Fully Hadronic Samples Check - b/c jets

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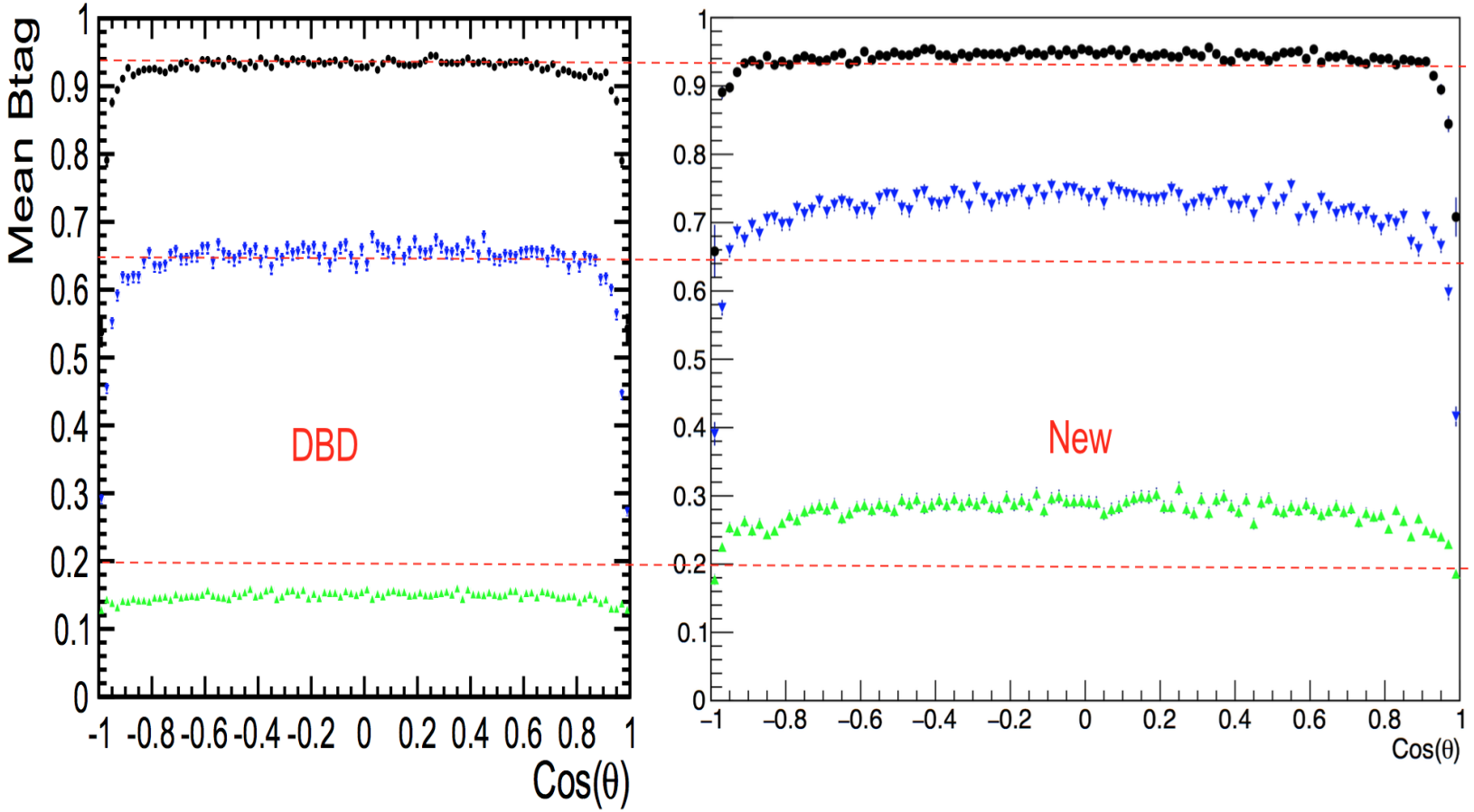
Data Samples and Software version

