

Acceptance correction using data

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▶ Old samples:

- mc-dbd/ild/dst-merged/250-TDR_ws/2f_Z_hadronic/ILD_o1_v05/

v01-17-11-p02/

rv01-17-11-p02.sv01-14-01-p00.mILD_o1_v05.E250-TDR_ws.l106607.P2f_z_h.eL.pR_dst_00008992_001_01-DST.slcio

1 tag vs 2 tag

$$f_1 = \epsilon_b R_b^{cont.} + \epsilon_c R_c^{cont.} + \epsilon_{uds}(1 - R_b^{cont.} - R_c^{cont.}) + F(\epsilon_c, \epsilon_b, \epsilon_{uds}, BKG)$$
$$f_2 = \epsilon_b^2(1 + \rho_b)R_b^{cont.} + \epsilon_c^2 R_c^{cont.} + \epsilon_{uds}^2(1 - R_b^{cont.} - R_c^{cont.}) + F(\epsilon_c^2, \epsilon_b^2, \epsilon_{uds}^2, BKG)$$

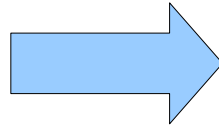
- ▶ f_1 = njets with btag / njets preselection
- ▶ f_2 = nevents with 2 btags / nevents preselection

$$f_1 = \epsilon_b R_b^{cont.}$$
$$f_2 = \epsilon_b^2(1 + \rho_b)R_b^{cont.}$$

If no bkg and/or mistagging
(or if they are known at 100%)

1 charge vs 2 charge (assuming only one method)

$$f_1 = \epsilon_b R_b^{cont}$$
$$f_2 = \epsilon_b^2 (1 + \rho_b) R_b^{cont.}$$

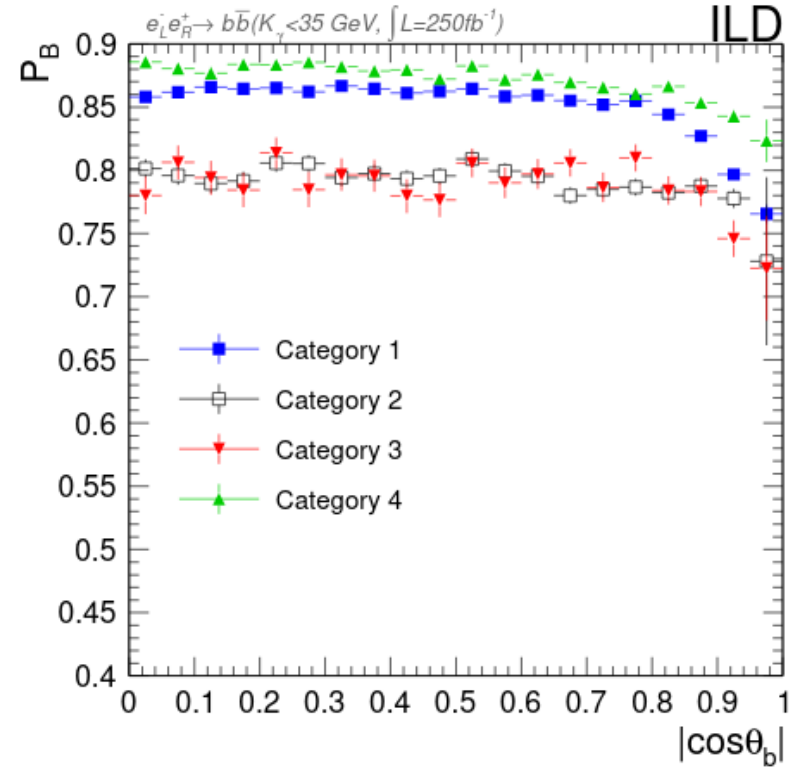
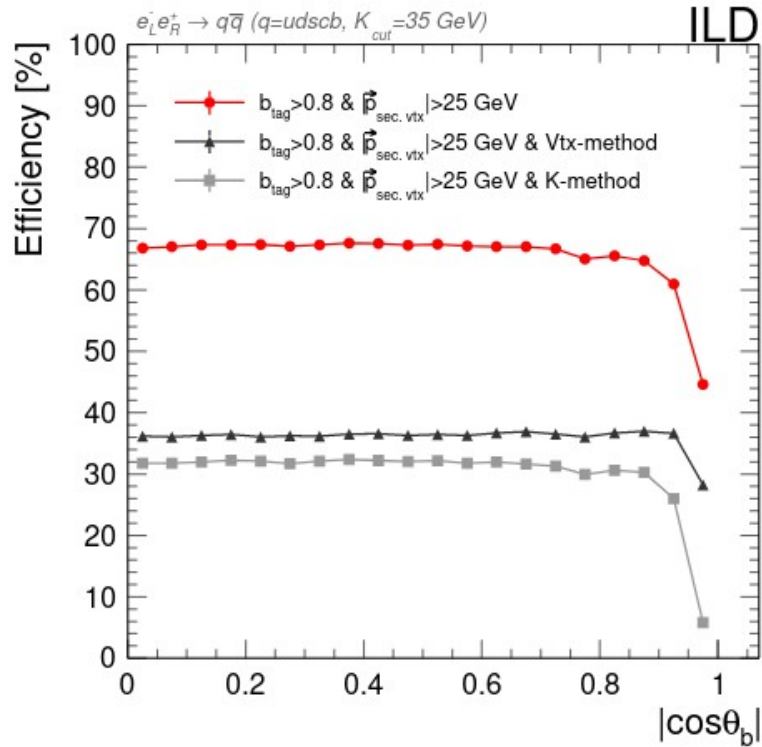


$$f_1 = \epsilon_{Vtx} R_b^{correct\ charge}(\cos\theta)$$
$$f_2 = \epsilon_{Vtx}^2 (p^2 + q^2) R_b^{correct\ charge}(\cos\theta)$$

