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Subject: Re: Bear Smear and Cross Sections

Posted by [Ingo Froehlich](#) on Mon, 27 Aug 2012 07:22:01 GMT

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Michael Kunkel wrote on Fri, 24 August 2012 19:32

Also, I am unclear on what SetNpx/y does. Looking in the code I see that on line 58

```
if (npy>0) pf2->SetNpx(npy);
```

Is this suppose to be SetNpx for npy? Could you also elaborate more on this functionality?

This is just a typical copy-and-paste typo. I will correct it.

SetNpx/Npy are just forwarded to the TF2 base class. They have the same meaning as there (precision vs. computing time)

Michael Kunkel wrote on Fri, 24 August 2012 19:32

Also, beam smearing is not working with the PScatterCrossSection. ....

....

Quote:

PS: Do not forget that the y-axis (a linear increase of `_f`) was just dummy.

I do not understand this. Once I corrected my syntax for my double boost, I checked my distributed  $\cos(\theta)$  of the PLUTO generation. It looks like the input. (see below) Would you also elaborate more on the meaning of your P.S.

Thanks  
Michael

I think I should explain the meaning of this method a little bit more. It is a function based on `_x` ( $\cos \theta$ ) and `_y` (total c.m. energy). The class samples the density function with `GetRandom2()`, and sets the resulting angle and the c.m. energy of the system. Therefore, the beam smearing cannot be used in this case. You have to fold the beam smearing inside the function.

All this could be in fact also be realized with a TF2 class. But the class `PF2EvalBatch` is more flexible. You can merge one (or more) histograms with the function, if you want you can use one histogram for  $\cos \theta$  and another one for the cross section (and/or beam smearing), or a 2dimensional histogram, or just an analytical function. Therefore, in my dummy example you have to replace the calculation of `_y` (linear function) with some meaningful (if you look carefully you can also see the dummy linear function in your plot).

I have chosen c.m. instead of beam energy because it is an invariant. This is important if somebody uses the class for near-threshold sampling in a deuteron or heavy nucleon with fermi momentum.