

Fully Hadronic Samples Check - Status Update

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UCL

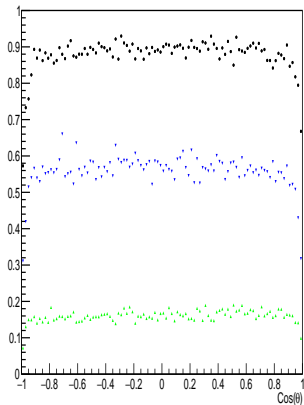
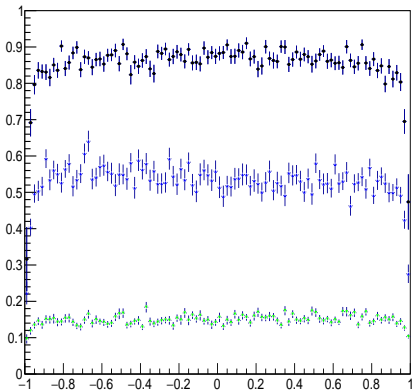
Nov 16, 2018

Updated on Nov 26, see last slide.

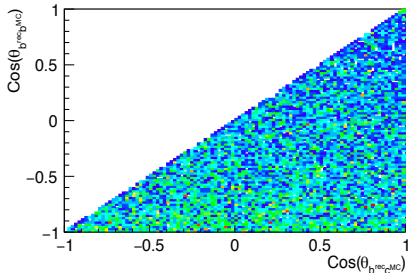
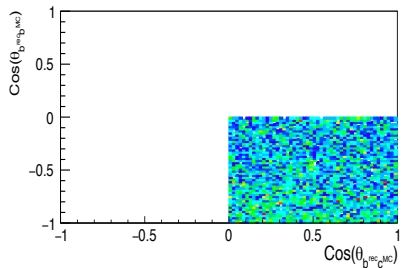
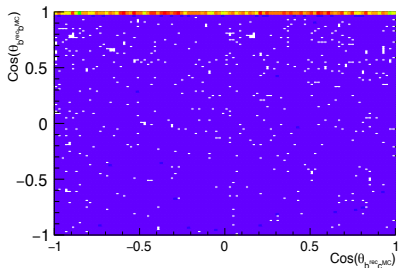


b-tagging performance comparison

btag performance



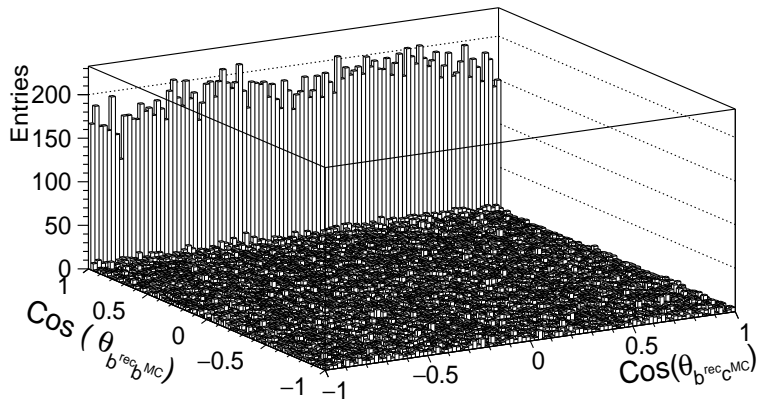
b/c mis-tagging (method)