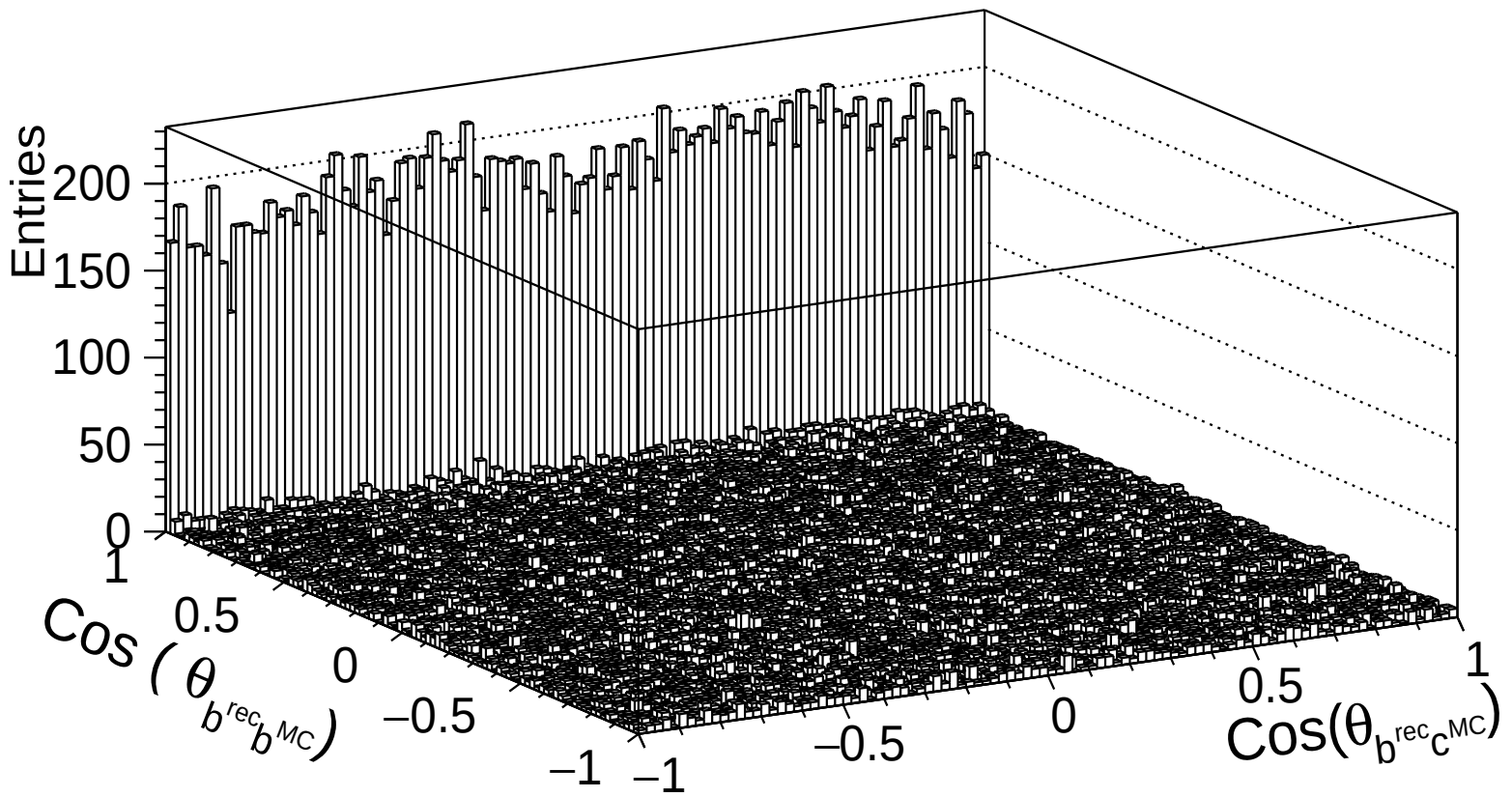
- 6f_ttbar samples, fully hadronic decay mode, 500 GeV with both polarisations.
- Total Number of Events processed: 80000, (52% for e^-_L, 48% for e^-_R)
  - The results in this talk are only for $e^-_L e^+_R$ samples.
- Processes: *yycyyc*,*yycyyu*,*yyuyyc*,*yyuyyu*.
- Detector:
  - ILD_l5_o1_v02 (for simulation and recostruction).
  - ILD_o1_v05 (for flavor tagging and analysis).
- ILCSoft v01-17-11, Marlin v01-09,
- LCFIPlus v00-06-05. lcfiweights prefix:6q500_v01_p01

b-tagging performance comaprison

Two jets with highest *b*-tag value are chosen as *b* jets.



b/c mis-tagging (old)



