Subject: Re: No back propagation to IP for V_0 reconstruction
Posted by donghee on Wed, 03 Dec 2014 22:17:27 GMT
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Hi Stefano,

Option for back propagation are touched in both reco & pid macro as you suggested.

After track reconstruction, K_s mass distributions are compared, no PID applied and same statistics are simulated.
MC truth matched mass distributions are plotted to compare directly efficiency.
Red histo is for the propagation turns on, eff=0.407035
Blue histo is for the propagation turns off, eff=0.403639

Mass resolutions are completely different, no back propagation show much worser resolution than back propagation case. This is easy to understand.
However the efficiency doesn't change.

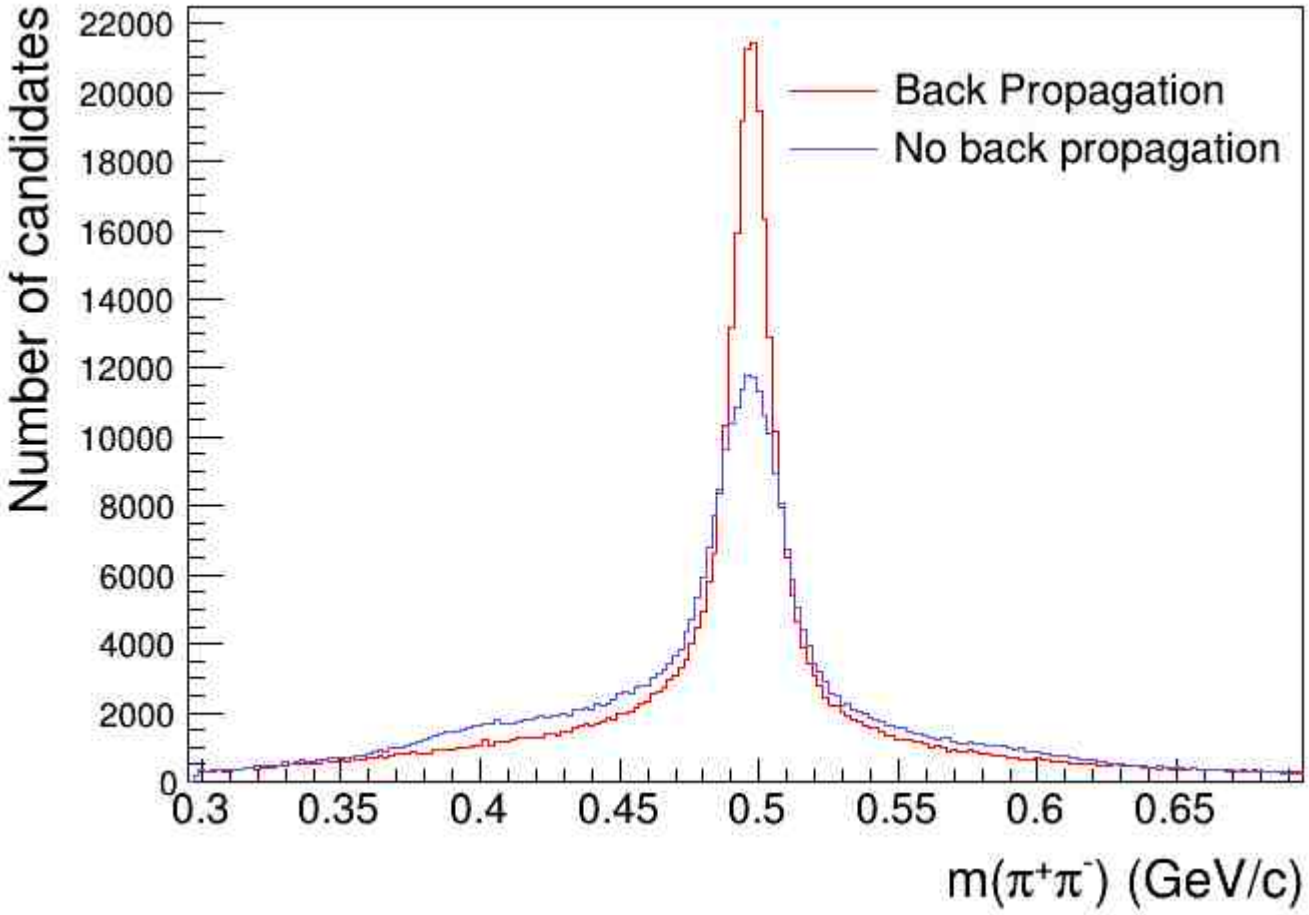
A distance/(gamma*beta) distributions for MC truth matched k_s are compiled to test V0 reconstruction, whether "no back propagation" show some improvement of tracking efficiency for V0 decay particle. Distance is defined as a length between k_s production and decay vertex.

