

Jet clustering

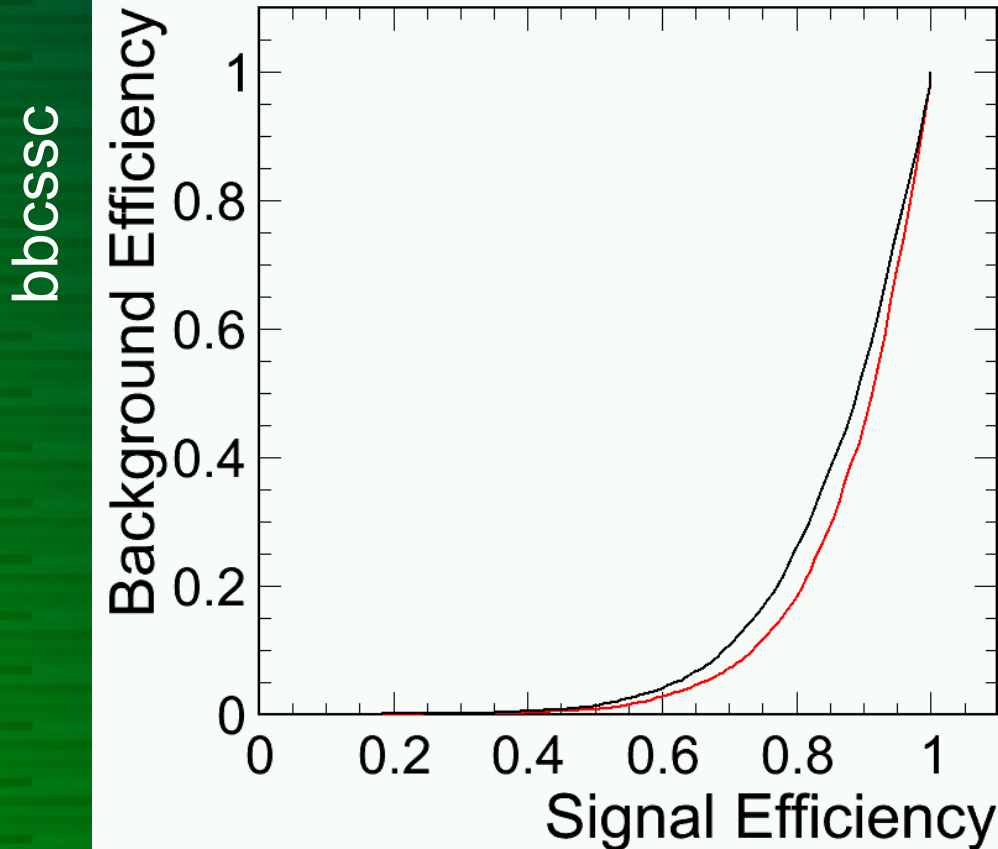
Taikan Suehara

B-tag efficiency

- Vertex clustering vs. Durham
- Forced 6-jet clustering for qqhh & bbcssc
 - qqhh selected by MC b-hadrons ≥ 4
 - bbcssc selected by MC b-hadrons $= 2$
(~98%)
- Mokka with b-hadron fix
- Reconstruction in ilcsoft v01-10
- Vertex clustering (original)
- Old LCFIVertex (in ilcsoft v01-10)
- Check sig-eff vs bg-eff plots

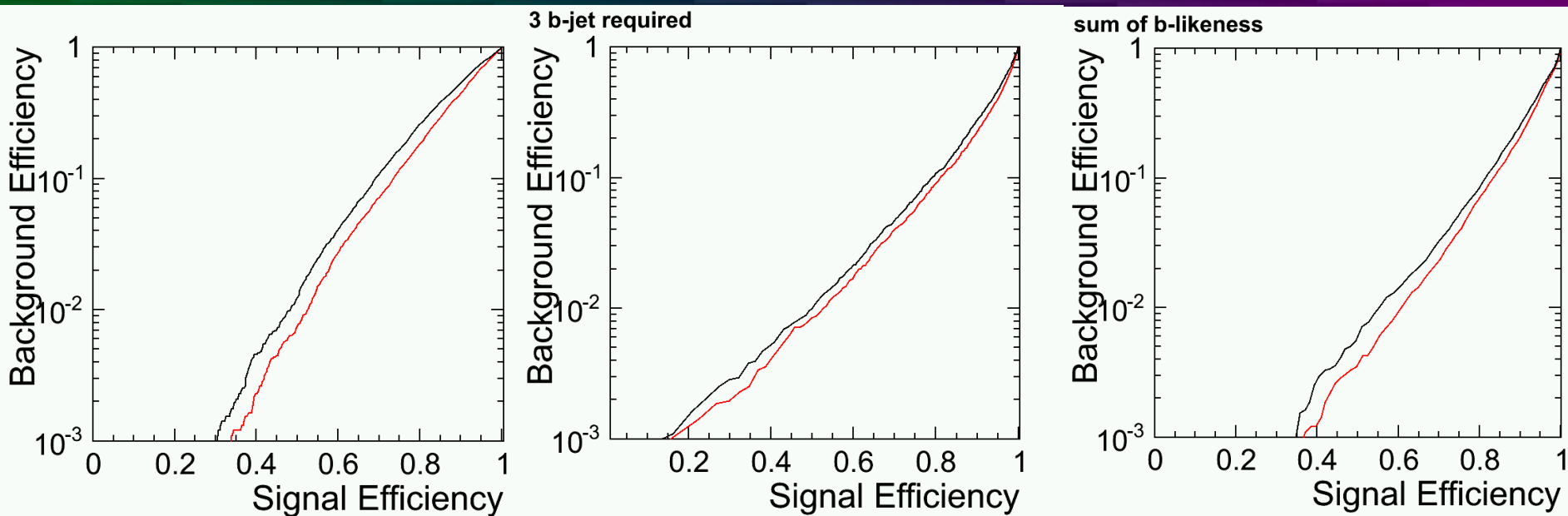
Results (4-b required)

