

$b\bar{b}$ charge reconstruction in ILD

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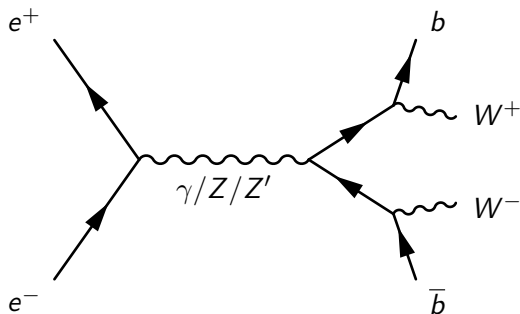
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Channel

- Top's full hadronic decay channel (namely $t\bar{t} \rightarrow b\bar{b}qq'qq'$)
- 46% of the top decay



Progress

Cuts

- $btag_{1,2} > 0.8$
- $(b1chg > 0 \text{ and } b2chg > 0)$ or vice versa
- Vertex charge from one b-jet in combination with vertex charge from another b-jet, abbreviated as $vtx+vtx$
- Kaon charge from one b-jet in combination with kaon charge from another b-jet ($kaon+kaon$);
- Vertex charge and kaon charge combination from different b-jets ($vtx+kaon'$);

Progress

– before vertex recovery –
eventnum = 506773 (100%)
after b-tag cut = 371410 (73.2892%)
after kinematic cut = 242100 (47.7729%)
after chi2 cut = 146479 (28.9043%)
used number = 146479
number after cuts = 38738
vtx1 + vtx2 : 22156
kaon1 + kaon2 : 11581
vtx1 + kaon2 : 5001
AFB(top) = 0.283107, AFB(bottom) = 0.275156

Progress

– after vertex recovery –

eventnum = 506773 (100%)

after b-tag cut = 372884 (73.5801%)

after kinematic cut = 243046 (47.9595%)

after chi2 cut = 146990 (29.0051%)

used number = 146990

number after cuts = 45644

vtx1 + vtx2 : 25254

kaon1 + kaon2 : 14557

vtx1 + kaon2 : 5833

AFB(top) = 0.278525, AFB(bottom) = 0.275524

Progress

– generated data –

used generated number = 491557

$AFB(\text{top}) = 0.324676$, $AFB(\text{bottom}) = 0.341256$

Polar angle spectrum

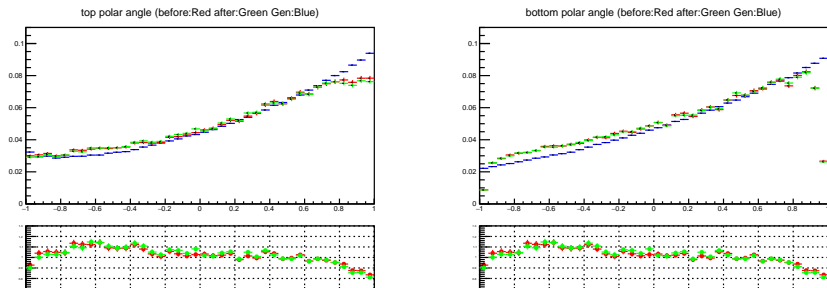


Figure: Top polar angle spectrum