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Subject: Fast simulation - MCTrack block

Posted by [Elisabetta Prencipe \(2\)](#) on Tue, 01 Apr 2014 08:38:35 GMT

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Dear Klaus,

when I run the sim macro from the folder /macro/scrut/ :

```
root [0] .x simfast.C("outputDs2535","Y2535DstarK.dec",9.38,10000,"pbarpSystem")
```

something funny happens, if I check the plot of MCTrack.fPx and MCTrack.fPy. I got a spike on 0, not a distribution.

It is not so for MCTrack.fPz and MCTrack.E. Do I misinterpret something here, or what is the explanation for this?

Best regards, Elisabetta

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Subject: Re: Fast simulation - MCTrack block

Posted by [Stefano Spataro](#) on Tue, 01 Apr 2014 09:04:39 GMT

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I suppose your pbarpsystem is not decaying, then you have only the initial 4-momentum:  $p_x = p_y = 0$  and  $p_z \neq 0$ .

Are you sure that everything is properly loaded or changed in the simulation? Can you please upload the sim and the dec file ?

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Subject: Re: Fast simulation - MCTrack block

Posted by [Elisabetta Prencipe \(2\)](#) on Tue, 01 Apr 2014 09:15:47 GMT

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Hi Stefano,

the sim macro is the standard one of trunk 24218. The dec file is the one used for the full simulations. When I run the full simulation, I got distributions of pX and pY, centered in 0. I am wondering why.

Here are attached.

cheers, Elisabetta

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#### File Attachments

1) [simfast.C](#), downloaded 218 times

2) [Y2535DstarK.dec](#), downloaded 199 times

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Subject: Re: Fast simulation - MCTrack block

Posted by [Stefano Spataro](#) on Tue, 01 Apr 2014 09:36:59 GMT

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You don't have enough energy, and EvtGen is not letting your pbarpSystem decay:

This top particle is pbarpSystem 4.410 (10.365,0.000,-0.000,9.380)  
pbarpSystem -> D'\_s1+ D\_s- 2.525 (2.525,0.000,0.000,0.000) 3; 1.968  
(1.968,0.000,0.000,0.000)

With your momentum you have  $\sqrt{s} = 4.410$ , but the mass sum of D'\_s and D\_s is  $2.525 + 1.968 = 4.493$ . This is the reason why you have such error messages from evtgen. You should increase your momentum.

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Elisabetta Prencipe \(2\)](#) on Tue, 01 Apr 2014 10:53:46 GMT  
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Hi Stefano,

my invariant mass is 4.505 GeV/c<sup>2</sup>. It is the threshold to produce one Ds1' and one Ds. For this purpose, the  $p_{lab} = 9.83$  GeV/c. With this momentum set up, I don't get any problem with the full simulation. So I am wondering why.

Please, let me know. Elisabetta

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Elisabetta Prencipe \(2\)](#) on Tue, 01 Apr 2014 10:58:54 GMT  
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Hi Stefano,

I attach here the log file obtained when running the normal full simulation. Here you can see what are the values of my incident beam, and the invariant mass.

incident 4-mom : (10.813, 0, 0, 9.830),  $m = 4.505$

cheers, Elisabetta

#### File Attachments

1) [logtot](#), downloaded 194 times

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Lu Cao](#) on Tue, 01 Apr 2014 11:20:35 GMT  
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Hi Elisabetta,

Perhaps I found the problem there, in your decay file you make the decay chain start from "pbarpSystem", but in the simfast.C "pbarpSystem0" is set as the initial particle. From the evt.pdl list,

*	type	name	id	mass/GeV	width/GeV	max_Dm/GeV	3*charge	2*spin	
		lifetime*c/mm Lund-KC							
add	p Special	pbarpSystem	88888	2.98	0.1	0	0	0 88888	
add	p Special	pbarpSystem0	88880	2.98	0.1	0	0	0 88880	

they're two "different" particles although they look the same here except the pdgcode. Anyway, no matter which one you prefer to use, it's needed to make them consistent in decay file and sim macro.

