Subject: [FIXED] Bug in PndFts/SttMvdGemTrackingIdeal ?
Posted by StefanoSpataro on Wed, 18 Sep 2013 21:10:18 GMT
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Hi tracking guys,
I see a potential bug, or maybe a feature, of the ideal track finders, i.e. PndFtsTrackerIdeal and PndSttMvdGemTrackingIdeal.

If I check PndFtsTrackerIdeal, first it search for FTS hits in the event:

```
if(fHits[0]->GetEntriesFast() == 0) {
  return;
```

If there are FTS hits, it start to fill the PndtrackCand with hits from MVD, GEM and FTS.
If there are at least 3 hits:

```
if( tcand->GetNHits() < 3 ) continue;
```

then the candidate is stored.

The main problem that I see is that there is no requirement that in the trackcand there is at least a FTS hit. For single particle events it is the same. But if you have a 2-particle events, one particle in the forward part and another in the barrel, the code will see that there are FTS hits in the event, and it will fill not only the trackcand of the fwd track, but it will create also a trackcand with the MVD+GEM hits of the barrel particle. Such second track is not a forward track. The opposite in the case of the PndSttMvdGemTrackingIdeal.

This means that maybe, once you run a barrel and a forward tracker together (both ideal, or one ideal and another real), you could have in the same event a track with MVD+STT+GEM hits, and another track with the same hits from MVD+GEM but w/o STT, since it is a "forward" track. The same track is reconstructed twice.

I hope I was clear. Maybe it would be better to put a selection, so that only TrackCand with at least one FTS or STT hit are stored. Maybe it would be good also to increase such number, since tracking with a single hit straw is impossible I believe.

Please let me know your opinions, maybe I read wrongly the code.