Subject: tracks belonging to the same MC truth track
Posted by Gianluigi Boca on Tue, 18 Nov 2014 17:27:55 GMT
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hi Donghee,
I saw your presentation at the last computing Evo meeting.
Can you please be more specific on the problem you mentioned ? Did you mean that it can happen that more than one RECONSTRUCTED
TRACK can be associated to the SAME MC TRUTH TRACK ?

Gianluigi

Subject: Re: tracks belonging to the same MC truth track
Posted by donghee on Tue, 18 Nov 2014 19:57:16 GMT
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Hi Gianluigi,

Yes exactly, two or sometimes more than two reconstucted tracks are associated to the one MC truth track.
2-3 % of events have such kind of double(or more) tracks effect with oct14 release.
At exclusive analysis, those events doesn't affect too much for the evaluation of efficiency.
If we are doing inclusive analysis, we need to care about those events seriously, otherwise the efficiency could be biased.

How can we avoid this effect when we perform MC truth matching?
Naturally we can have some tracks, which is basically induced same origin, in the track reconstruction.
I do not have clear idea what the best solution is, either a strict clean up in the track reconstruction or specific handling of MC truth matching for such tracks.

Best wishes,
Donghee

Subject: Re: tracks belonging to the same MC truth track
Posted by StefanoSpataro on Tue, 18 Nov 2014 20:12:34 GMT
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It would be nice to compare the reconstructed doubles and understand why they are double. Maybe they are a single track broken in two, like crossing the two hemicilinders, or maybe they are correlated to some kink, or maybe they share common hits.

Subject: Re: tracks belonging to the same MC truth track
Posted by Gianluigi Boca on Tue, 18 Nov 2014 20:16:19 GMT
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Hi,

that is a problem caused by the task that associates the reconstructed track to the MC truth.
I suggested a couple of years ago an algorithm that avoids exactly those situations since it chooses the reconstructed track with the largest number of 'true' hits to be associated with a MC truth track.

That algorithm was not accepted (for very detached vertices like Lambda's it may happen that one track is reconstructed in two pieces, each piece belonging to a different sector of the Stt) but we could use it now except for the Lambda or Ks
case.

On the other hand I would be interested to know how many clones tracks (tracks with essentially the same momentum components)
you have in your channel. Those should be down to a minimum percentage after I eliminated them last August.

In any case, the Task to be modified is the PndMCTrackAssociator task.

Gianlugi

I suggested time ago an associator that avoids that situation

donghee wrote on Tue, 18 November 2014 20:57Hi Gianluigi,

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Best wishes,
Donghee

Subject: Re: tracks belonging to the same MC truth track
Posted by StefanoSpataro on Wed, 19 Nov 2014 21:21:11 GMT
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Those tracks will enter inside the counts, regardless of the MC Track Association, and will increase the combionatorial background.
Even if you do not associate them to the corresponding MC track, they have similar momentum and parameters of the original one. The point is: why? An event by event check on how those tracks look like will help to understand (and correct) the feature.