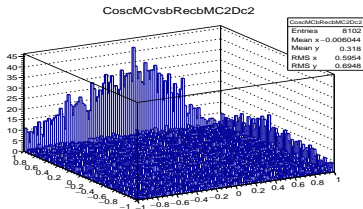
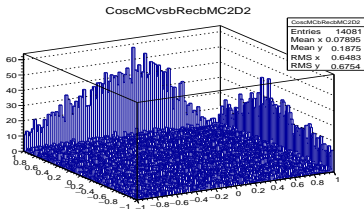
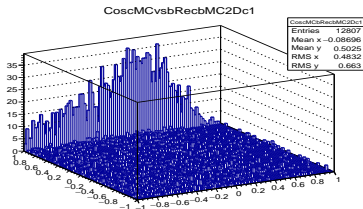
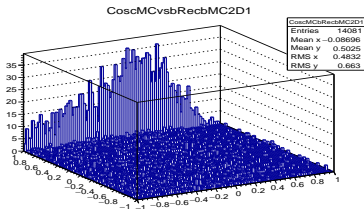
Angle	Events Jet1 (%)	Events Jet1 (%)	Events Jet2 (%)	Events Jet2 (%)
	All	Above b-tag 0.3	All	Above b-tag 0.3
left-handed Polarization ($e_L^- e_R^+$)				
$\theta_{b^{\text{rec}}^c \text{MC}} < \theta_{b^{\text{rec}}^b \text{MC}}$	12	11	13	8
$\theta_{b^{\text{rec}}^c \text{MC}} < \theta_{b^{\text{rec}}^b \text{MC}}$ $\theta_{b^{\text{rec}}^c \text{MC}} < \pi/2$	8	8	9	6
$\theta_{b^{\text{rec}}^c \text{MC}} < \theta_{b^{\text{rec}}^b \text{MC}}$ $\theta_{b^{\text{rec}}^c \text{MC}} < \pi/2$ $\theta_{b^{\text{rec}}^c \text{MC}} > \pi/2$	6	6	6	4
right-handed Polarization ($e_R^- e_L^+$)				
$\theta_{b^{\text{rec}}^c \text{MC}} < \theta_{b^{\text{rec}}^b \text{MC}}$	12	11	12	8
$\theta_{b^{\text{rec}}^c \text{MC}} < \theta_{b^{\text{rec}}^b \text{MC}}$ $\theta_{b^{\text{rec}}^c \text{MC}} < \pi/2$	8	8	9	6
$\theta_{b^{\text{rec}}^c \text{MC}} < \theta_{b^{\text{rec}}^b \text{MC}}$ $\theta_{b^{\text{rec}}^c \text{MC}} < \pi/2$ $\theta_{b^{\text{rec}}^c \text{MC}} > \pi/2$	5	5	6	4

b/c mis-tagging (DBD)

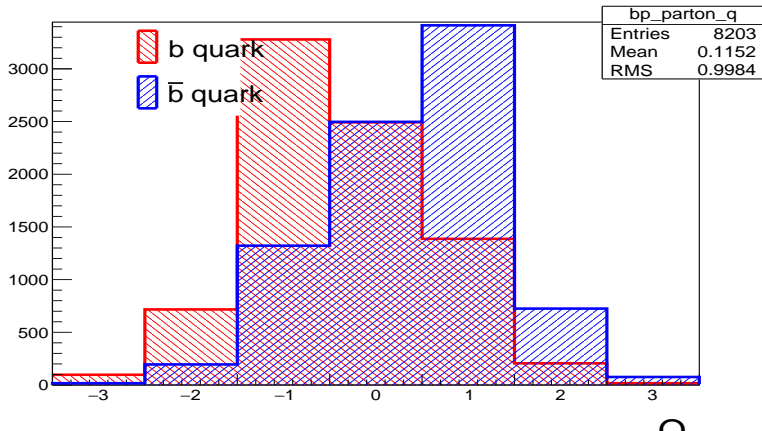
A 3D Projection of comparison of the cosine of the angle between reconstructed b -jets and generate b quarks, vs cosine of the angle between reconstructed b -jets and generated c quarks, to see the mis-tagging of c jets as b jets.



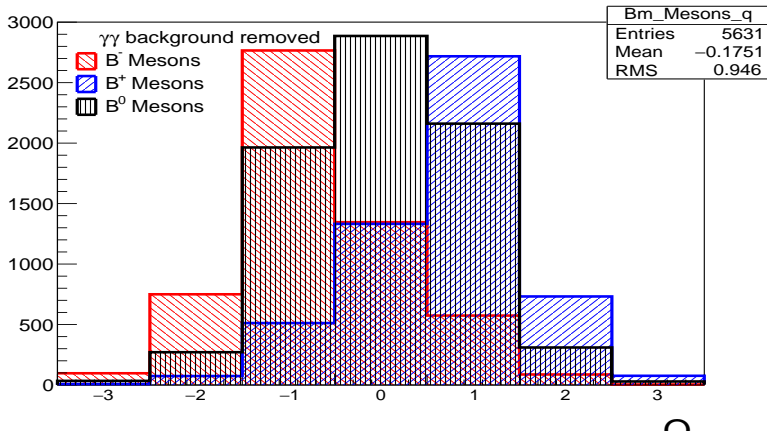
b/c mis-tagging



b charge reconstruction - parton level



b charge reconstruction - Meson level



Summary

The new samples were processed with the ILCSoft v02-00-01, ILD_l5 geometry, newest LCFIPlus (not yet integrated in ILCSoft) using the same weightfiles as used before for the standard version (included in ILCSoft v02-00-01). The charge reconstructions seems satisfactory though b-tagging for second b jet is still at the same level of confusion with c-jet. Need to look further into this.

Update On Nov 26, 2018: So as per suggestions from Ryo, I used the different weightfiles from his github repo. It has not made any significant improvements to the problem concerning second *b*-jet. Have to follow up on the vertex smearing aspect in new files.