Best,  
Lu

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Elisabetta Prencipe \(2\)](#) on Tue, 01 Apr 2014 11:24:21 GMT  
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Hi Lu,

could you say to me please which trunk version are you currently using? I just made an update, and fastsim is not working at all...

thanks, Elisabetta

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Lu Cao](#) on Tue, 01 Apr 2014 11:29:22 GMT  
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Hi Elisabetta,

I'm using #24270 at this moment...

Best,  
Lu

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Klaus Götzen](#) on Tue, 01 Apr 2014 12:15:10 GMT  
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Hi Elisabetta,

the distribution you observed might indicate, that the initial particle was created, but not found

in the decay file to start decaying. You could check, if the number of entries in your MCTrack.fPx histogram is exactly the number of events you simulated -> only one particle per event (the initial one).

Best,  
Klaus

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Stefano Spataro](#) on Tue, 01 Apr 2014 12:28:52 GMT  
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You wrote:

Quote:root [0] .x simfast.C("outputDs2535","Y2535DstarK.dec",9.38,1,"pbarpSystem")  
  
9.38, and not 9,83!

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Stefano Spataro](#) on Tue, 01 Apr 2014 12:30:40 GMT  
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No, Elisabetta is using pbarpSystem:

Quote:root [0] .x simfast.C("outputDs2535","Y2535DstarK.dec",9.38,10000,"pbarpSystem")

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Elisabetta Prencipe \(2\)](#) on Tue, 01 Apr 2014 12:41:46 GMT  
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Hi Stefano and Klaus,

that was just a typo this morning (my apologize for that).

In the meantime, I updated the trunk to rev-24270.

when I run:

```
root [0] .x simfast.C("outputDs2535","Y2535DstarK.dec",9.83,1000,"pbarpSystem0")
```

[pbarpsystem0 now is everywhere]

all fX,Y,Z,E distribution are a spike to 0. Nothing passes.  
I see that in the new simfast macro a new entry is added:

```
void simfast(TString Prefix, TString Decfile, Float_t Mom, Int_t nEvents = 1000, TString  
Resonance="pbarpSystem0", int pdgcode = 11 )
```

what shall I write instead of 11? If I write 88888, it does not work. I get only "red" warning of non existing particles, when I try this macro.  
If I do not write anything, it does not work in any case. If I leave 11, same situation.

FairPrimaryGenerator: PDG code 88880 not found in database. This warning can be safely ignored.

-W FairPrimaryGenerator: PDG code 88880 not found in database. This warning can be safely ignored.

-W FairPrimaryGenerator: PDG code 88880 not found in database. This warning can be safely ignored.

-W FairPrimaryGenerator: PDG code 88880 not found in database. This warning can be safely ignored.

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-W FairPrimaryGenerator: PDG code 88880 not found in database. This warning can be safely ignored.

-W FairPrimaryGenerator: PDG code 88880 not found in database. This warning can be safely ignored.

[this for 1000 times..at least yesterday it looked the normal stuff]

Any idea what's wrong here? how shall I run my analysis with the fast simulation tool? It is still not clear to me....

thank you, Elisabetta

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Elisabetta Prencipe \(2\)](#) on Tue, 01 Apr 2014 12:46:31 GMT  
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Hi,

I tried both, same situation. With pbarSystem is giving strange results; with pbarsystem0 is simply crashing.

what shall I do to have something running with fast simulation, please?  
From my side, nothing works.

Elisabetta

Subject: Re: Fast simulation - MCTrack block  
Posted by [Klaus Götzen](#) on Tue, 01 Apr 2014 12:50:06 GMT  
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Hi Elisabetta,

you can ignore the pdgcode=11 for EvtGen. It's the particle type for running Box generator, in case you want to do that. I introduced it to not modify always the macro for running particle-gun for different species. (It's actually described in the README like this.)

This error from FairPrimaryGenerator is normal because TDatabasePDG does not know about particles defined for EvtGen. However, myself I'm looking for a switch to turn it off. If you want to immediately get rid of it, you could also add

```
double sqrts = ...  
TDatabasePDG::Instance()->AddParticle("pbarpSystem0","ppbar0",sqrts,0,0.0001,0,"",88880);  
TDatabasePDG::Instance()->AddParticle("pbarpSystem","ppbar",sqrts,0,0.0001,0,"",88888);
```

in the beginning of simfast.C.

