
Subject: STT helix fit output parameters.

Posted by [Lia Lavezzi](#) on Tue, 22 Apr 2008 10:22:20 GMT

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Hi,

as said during the EVO meeting I write down here the output parameters of the STT reconstruction.

The helix fit parameters are the following ones: d0, phi0, R, z0, tan(lambda)
where:

- d0 is the distance of closest approach of the track to the origin (see also the attached figure);
- phi0 is the azimuthal angle of the point of closest approach [$\phi_0 = \arctan(y_c/x_c)$ with (x_c, y_c) = center of curvature coordinates];
- R is the curvature radius of the track in the xy plane;
- z0 is the z coordinate of the point of closest approach calculated in xy plane;
- tan(lambda) is the tangent of the dip angle, the slope of the straight line in z - track length * cos(lambda) plane.

The parameters can be accessed by the following functions:

```
Double_t d0   = pTrack->GetParamLast()->GetX();
Double_t phi0  = pTrack->GetParamLast()->GetY();
Double_t R     = pTrack->GetParamLast()->GetTx();
Double_t z0    = pTrack->GetParamLast()->GetZ();
Double_t tanl  = pTrack->GetParamLast()->GetTy();
```

and the transverse and longitudinal momenta can be calculated:

```
Double_t ptran = 0.003 * 2 * R
```

```
Double_t plong = ptran * tanl
```

```
...and, from them, finally ptot = sqrt(plong*plong + ptran*ptran)
```

Best regards,
Lia.

Edited on Jan 14, 2010:

The parameter access functions have changed:

```
Double_t d0   = pTrack->GetDist();
Double_t phi0  = pTrack->GetPhi();
Double_t R     = pTrack->GetRad();
Double_t z0    = pTrack->GetZ();
Double_t tanl  = pTrack->GetTanL();
```

File Attachments

1) [paramxy.ps](#), downloaded 676 times