Obtained by changing b-likeness threshold



Clear
improvement!

Compared with various selections



4b required

3b required

Sum b-likeness

Improvements in every selection
Sum b-likeness seems to be the best

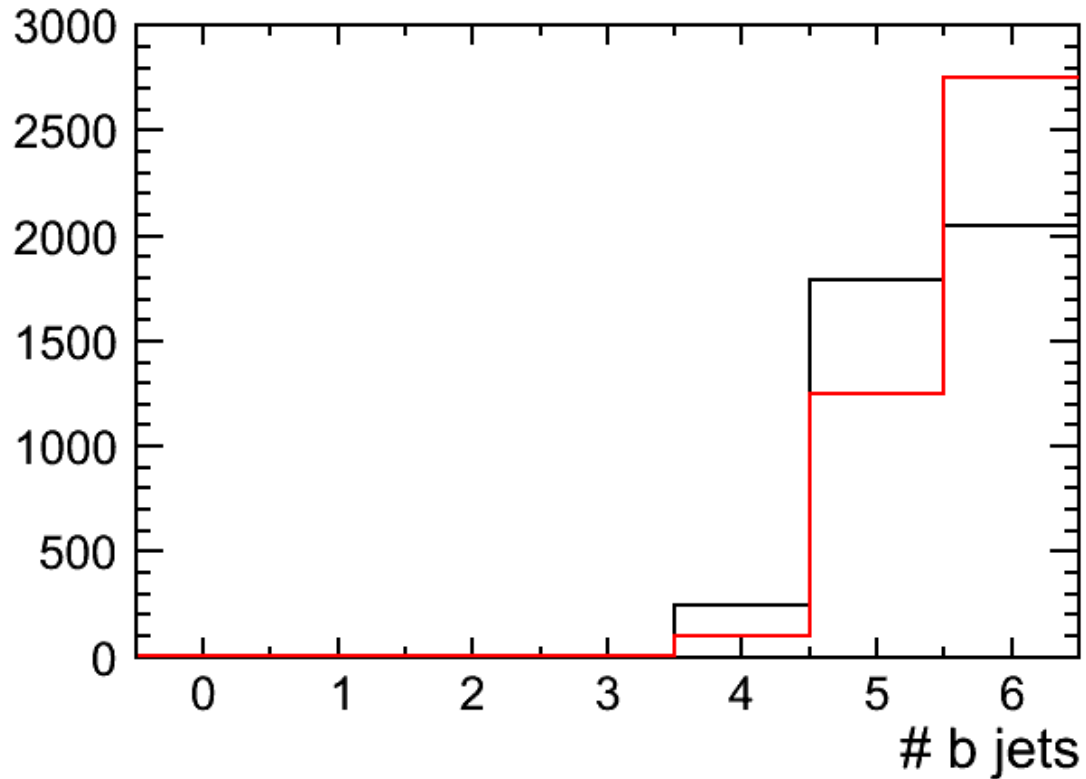
Software status / to do

- Flavtag can now be run as Marlin processor
 - Build up vertex finder
 - Vertex clustering (as well as old jet clustering)
 - Flavor tagging processor is not available yet
- Need to cleanup the code to be published in ilcsoft
- Plans
 - TIPP11 in Chicago and publish a paper
 - Flavor tagging optimization for multi-jet events

