Questions to Draft 1.9 of ILD-2019-007

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- Clear drop towards acceptance limits
- bbbar final state "Pencil like"

- Top quark covers larger angular surface as b

- Acceptance drop less well pronounced





• ee->bb a 500 GeV: Final selection efficiency

$e_L^- e_R^+ o b ar b$ at	t 500 GeV	/
Y	IDR-L	IDR-S
Vtx+Vtx	12.9%	12.8%
K + K	4.4%	4.0%
Vtx + K (diff. jets)	3.9%	3.7%
Vtx+K (same jet)	7.7%	7.4%

Table 2: Final selection efficiency, after double jet-charge measurement

- Kaons double the statistics (similar observation for ee->bb 250 GeV
- Need to make similar statistics for ee->tt which in the note is still very much Dominated by isolated lepton
- Need to understand better the influence of the Kaons in ee->tt \bullet
 - e.g. Unsatisfactory results b-quark in e⁺_R e⁻
 - More systematic studies in coming weeks by Yuichi GT01 2020





- We are hopefully heading towards the ILC
 - Therefore choices for the detector(s) will have to be made
 - Our analyses address a few key questions
- Layout of the vertex detector
 - Closer to the beam pipe (May be an option at smaller energies, Z-pole, CEPC and FCCee study 12mm)
 - Extension of acceptance of vertex detector
 - Distance between end of vertex detector and first forward disk is realtively high in ILD
- Do we need a TPC?
 - Leads to a sizeable increase of statistics do to particle ID of Kaons
 - Are there other means of PID?
 - TOF could work until 10 GeV in an optimistic scenario
 - Might be enough at Z-pole (-> CEPC Study) but gets more involved at higher energies
 - For heavy quarks we always have the vertex charge (with statistics penalty) but w/o particle ID we will close the door to lighter quarks
- Many of these question will addressed in this group and in particular in Yuichi's thesis GT01 2020



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