this plot one can see the start-position of all tracks in the XY-plane, and one can clearly see some starting points which are way off. This is of course ALL tracks, also the tracks where the fits went wrong.
Looking at only the tracks with
track.getCardinalRep().getStatusFlag()==0, where the fit converged I get something like this, where all start values are within a reasonable range.

The rough binning is to make the outlyers a bit more visible.

This led me to investigate if this flag is checked at any time later in the analysis chain and as far as I can see this information is lost when converting the GFTrack to a PndTrack, where the

PndTrack gets a new flag which is:
-1 if NDF=0 or Genfit threw an exeption when calculated the momentum at the first and last detector plane
 1 otherwhise

I did the same plot for all GFTracks where NDF!=0 resulting in:

Where clearly can see that the worst outliers are gone.
Since only this flag is awailable atthe PndPidTrackInfo level I implemented this check before the extrapolation:

```
Bool_t rc=false;
if(track->GetFlag()==1){
    rc =  fPro0->Propagate(helix, fRes, fPidHyp*charge);
}
```

This was then tested on 1000 events, whith no crash in the PID-macr. This is probably the quickest fix as one only needs to rerun the PID-Macro.

Best regards
Sverre

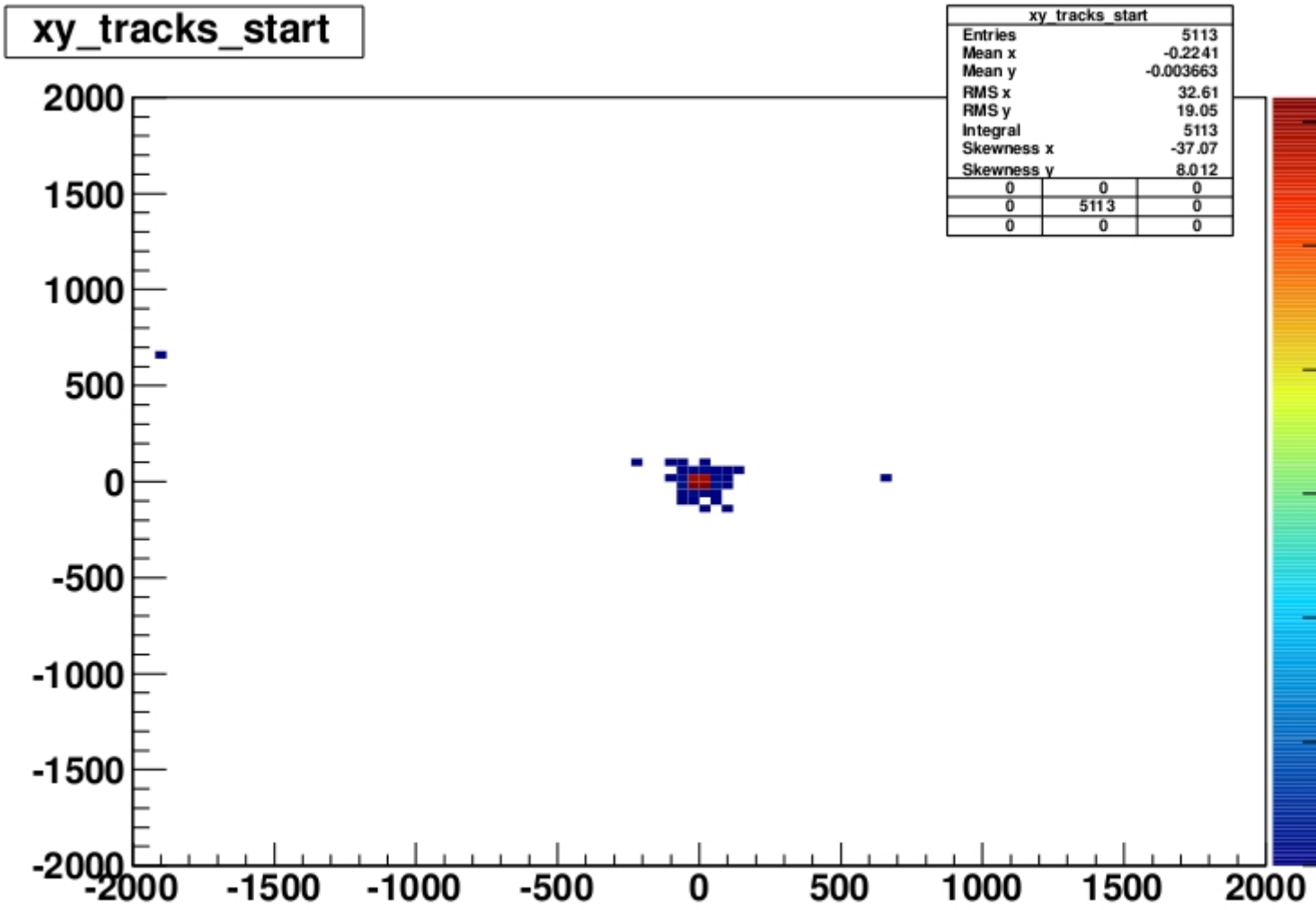
Ps:
Looking at the statistics in the 3 plots:
All GFTracks:5113
statusflag 0:4132
ndf!=0   :4912