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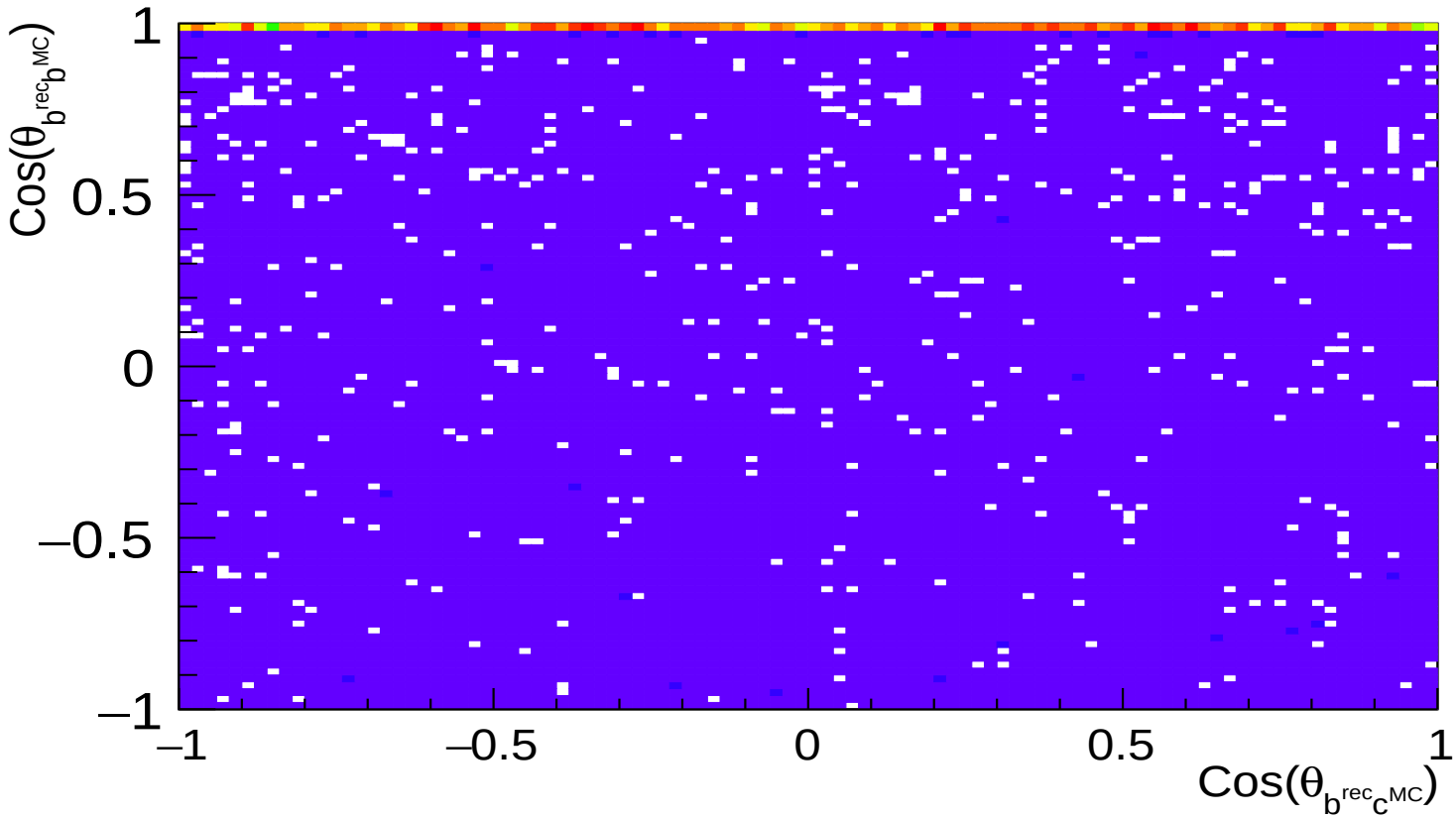