Best,  
Klaus

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Elisabetta Prencipe \(2\)](#) on Tue, 01 Apr 2014 12:53:07 GMT  
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Hi Klaus,

the point is that I get a Segmentation Violation when using the sim fast macro. And I still do not know why. It does not start neither the first event. Could you please try yourself?

thank you very much! I attach here my dec file.

Rev: 24270  
Operative system: Suse-Linux

Elisabetta

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#### File Attachments

1) [Y2535DstarK.dec](#), downloaded 194 times

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Klaus Götzen](#) on Tue, 01 Apr 2014 12:55:02 GMT

Hi Elisabetta,

if you just updated this afternoon, you should update again at least fsim, since there was some incomplete code leading to this error. Ralf just submitted the fix....

Best,  
Klaus

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Lu Cao](#) on Tue, 01 Apr 2014 13:05:16 GMT  
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Hi Elisabetta,

I tried your decay on my machine (#24270) as simfast(TString Prefix="els\_out", TString Decfile= "Y2535DstarK.dec", Float\_t Mom=9.83, Int\_t nEvents = 1000, TString Resonance="pbarpSystem", int pdgcode = 11 )

It works. The plot of MCTrack.fPx is attached.

Best,  
Lu

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#### File Attachments

1) [Canvas\\_1.png](#), downloaded 219 times

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Elisabetta Prencipe \(2\)](#) on Tue, 01 Apr 2014 13:06:54 GMT  
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Hi Klaus,

so which trunk version should I use?

In the meantime I changed the definition of "Mom" from Float to Double in my sim fast macro: it looks running now (it's a silly change, but at least I do not see the Seg Fault, which was seen here only when setting the momentum to a number with 2 decimal entries after the comma, e.g. 9.4 is good; 9.40 produces a crash....strange....).

Elisabetta

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Klaus Götzen](#) on Tue, 01 Apr 2014 13:09:41 GMT  
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Hi,

my svn says

URL: <https://subversion.gsi.de/fairroot/pandaroot/trunk/fsim>  
Repository Root: <https://subversion.gsi.de/fairroot>  
Repository UUID: 0381ead4-6506-0410-b988-94b70fbc4730  
Revision: 24275  
Node Kind: directory  
Schedule: normal  
Last Changed Author: ralfk  
Last Changed Rev: 24275  
Last Changed Date: 2014-04-01 14:43:06 +0200 (Di, 01 Apr 2014)

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Elisabetta Prencipe \(2\)](#) on Tue, 01 Apr 2014 13:10:17 GMT  
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Hi Lu,

I don't know how you get this plot. For me it is just a spike on 0, when the macro runs....which is not happening with the standard macro of the rev-24270. I needed to change it, and in any case I do not get a distribution.

Elisabetta

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Elisabetta Prencipe \(2\)](#) on Tue, 01 Apr 2014 13:32:59 GMT  
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Hi Klaus,

I tried to run the fastsim in 2 different machines, with different operative systems, using the rev-24275 (the last updated trunk version).  
Lu Cao is right in saying that something funny happens with pbarpSystem and pbarpSystem0 (and then, why we have the 2 of them?)  
now I got distributions for fpx, fpy, fpz and fE (MC-track block), finally. I can go further

Thank you all for your help,

Elisabetta

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Subject: Re: Fast simulation - MCTrack block  
Posted by [Stefano Spataro](#) on Tue, 01 Apr 2014 14:44:44 GMT  
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pbarpSystem0, pbarpSystem1 and pbarpSystem2 are states with spin 0, 1 and 2. If you use models which depend on spin, you should use the proper system in order to avoid crashes. (i.e. a VLL will never work with a initial state with spin0). I pbarpSystem has spin 1 and is the "original state", if you use phase space you don't have to care. If you exchange pbarpSystem with pbarpSystem0 you should be sure that you change properly the whole sim macro including the dec file.

If now everything works I would set this topic as fixed.

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