
Subject: Update of lhetrack

Posted by [Stefano Spataro](#) on Thu, 10 Apr 2008 17:25:34 GMT

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Dear all,

since version 2466 lhetrack package has several "important" updates.

- 1) First of all, a small bug that produced analysis crashes was solved (see entry before).
- 2) Now it is possible to include MVD in the fitting by a task option, without recompiling (as done before)
- 3) It is possible to run the code with pure MC points, with MCPoints smeared by fixing the spatial resolution, with reconstructed hits (so TpcCluster and MVDHits).

The construction is very easy. You have just to add in your analysis macro:

```
// ----- LHETRACK -----
PndTpcLheHitsMaker* trackMS = new PndTpcLheHitsMaker("Tracking routine");
trackMS->SetTpcMode(2, -1); // 0 OFF, 1 TpcPoint, 2 TpcCluster // TpcPoint smearing [cm], if
negative no smearing
trackMS->SetMvdMode(2, -1); // 0 OFF, 1 MVDPoint, 2 MVDHit // MVDPoint smearing [cm],
if negative no smearing
fRun->AddTask(trackMS);
PndTpcLheTrackFinder* trackFinder = new PndTpcLheTrackFinder();
fRun->AddTask(trackFinder);

PndTpcLheTrackFitter* trackFitter = new PndTpcLheTrackFitter("fitting");
fRun->AddTask(trackFitter);
```

With the SetXXXMode(Int_t mode, Float_t res) function for TPC and MVD you can switch OFF your detector (mode==0), or decide to use just Points (mode==1), Points smeared according to a space resolution value res (for TPC $\sigma_Z = 2*res$), or reconstructed hits (mode==2).

Under macro/lhetrack you can run the reconstruction chain:

run_sim_tpcmvd.C will produce MC points
run_track_tpcmvd.C will run digitization+reconstruction for TPC and MVD, and will use the reco points for the fitting
plot_pT.C will plot the results of the fitting.

Known (and unsolved) problems (at the moment)

- 1) If lhetrack runs in a 2nd step macro, it is crashing. The problem seems to stay in the sigma for MVD hits. The functions MVDHits::GetDx() y and z called by lhetrack code require the geometry which is not in the file, so the macro crashes. Adding the sim file as fRun->AddFriend() does not help. For these reasons everything should run in the same macro, at the moment.
- 2) It seems that if one turns on the RiemannFit task, the macro goes well. But when launching

the plot_pT.C macro to show results, this crashes. It is like it is not able to access properly to the tree. This should be investigated.

3) While for the MCPoints is easy to get the MCTrack index, for reco hits this is not possible. In this case the TrackID is set to -1.

4) lhetrack has some tools to fill track candidated from the MC and from the fit, by using TpcPoints TCA. Now lhetrack works even with other kind of data objects such as MVDPoints and reco hits. So this part should be adjusted. For MC it will be quite simple, but for reco... that's another story.

Some feedback is welcome, of course.