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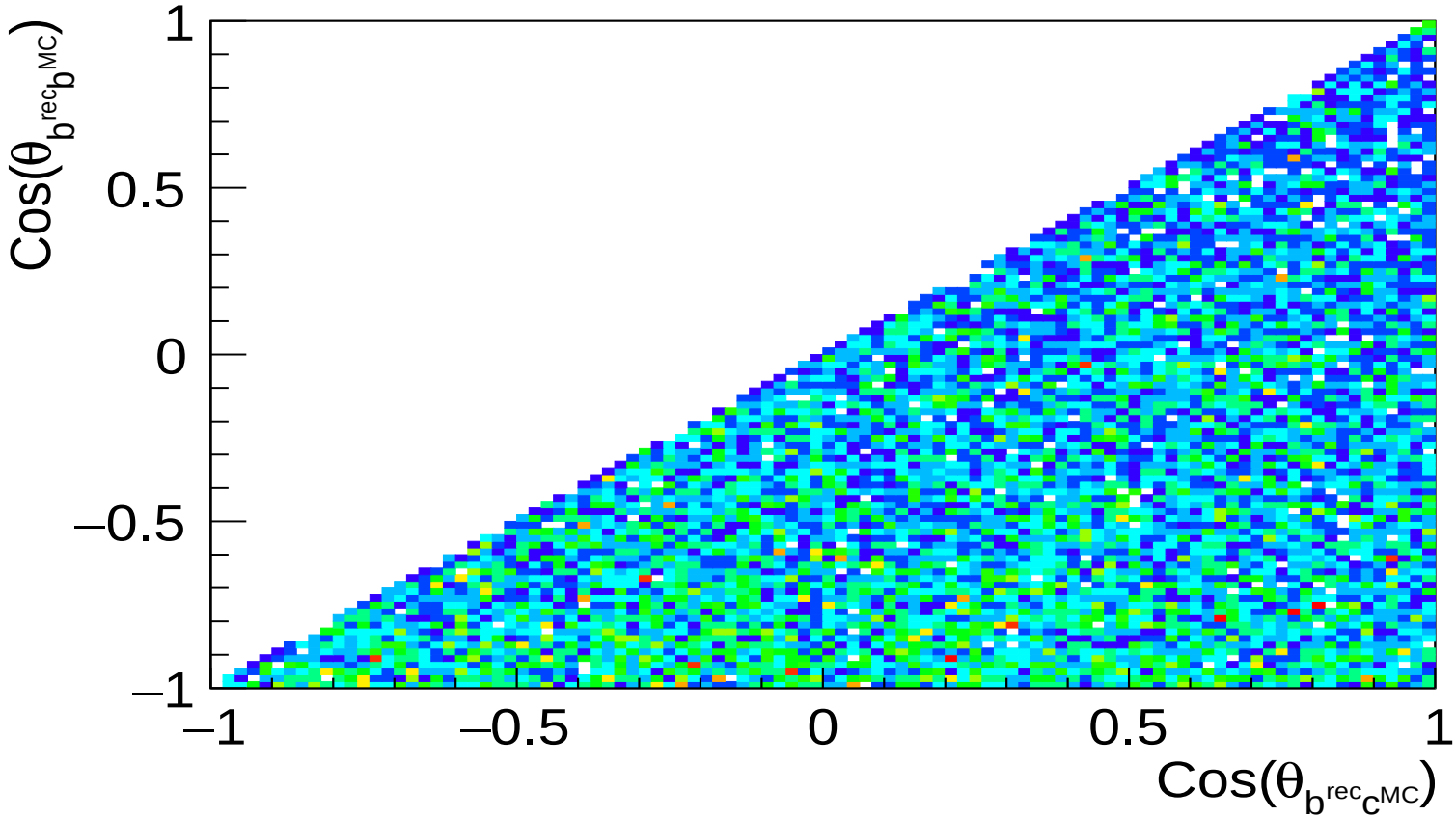
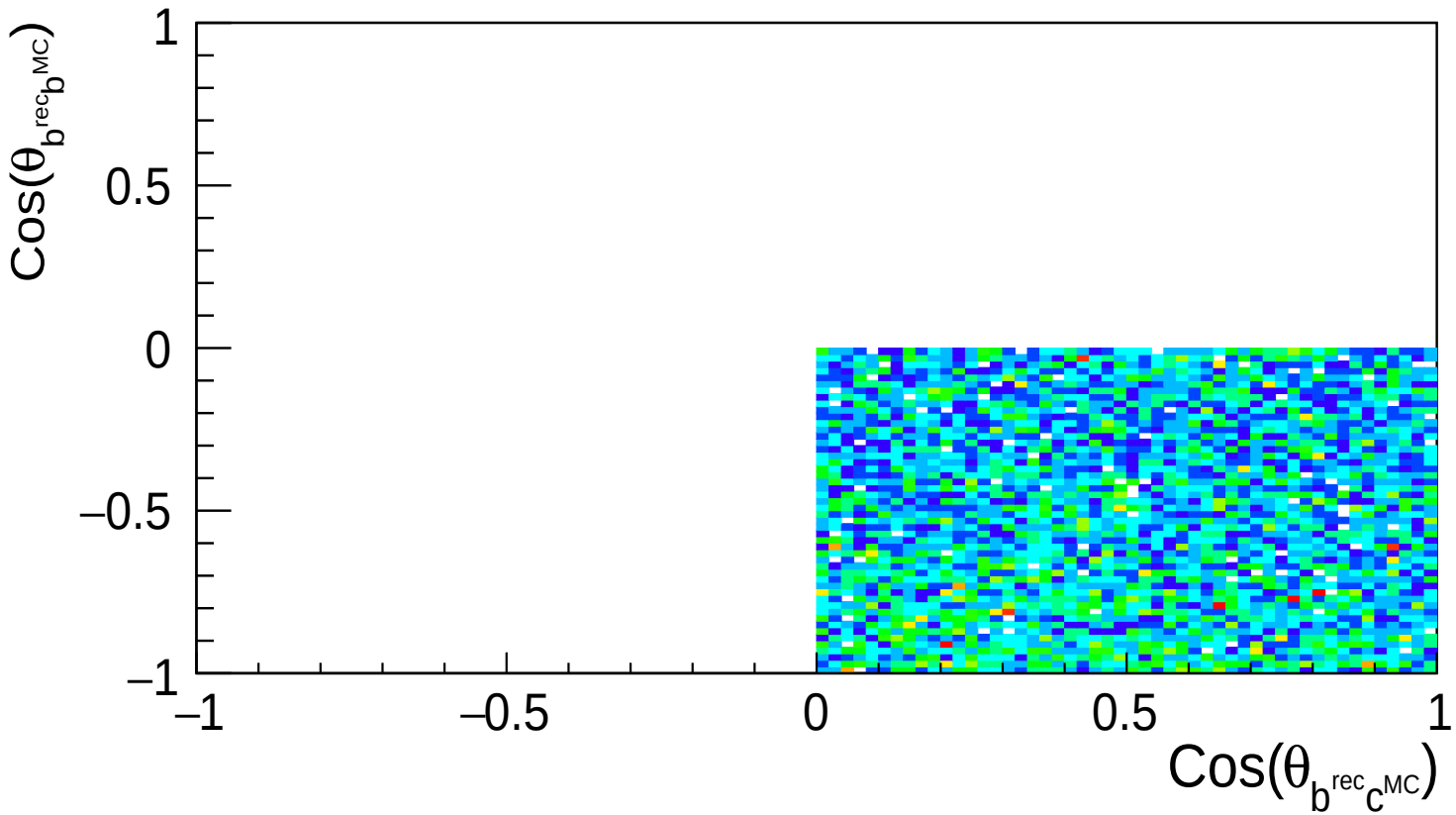


