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Subject: plane id in track candidate

Posted by [Anonymous Poster](#) on Tue, 23 Feb 2010 09:23:17 GMT

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Hi,

I have stumbled upon an interesting problem in track fitting:

If the pattern recognition determines that two hits in the same plane (e.g. MVD) belong to the same track, because a clear distinction is impossible, they are both input to the track fit. Then maybe the fit can determine which is the outlier or simply it has to use both. The question is how to handle that situation, i.e. how does the Kalman filter (or another algorithm) know that two hits are on the same plane. We could compare the complete plane parameters of both planes, but that is a big computational effort and hardly seems necessary. That is why I propose the following:

We should add an (unsigned) integer is called planeId to all hits in the track candidate. This way any tracking algorithm can easily determine if the next hit is in the same plane or in another one that requires an extrapolation.

If there are no objections, I will add the corresponding things to the PndTrackCand. The long term id behind this is that we will in the near future work on a tracking algorithm called

noise: a study of elastic tracking and nonlinear filters, Computer Physics Communications 120 (1999) 197–214) which has a dynamic weighting of hits in a fit, especially if there are several of them in the same plane. This will be cool for doing realistic pattern reco track fitting including the MVD & GEMs.

Cheers, Christian

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