Naively, I expected that efficiency should also increase with "no back propagation", since the decay particles produced far from IP can be reconstructed much better than "using back propagation". In middle range in normalized distance distribution, you can see a significant improvement of reconstruction efficiency for "no back propagation". But if k_s decay near the position of produciton vertex, the efficiency drop down drastically for "no back propagation"(see zoom plot at d/(gamma*beta) below 1(cm)).
I don't know correctly why 0-1 region show a huge difference.

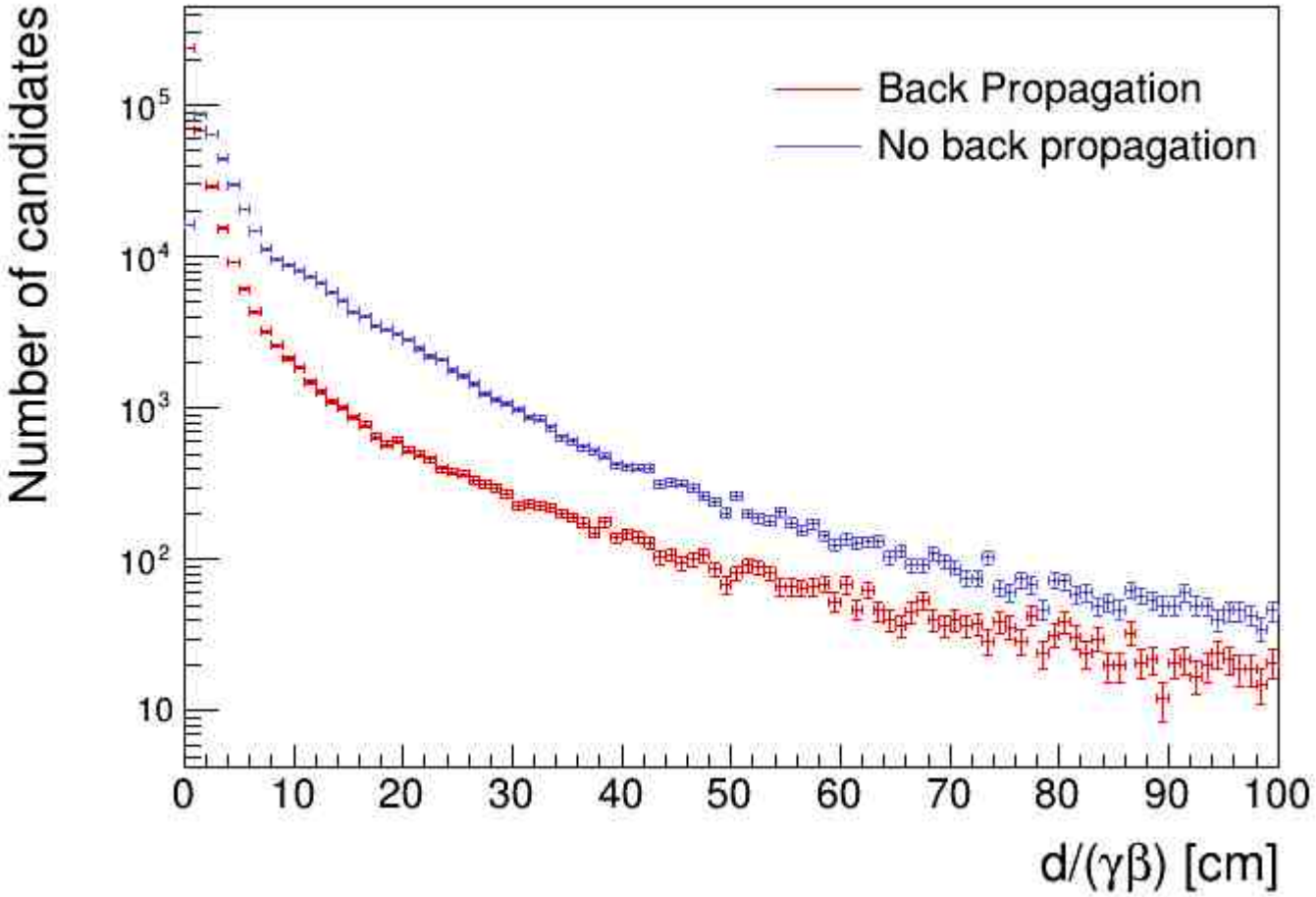
Best wishes,
Donghee

File Attachments

1) test_mass_d04.jpg, downloaded 1522 times



2) test_ctau_d04.jpg, downloaded 1431 times



3) test_ctau_d04_zoom.jpg, downloaded 1547 times