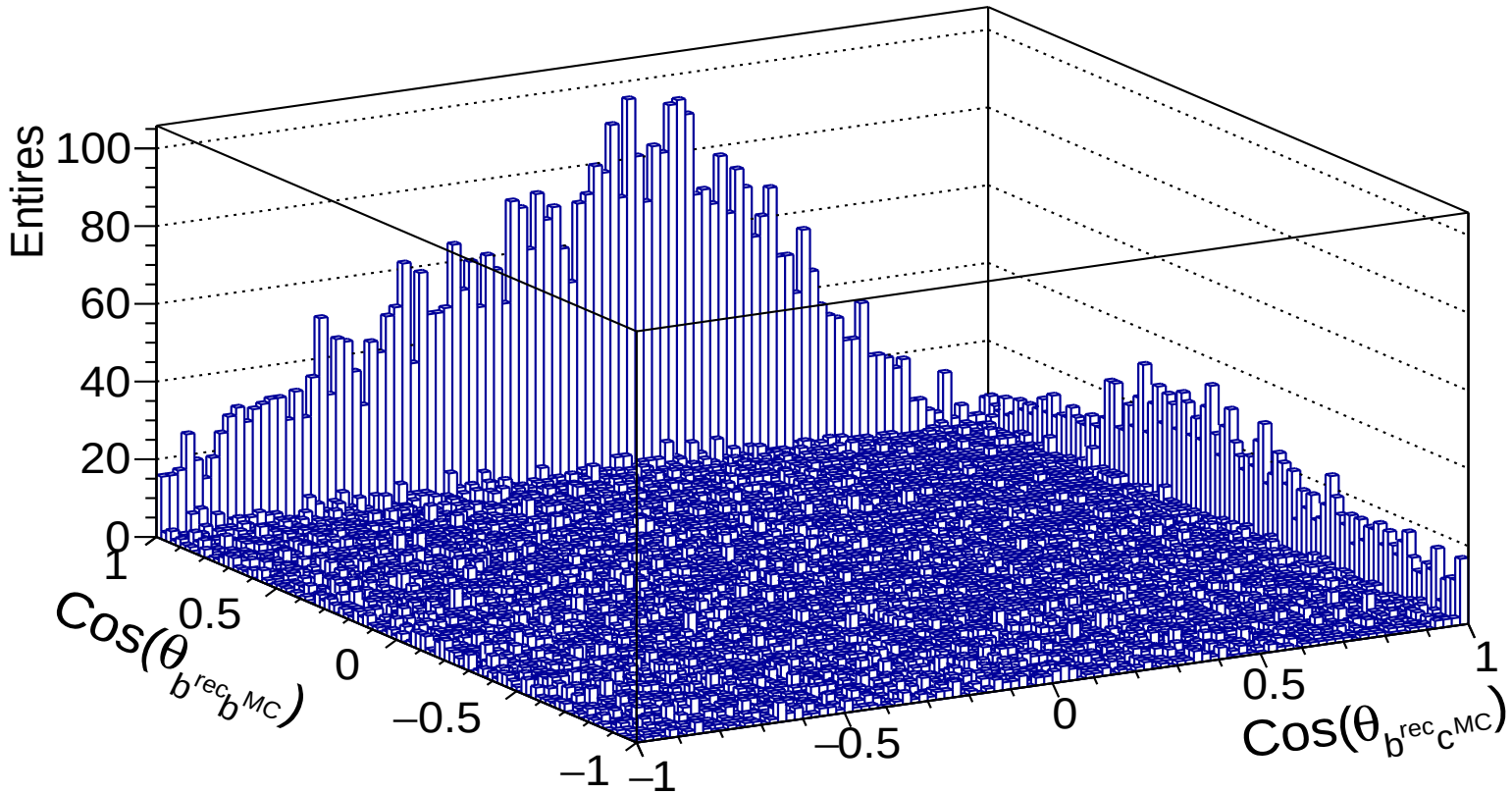
b/c mis-tagging (old)