A lot more tracks get lost when cutting away events with statusflag!=0(ie something whent wrong) than just cutting away events with ndf!=0.

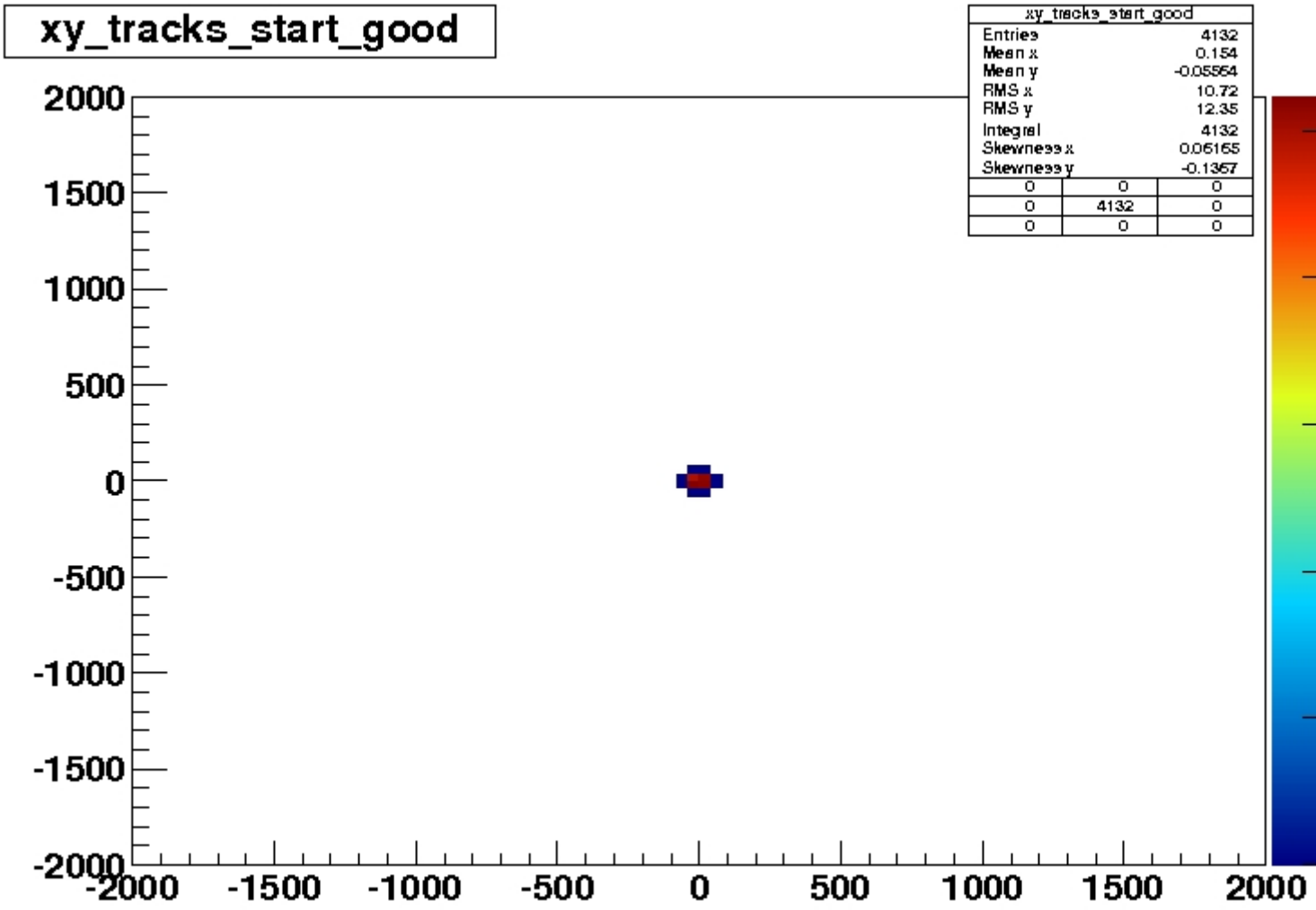
The effect of this should also be tested.

