
Subject: Pnd4CFitter - how to use it

Posted by [Elisabetta Prencipe \(2\)](#) on Fri, 30 Aug 2013 13:03:25 GMT

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Dear Rho experts,

I am reconstructing the meson Ds(2536)+ through its decay to D*0 K+, D*0 to D0 gamma, D0 to K-pi+.

With the vertex fit or the mass constrained fit, no problems...I mean, I get troubles with the reconstruction of neutrals such as gammas, but this is another topic. My question now is the following: I have my Ds2535 list, and I write:

```
for (j=0;j<Ds2535.GetLength();++j)
{
    Pnd4CFitter fitter(Ds2535[j],ini);
    fitter.FitConserveMasses();
    double chi2_4c=fitter.GetChi2();
    hm_chi2_4c->Fill(chi2_4c);

    if (chi2_4c<40)
    {
        RhoCandidate *jfit = Ds2535[j]->GetFit();
        RhoCandidate *jfit2=Ds2535[j]->Daughter(0)->GetFit();

        h_4cf->Fill(jfit->M());
        h_4cf2->Fill(jfit2->M());

    }
}
```

The histograms are filled, but with crazy results. What am I doing so wrong? thank you for any feedback!

Elisabetta

Subject: Re: Pnd4CFitter - how to use it

Posted by [Stefano Spataro](#) on Fri, 30 Aug 2013 13:40:58 GMT

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The 4-constraints fit forces the final 4-momentum, sum of the decay products, to be exactly like the initial one.

If you have a formation experiment, i.e. pbarp->h_c, then you can use the 4C fitter since you know the p at rest and the projectile pbar, but if you have a reaction like pbarp->DD you cannot use it to force the mass of one single D, since you don't know its initial 4-momentum. You can force the DD state, but not the single D.

I suppose this is the reason why it does not work in your case.

Subject: Re: Pnd4CFitter - how to use it
Posted by [Klaus Götzen](#) on Fri, 30 Aug 2013 13:45:38 GMT
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Hi Elisabetta,

could you try to use the PndKinFitter instead and compare? It works like this:

```
PndKinFitter fitter(Ds2535[j]);  
fitter.Add4MomConstraint(ini);  
fitter.Fit();  
  
double chi2_4c = fitter.GetChi2();  
double prob_4c = fitter.GetProb();  
  
if ( prob_4c > 0.01 )  
{  
    RhoCandidate *dstarfit = Ds2535[j]->Daughter(0)->GetFit();  
    ...  
}
```

Best,
Klaus
