Subject: Re: Psi3770 study with run981 tpc mode
Posted by donghee on Tue, 26 Jul 2011 09:14:02 GMT
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Dear

Here is some new study of psi3770 channel.
I have tried to test the effect of pion and kaon hypothesis in the psi3770 reconstruction.

Please remind the psi(D+D-)-> decay into 6 final state with K-pi+pi+K+pi-pi-.

In the STT reconstruction, I have prepared an extra reco and pid file with kaon hypothesis, which has an assumption of kaon mass in PndRecoKalmanTask during the kalman fit.

So, I have two different pid files according only pion hypothesis and only kaon hypothesis, respectively.
Then I tried to build D+, for instance, with negative Kaon candidate from kaon pid file and positive pion candidates from pion pid file. That is quite simple approach to test the influence on D+ and D- reconstruction and vertex resolution.

In attached files, the D+ and D- mass distributions are compared.
Dmeson_mass_distribution plot show the results on the pion hypothesis, which is our standard approach. Tracking has been done only with pion hypothesis in this case.
In Dmeson2_mass_distribution, kaon hypothesis and pion hypothesis are used according D+(K-pi+pi+) or D-(K+pi-pi-) decay topology. As I said, I made kaon pid file with kaon hypothesis as an extra step.

What we can learn from both plots is the number of reconstructed events are increased due to correct mass hypothesis.
But vertex resolution of D+ and D- are practically unchanged.
I (or you) could expect some improvement of D+ and D- vertex resolution, but unfortunately it doesn't so much help in the reconstruction level.

welcome any comments.

Best wishes,
Donghee

File Attachments

1) Dmeson_mass_distribution.eps, downloaded 414 times
2) Dmeson2_mass_distribution.eps, downloaded 417 times