

Projection onto vertical
planes

The problem

Deep in the code where the reference plane for the projection is defined:

```
case DETECTOR_TYPE::Vertical_Plane:  
pathlenth_from_first_meas = phgf_track->extrapolateToPlane(*gf_state, TVector3(0., 0., iter->second.second),  
TVector3(1, 0., iter->second.second), 0);
```

Instead of:

```
case DETECTOR_TYPE::Vertical_Plane:  
pathlenth_from_first_meas = phgf_track->extrapolateToPlane(*gf_state, TVector3(0., 0., iter->second.second),  
TVector3(0, 0., 1.), 0);
```

The norm vector created a slightly tilted reference plane with respect to y. The deviation in z is smaller the further upstream/downstream the plane is created. The deviation in z is smaller the closer one is to the beam.

It showed up when testing a plane 100cm downstream where deviations in z of 1-2cm were observed ~1m from the beam. The x/y coordinates of the projections were hardly affected which is why nobody has found this so far

The bug was found and fixed 9 days ago, I put a note into our mattermost chat (we don't really have a mailing list for this)