Subject: Re: Helix and FairTrackParH
Posted by Lia Lavezzi on Thu, 23 Jul 2009 17:41:38 GMT
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Hi Stefano,

just to clarify the meaning of the different parametrizations:

1) in FairTrackParH you have the 5 parameters: q/p, lambda, phi, yperp, zperp.
q/p is the charge over momentum, lambda and phi are the dip and polar angles which describe the direction of the particle, yperp and zperp are the coordinates of the point in the SC reference frame (the one perpendicular to the momentum). Using the functions of that class you can also get the position and momentum in the master reference frame;

2) in the equations you cited from my thesis, x0, y0, z0 define the starting point of the helix, phi0 is the azimuthal angle of the starting point with respect to the helix axis, lambda is the dip angle and Rh is the radius of curvature of the helix.

So, I don' t think you can directly apply the equations in 2) to the track from 1) since phi and phi0 should be different: in fact phi0 is calculated with respect to the helix axis and so they would coincide only if the helix axis was coincident with the beam.

If you want to apply the x(s), y(s), z(s) equations you should choose as starting point the one you get with GetPosition in FairTrackParH and then apply them, but you have to calculate the corresponding phi0, since it is not directly given by GetPhi in FairTrackParH.

Concerning the momentum calculation I guess that once you have the helix described in the x(s), y(s), z(s) point you can obtain the px and py coordinates by considering the transverse momentum as tangent to the track (a circle) in that point and then projecting it on the x/y directions, can' t you?

If I find the exact equations for the momentum I will post a message!
Ciao,
Lia.