b/c mis-tagging DBD Results

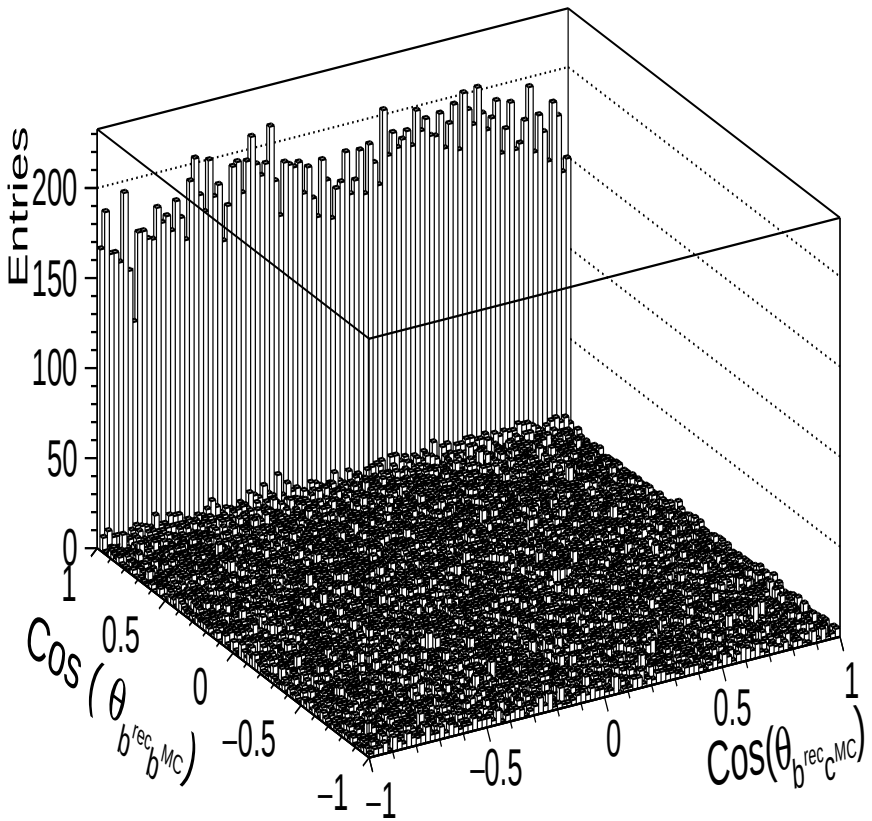
Angle	Events Jet1 (%) All	Events Jet1 (%) Above b-tag 0.3	Events Jet2 (%) All	Events Jet2 (%) Above b-tag 0.3
left-handed Polarization $(e_L^- e_R^+)$				
$\theta_{b_{rec}c_{MC}} < \theta_{b_{rec}b_{MC}}$	12	11	13	8
$\theta_{b_{rec}c_{MC}} < \theta_{b_{rec}b_{MC}}$ $\theta_{b_{rec}c_{MC}} < \pi/2$	8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

b/c mis-tagging (New)

