Subject: [FIXED] Problem in reconstructing neutral particle
Posted by Lu Cao on Fri, 30 Aug 2013 21:42:48 GMT
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Dear all,

I'm reconstructing this decay chain:
Ds+ -> nu_e e+ eta
|->pi+ pi- pi0
|-> gamma gamma

In reconstruction, since the photons come from three different components of EMC(with different angle and energy cuttings), i.e. barrel, forward endcap, backward endcap, I need to take all possible combinations into account of the pi0 candidates. My analysis can run smoothly when the combinations are only related to barrel and forward endcap. When one/both of the two gamma(s) come from the backward endcap EMC, the macro will be crashed after 500evt with the following info:

evt 100
evt 200
evt 300
evt 400
evt 500
ERROR: attempt to call RhoCandidate::SetType("pi0 | Meson | Q=0") for a composite RhoCandidate whose daughters have total charge -3
ERROR: attempt to call RhoCandidate::SetType("pi0 | Meson | Q=0") for a composite RhoCandidate whose daughters have total charge -2
ERROR: attempt to call RhoCandidate::SetType("pi0 | Meson | Q=0") for a composite RhoCandidate whose daughters have total charge -1
*** Candidate is its own mother??? ***

I use FillList(gam,"Neutral") to get the photon list though I know it has some problems with PdgCode setting. From the error message, it seems that some charged particles are misfilled into the neutral list.

I commented some combinations related to the bwd part, and found that in some occasions the crash happens without any error info about charge but only "** Candidate is its own mother??? **". Thus, I guess if there are some pi0 in the gamma list as well.

From the other hand, I don't understand why this crash only happens with the backward endcap EMC. If this problem is purely due to the incorrect filling of neutral list, these errors should be also equally posted by other two EMC components, but they don't actually.

Thanks in advance for all comments and suggestions!

Best,
Lu

Subject: Re: Problem in reconstructing neutral particle
Posted by Klaus Götzen on Fri, 30 Aug 2013 22:08:05 GMT
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Dear Lu,

could you please attach your analysis macro? I think that would help to investigate the problem.

Best,
Klaus

Subject: Re: Problem in reconstructing neutral particle
Posted by Lu Cao on Mon, 02 Sep 2013 09:14:27 GMT
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Hello Klaus,

Here's my analysis macro.
Thanks in advance.

Best,
Lu

File Attachments
1) ana_pi0.C, downloaded 473 times

Subject: Re: Problem in reconstructing neutral particle
Posted by Klaus Götzen on Mon, 02 Sep 2013 10:00:54 GMT
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Hi Lu,

I was not able to reproduce your problem up to now, but I noticed, that you don't empty the RhoCandList bwd_gam around line 202/203.

You could add an

```
bwd_gam.Cleanup();
```

and rerun to see whether this cures the error.

The problem could be, that the bwd_gam list still holds pointers to candidates from the previous event, which after RhoFactory::Reset() point to different candidates from the current event, which might be composites, charged or whatever kind of particles.

Btw, the filtering in lines 135 and 139 (cutting on the PdgCode()) actually does not filter, since these numbers from the reco candidates do not represent the MC truth codes, but just the assigned ones from particle selectors. I.e. all the candidates in a 'PionLoosePlus' list have PDG code 211 after filling the list.

Best,
Klaus

Subject: Re: Problem in reconstructing neutral particle
Posted by Lu Cao on Mon, 02 Sep 2013 12:03:16 GMT
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Hi Klaus,

Thanks pretty much for your suggestions.
It works fine now!
I'm really happy the situation is much better than I thought.

Best regards,
Lu