File Attachments

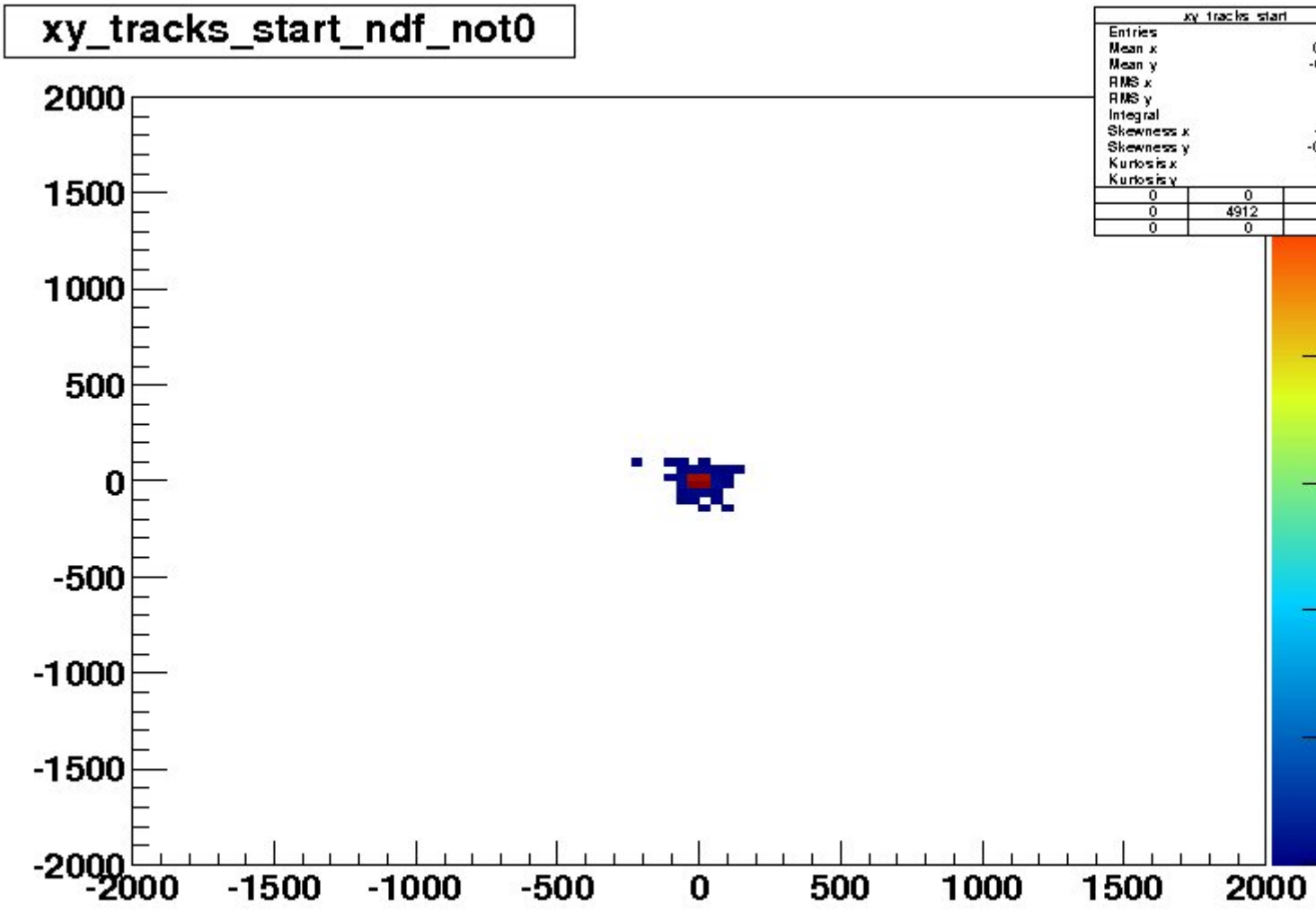
1) xy_track_start_all.jpg, downloaded 1826 times



2) xy_track_start_good.jpg, downloaded 1922 times



3) xy_track_start_ndf_not0.jpg, downloaded 1853 times


xy_tracks_start_ndf_not0
xy_tracks_start
Entries
Mean x
Mean y
RMS x
RMS y
Integral
Skewness x
Skewness y
Kurtosis x
Kurtosis y
0
0
0
4912
0
0
2000
1500
1000
500
0
-500
-1000
-1500
-2000
-2000
-1500
-1000
-500
0
500
1000
1500
2000