
Subject: Panda target and vertex cuts

Posted by [Elisabetta Prencipe \(2\)](#) on Tue, 27 Oct 2015 14:50:26 GMT

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Dear all,

following a discussion started at the open-charm meeting, and today at the computing meeting, I would like to point you on a non-trivial problem.

I am trying to reduce the DPM bkg in the simulation ppbar to Ds- Ds2317+. It turns out that a cut around the vertex position can be effective. However, I am currently using the /rho package, and I did not find a way to compute how effectively the target smearing can affect such a cut. It should be done at level of sim- macro.

Based on MC signal simulations, the vtx resolution in x,y is in between 50 and 80 micrometer (it depends also on which vtx fitter one makes use of), and it is roughly double value for the z vtx position. However, to apply even a 5 sigma cuts around those distributions, it is not a clever idea, due to the fact that we cannot assume IP(0,0,0): it is simply non realistic, due to the target smearing, which is still not taken in consideration.

Here is a PhD thesis performed in 2011, from T. Randriamalala:

[http://www-brs.ub.ruhr-uni-bochum.de/netahtml/HSS/Diss/RandriamalalaTsit ohainaH/diss.pdf](http://www-brs.ub.ruhr-uni-bochum.de/netahtml/HSS/Diss/RandriamalalaTsit%20ohainaH/diss.pdf)

At pag.58-61 studies are reported in this sense, for the pellet target. I point you at pag. 60, fig. 4.34.

If I understand it correctly, a cut at $\leq 2\text{mm}$ would be safe. Do you agree?

I do not find such a study related to the cluster-jet target, and/or related simulation for a physics channel. Anybody has some any clue?

Looking forward to hear from you,

Elisabetta