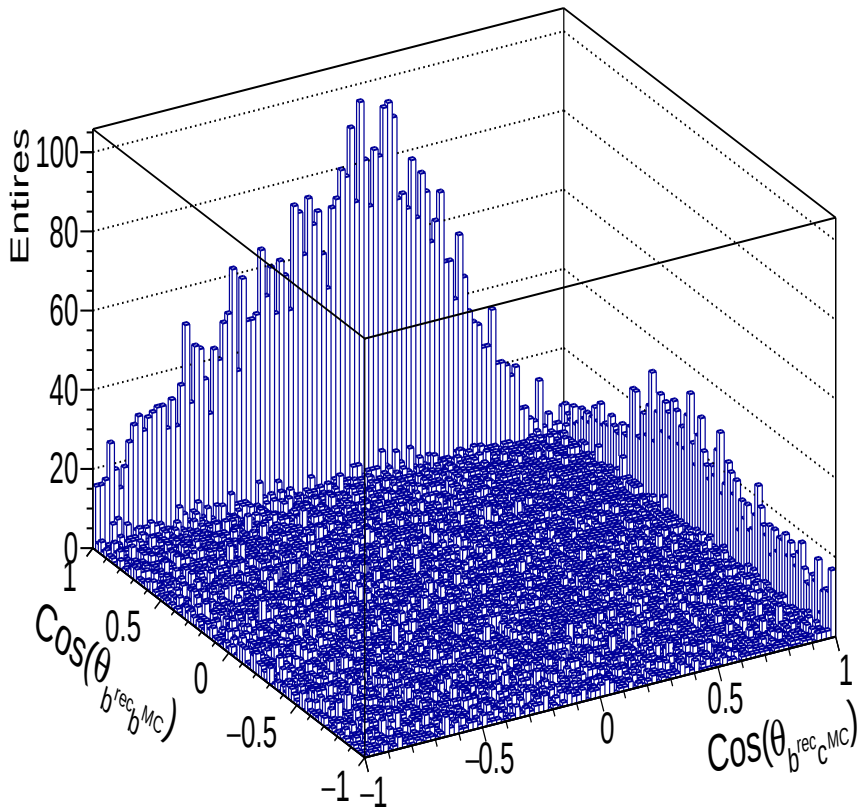


- Jet 2.

Comparison

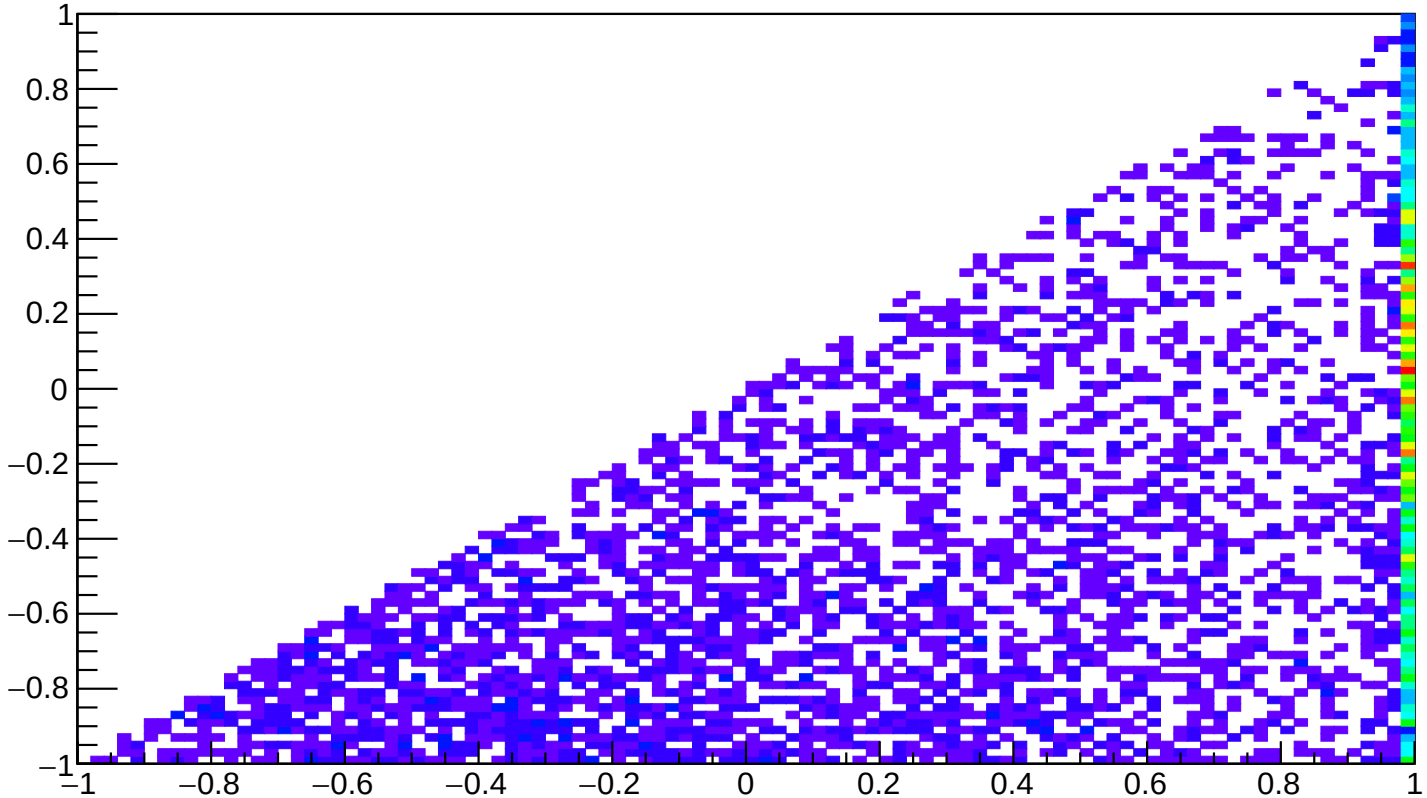


DBD



New Samples

b/c mis-tagging (New)