- ▶ epsilon_b now is not only the b-tag but also the charge measurement
- ▶ I ignore the rho for the moment
- ▶ f1 = njets with charge measured / njets preselection
- ▶ f2= nevents with TWO COMPATIBLE charge measurements / nevents preselection

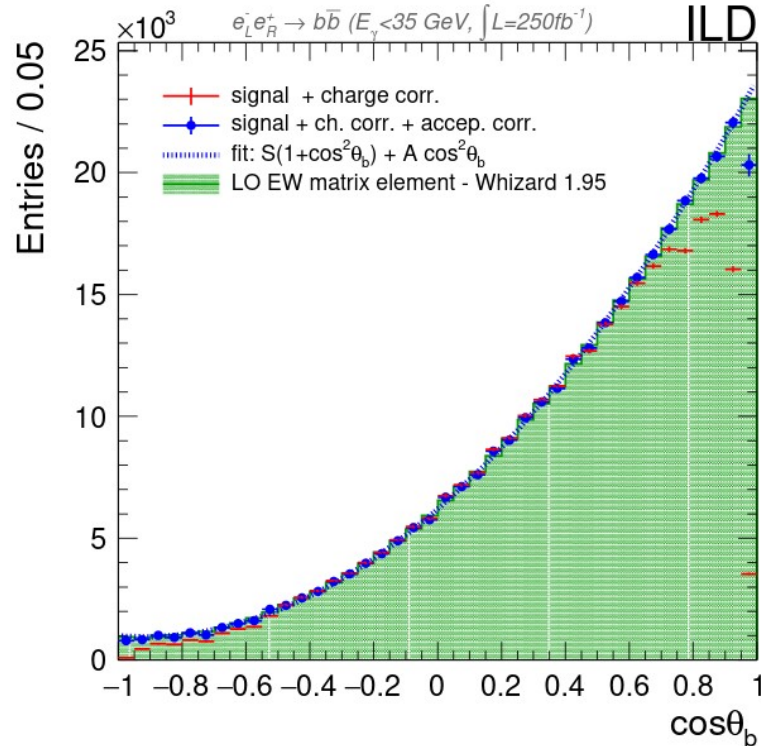
- ▶ p/q is measured using events with two charge measurements compatibles vs two charge measurements incompatible
- ▶ R is corrected with these p/q for the charge flips.
 - Does p/q work for single tag ? → YES. I did prove it long time ago (and for ccb̄)... need to find the plots/macros

Vtx Vtx (Category 1)

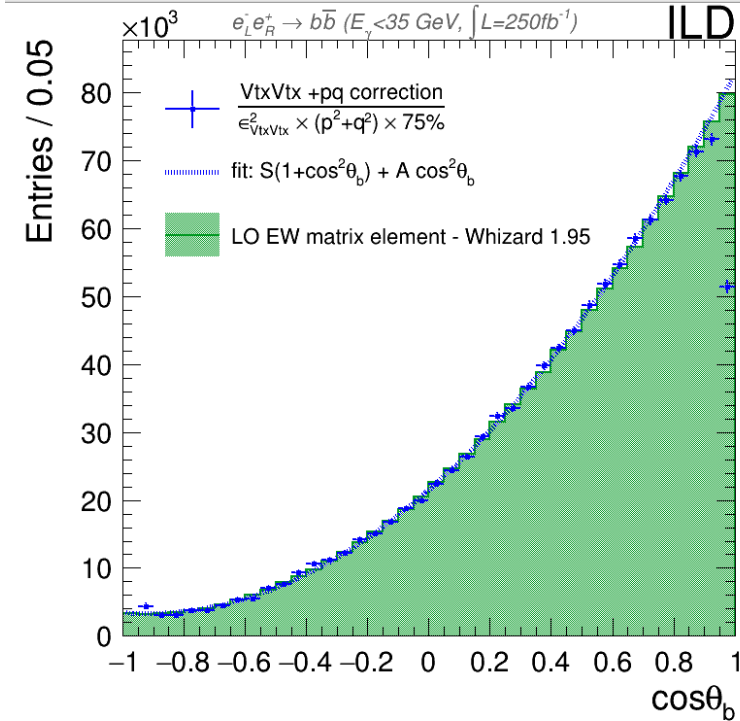


Acceptance correction

► Using MC (all charge methods)



► Using “data” (Only Vtx Vtx)



Global normalizations are different. Left: the parton level is normalized to the reco. Right: the reco level is normalized to the parton

Next ?

- ▶ Prove again that the p/q method works for the single tag
- ▶ Explore the other categories...
 - Next category is K-K but for this one we use only rejected events by the Vtx Vtx method (to be checked)

$$f_1 = \epsilon_K R_b^{\text{correct charge}}(\cos \theta)$$
$$f_2 = \epsilon_K^2 (p_K^2 + q_K^2) (1 - \epsilon_{Vtx}^2 (p_{Vtx}^2 + q_{Vtx}^2)) R_b^{\text{correct charge}}(\cos \theta)$$

- The same jet category... will be complicated!