
Subject: Using the 4C fit "outside the framework"

Posted by [Marcel Tiemens](#) on Fri, 13 Feb 2015 11:58:57 GMT

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Hello everyone,

Before posting my question, let me set the stage. I'm working on a new algorithm for clustering in the EMC, and in doing that, the data structures that are created do not necessarily follow the format of the PandaRoot framework. That wouldn't really matter at this point, however, to test the algorithm, I am trying to reconstruct some decay (in my case, $p\bar{p} \rightarrow h_c \rightarrow \dots \rightarrow 7 \text{ gamma}$), and to improve on the resolution of e.g. the invariant mass of the h_c , I tried to apply a kinematic fit.

As I'm not creating the data in the format of the framework, I manually build the RhoCandidates from the Lorentz vectors of the clusters, and put them in a RhoCandList (and all the other particles in the decay), so I can use the kinematic fit as sketched in the Rho tutorial. When I try to run the macro I made however, ROOT complains that some matrix (which one is not specified) is singular and crashes in a segmentation violation. I've tried looking into the code of the PndKinFitter, but didn't learn much as to the cause of the crash. Johan said that I needed to specify the energy resolution matrix somewhere, but I can't figure out where. Does anyone know 1) if this is (likely) the reason for the crash and 2) how I can specify this matrix 'externally'? Or something else I can do to get around this problem?

Thanks!
Marcel

Subject: Re: Using the 4C fit "outside the framework"

Posted by [Ralf Kliemt](#) on Tue, 17 Feb 2015 11:00:12 GMT

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Hello Marcel,

in order to get a fitter work you have to provide your measurement as well as the symmetric covariance matrix. In case of the RhoCandidate and the kinematic fits you need the four-momentum and the 4x4 matrix. The trivial covariance matrices contain the squared errors on the diagonal. You can use `void SetCovP4 (const TMatrixD& covP4);` to set it in the candidate.

Cheers
Ralf

See more on the RhoCandidate in the header:

<https://subversion.gsi.de/trac/fairroot/browser/pandaroot/trunk/rho/RhoBase/RhoCandidate.h>