Previous slides

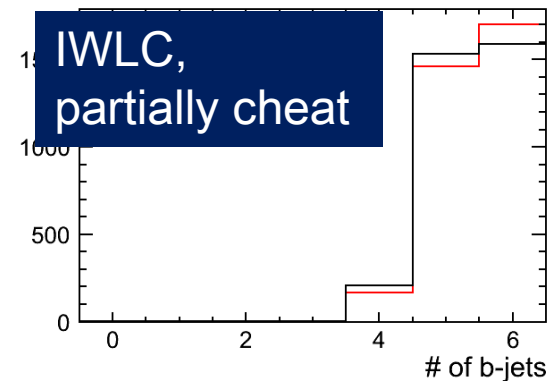
Number of b jets in bbbbbb

ZHH → bbbbbb



ZHH → bbbbbb

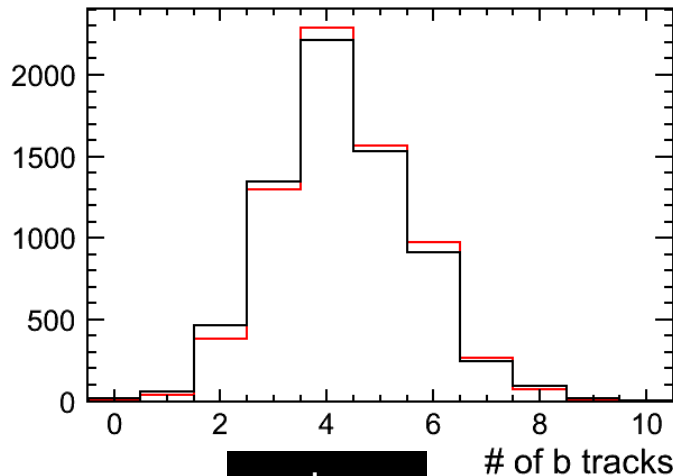
IWLC,
partially cheat



red: vertex clustering: significant improvement seen!

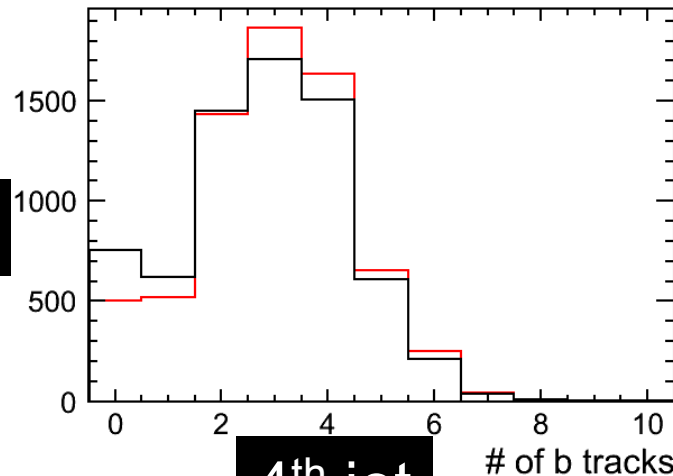
of b- secondary tracks

qqhh, 3rd jet



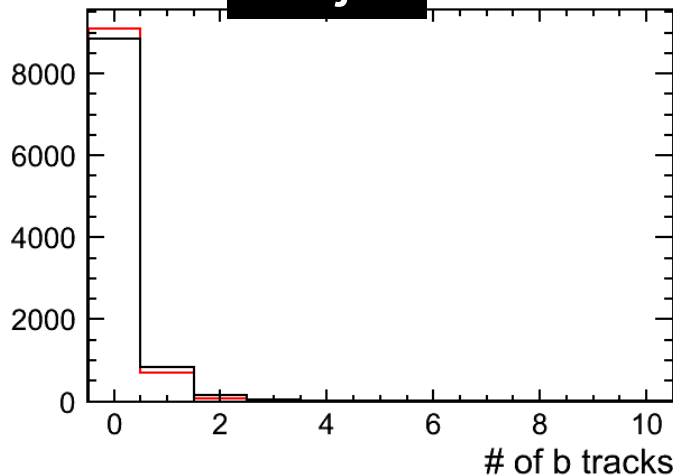
qqhh

qqhh, 4th jet



4th jet

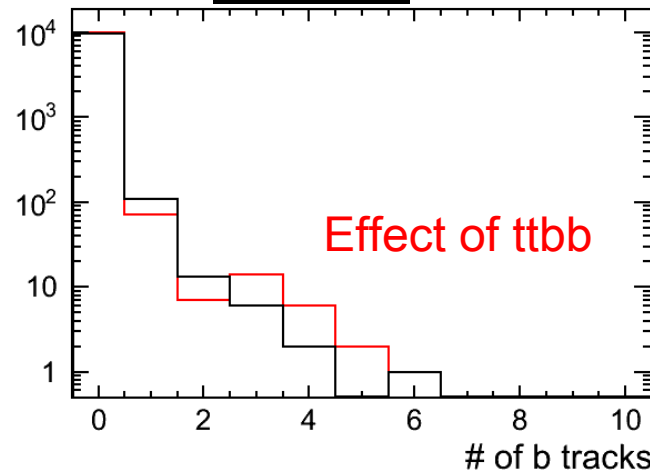
ttbar, 3rd jet



3rd jet

ttbar

ttbar, 4th jet



Effect of ttbb

ttbar rejection improved

qqhh acceptance improved