Subject: [FIXED] 4Cfit
Posted by Alexandros on Tue, 13 May 2014 12:20:12 GMT
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Hi,

I am looking in the channel psi(4160)->D0-antiD0 etc.
I am trying to apply 4C fit in psi(4160).
So what I add in my macro is:

```
PndKinFitter fitter(psi4160[j]);
fitter.Add4MomConstraint(ini); // set 4 constraint
fitter.Fit();
RhoCandidate *d0fit = psi4160[j]->Daughter(0)->GetFit(); // get fitted D0
RhoCandidate *antid0fit = psi4160[j]->Daughter(1)->GetFit(); // get fitted antiD0

npsi4160->Column("d0fit", (Float_t) d0fit->M());
npsi4160->Column("antid0fit", (Float_t) antid0fit->M());
```

When I run my macro I get something like this:

```
Error in <TDecompLU::DecomposeLUCrout>: matrix is singular
Error in <TDecompLU::InvertLU>: matrix is singular, 0 diag elements < tolerance of 2.2204e-16
```

It is the same going over and over again.
Is there something wrong???

Subject: Re: 4Cfit
Posted by Alexandros on Tue, 13 May 2014 12:25:44 GMT
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The right macro is this:

```
for (j=0;j<psi4160.GetLength();++j)
  {

   npsi4160->Column("ev", (Float_t) i);
   npsi4160->Column("cand", (Float_t) j);
   npsi4160->Column("ncand",   (Float_t) psi4160.GetLength());
   npsi4160->Column("nmct",    (Float_t) npsi4160mct);

   PndKinFitter fitter(psi4160[j]);
   fitter.Add4MomConstraint(ini);
   fitter.Fit();
   RhoCandidate *psif = psi4160[j]->GetFit();

   npsi4160->Column("psi2sfit", (Float_t) psif->M());
```

SORRY!!!

Subject: Re: 4Cfit
Posted by StefanoSpataro on Tue, 13 May 2014 12:42:47 GMT
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Are you should you properly defined your initial state?

Subject: Re: 4Cfit
Posted by Alexandros on Tue, 13 May 2014 12:46:04 GMT
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You mean my initial 4vector???

Subject: Re: 4Cfit
Posted by StefanoSpataro on Tue, 13 May 2014 12:47:41 GMT
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Exactly.

Subject: Re: 4Cfit
Posted by Alexandros on Tue, 13 May 2014 12:50:11 GMT
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```
// *** the lorentz vector of the initial psi(4160)
 double m0_p    = TDatabasePDG::Instance()->GetParticle("proton")->Mass();   // Get nominal PDG mass of the proton
 TLorentzVector ini(0, 0, pbarmom, sqrt(m0_p*m0_p + pbarmom*pbarmom) + m0_p);
```

Subject: Re: 4Cfit
Posted by StefanoSpataro on Tue, 13 May 2014 12:53:31 GMT
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How much is pbarmom? Have you compared this 4 vector to what is printed by evtgen in the init of the sim macro?

Subject: Re: 4Cfit
Posted by Klaus Götzen on Tue, 13 May 2014 13:13:16 GMT
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Hi,

if this appears only rarely, this is not a problem - for some combinations the fit fails.

Best,
Klaus

Subject: Re: 4Cfit
Posted by Alexandros on Tue, 13 May 2014 13:23:58 GMT
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So in my macro I set pbarm=8.000 and so energy is sqrt(8*8+0.938*0.938)+0.938 which gives 8.9928 if you make the math.
But from the EvtGen I get p=8.352 and energy=9.342...
Do I have to put these numbers in my initial 4vector??

Subject: Re: 4Cfit
Posted by StefanoSpataro on Tue, 13 May 2014 13:28:51 GMT
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This means that you set p=8.352 in your sim macro?
Maybe it is better that you upload your sim + dec files.

Subject: Re: 4Cfit
Posted by Alexandros on Tue, 13 May 2014 13:57:17 GMT
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So, when I call simfast I write:
simfast("psi4160","psi4160.dec",8.00000,10000,"psi(4160)")

I have ran everything before without the 4-5 new lines for the 4Cfit and I get nice results and everything works fine.
Now that I added in the for loop for psi4160 the 4c fit:

```
PndKinFitter fitter(psi4160[j]);
fitter.Add4MomConstraint(ini);
fitter.Fit();
RhoCandidate *psif = psi4160[j]->GetFit();

npsi4160->Column("psi4160fit", (Float_t) psif->M());
```

it gives me always the error I mentioned before but without crashing!!!!
So I get a column called "psi4160fit" but the result is exactly the same like the normal psi4160m!!!

File Attachments
1) psi4160.dec, downloaded 562 times
2) simfast.C, downloaded 562 times

Subject: Re: 4Cfit
Posted by StefanoSpataro on Tue, 13 May 2014 14:01:55 GMT
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In this way you are starting from a psi(4160) state, which has a mass well fixed, and evtgen does not takec ace that you set 8 GeV/c as momentum, it is automatically calculating the momentum from the psi mass.
(p=8.352 and energy=9.342). Then most probably 8 GeV/c are not enough to form such a state.

The alternative is to start from a pbarpSystem (in both sim and dec), and in such a case your 8 GeV/c will be set. But i think that with this low momentum evtgen will now have the psi(4160) mass.

Subject: Re: 4Cfit
Posted by Alexandros on Tue, 13 May 2014 15:12:30 GMT
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I tried the pbarsystem and the problem with the different values of momentum and energy is solved.
But still I have the same kind of error for the 4C fitter...

Subject: Re: 4Cfit
Posted by StefanoSpataro on Tue, 13 May 2014 15:14:53 GMT
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But now you are using exactly the same vector which evtgen is printing?

Subject: Re: 4Cfit
Posted by Alexandros on Tue, 13 May 2014 15:23:46 GMT
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Yes...I am also looking at it with johan messendorp but he cannot also find something wrong..

Subject: Re: 4Cfit
Posted by StefanoSpataro on Tue, 13 May 2014 15:26:13 GMT
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Can you upload your new sim, dec and analysis macros?

Subject: Re: 4Cfit
Posted by Alexandros on Tue, 13 May 2014 15:44:00 GMT
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File Attachments
1) psi4160.dec, downloaded 537 times
2) simfast.C, downloaded 559 times
3) Analysis.C, downloaded 561 times

Subject: Re: 4Cfit
Posted by StefanoSpataro on Tue, 13 May 2014 15:45:34 GMT
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How you call the simfast.C?

Subject: Re: 4Cfit
Posted by Alexandros on Tue, 13 May 2014 15:54:14 GMT
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.L simfast.C and then simfast("psi4160","psi4160.dec",8.000,10000,"pbarpSystem0")

Subject: Re: 4Cfit
Posted by StefanoSpataro on Tue, 13 May 2014 19:10:39 GMT
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I have just tried 10k events with the last trunk and scrut14 and I have seen no single error like that.
Are you sure that you don't have some broken file? Or maybe a screwed installation?

Subject: Re: 4Cfit
Posted by Alexandros on Tue, 13 May 2014 21:37:48 GMT
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It seems that the problem is that I am using march14 version of pandaroot and not the trunk.
I will try tomorrow and let you know so that you can close the topic.
Thanks for your help.

Subject: Re: 4Cfit
Posted by Alexandros on Wed, 14 May 2014 12:25:00 GMT
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so problem solved!!!!

i was using march14 version and not the scrut14...
with scrut 14 4Cfit works...with march14 not..
you can close the topic!!
thanks again...