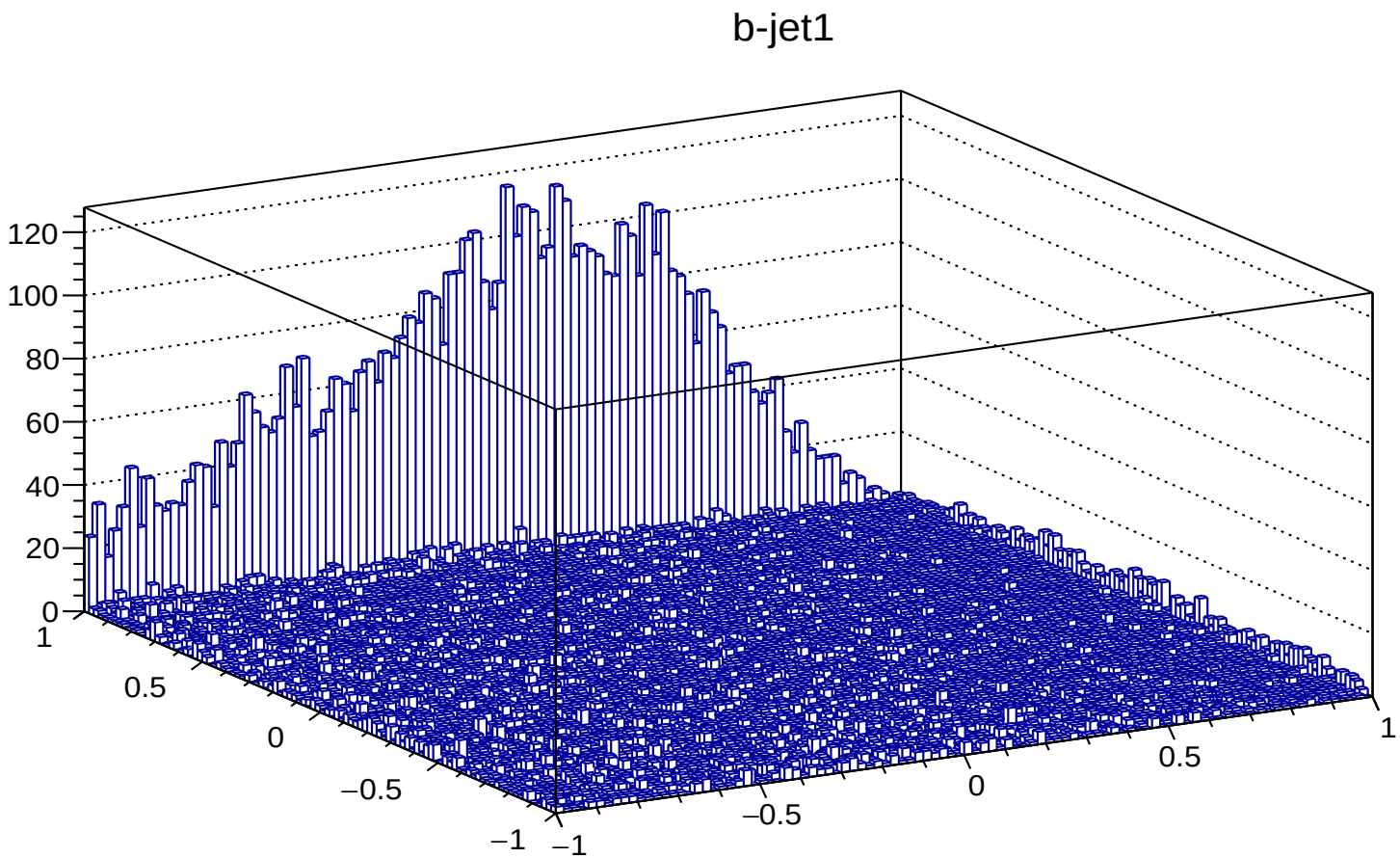


Summary

- The suspected c jets, which were tagged as b-jets were $\sim$ 4-6% in the DBD sample.
- This number appears to have risen to $\sim$ 20+% in current samples.
- A cut of b-tag > 0.3 amounts for $\sim$ 2% improvement in total which is fairly insignificant.
- The angular distributions show a little bias which is not understood.
- Correct gear? Correct LCFIPlus weights?
- Work continued to look for reasons.
- Run with v01-19.

THANKS

b/c mis-tagging (New)



- Jet 1.