High p_T b tagging: Status and Plans

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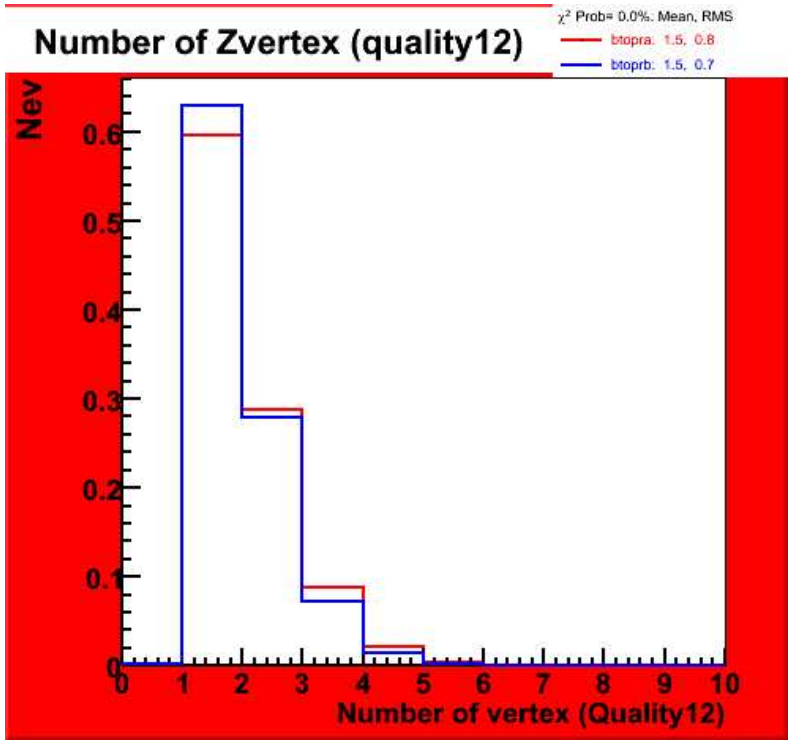
For the High p_T b Tagging Group

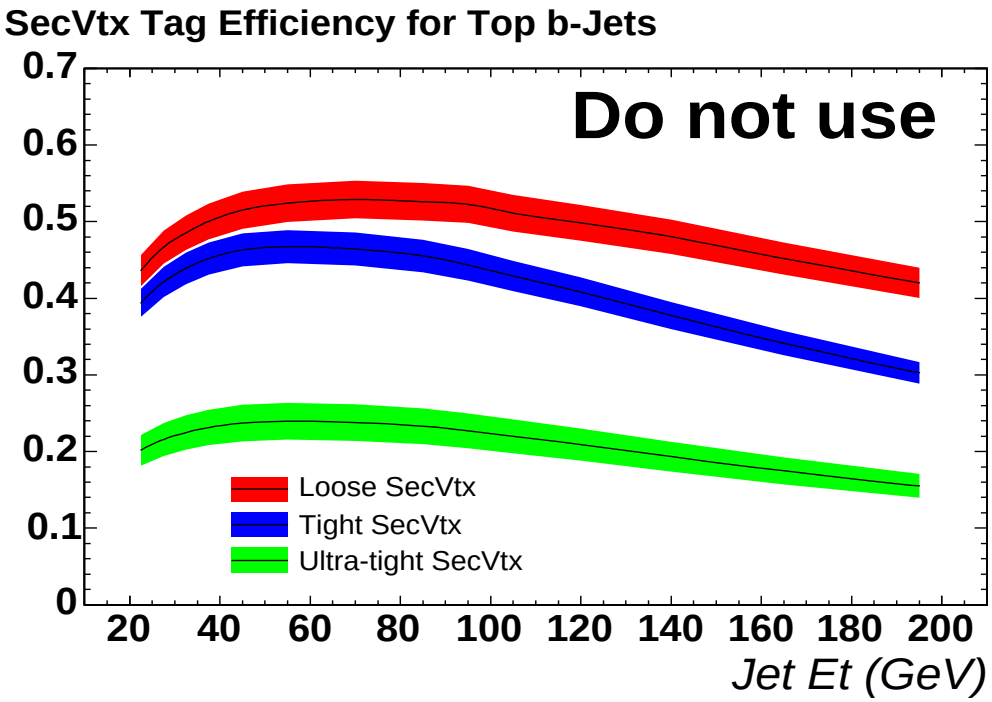
- 1.2/fb tools status:
  - MC production and validation for 1.2/fb analyses $\surd$
  - SecVtx taggers ready $\surd$
- Near term priorities:
  - New taggers:
    - ▷ Multivertex NN tagger (aka Roma tagger) $\leftarrow$
    - ▷ Soft electron tagger
  - JetProbability on-going work for 1.2/fb
  - Forward tagging $\leftarrow$

MC Production and Validation

- Btag group makes samples for SF, mistags (also used by QCD)
  - $\sim$ 25M events (Herwig/Pythia, HF enriched, generic jets - see Btag web page)
  - Gen6: EvtGen, Min bias overlaid, etc...
- Several problems during MC generation...
- Big MC validation effort (B. Alvarez, E. Palencia, J. Naganoma, et. al.)
  - Scripts to make validation plots (browsable in web)
  - Not a replacement of user validation



SecVtx for 1.2/fb Analyses



- Three SecVtx operating points ready (loose, tight, ultra-tight)
- Mistags blessed and β-version code ready (S. Budd, et. al.)
- Asymmetry correction included in mistag code (D. Sherman)
- Efficiency Scale Factors blessed
  - Electron method (D. Sherman, et. al.), Muon method (Garberson, et. al.)
- SF combination blessed:

Loose SF	=	0.95	$\pm$	0.01(stat)	$\pm$	0.04(syst)
Tight SF	=	0.95	$\pm$	0.01(stat)	$\pm$	0.04(syst)
Ultra-tight SF	=	0.88	$\pm$	0.01(stat)	$\pm$	0.05(syst)

- All information in Btag web page (err... will be there)

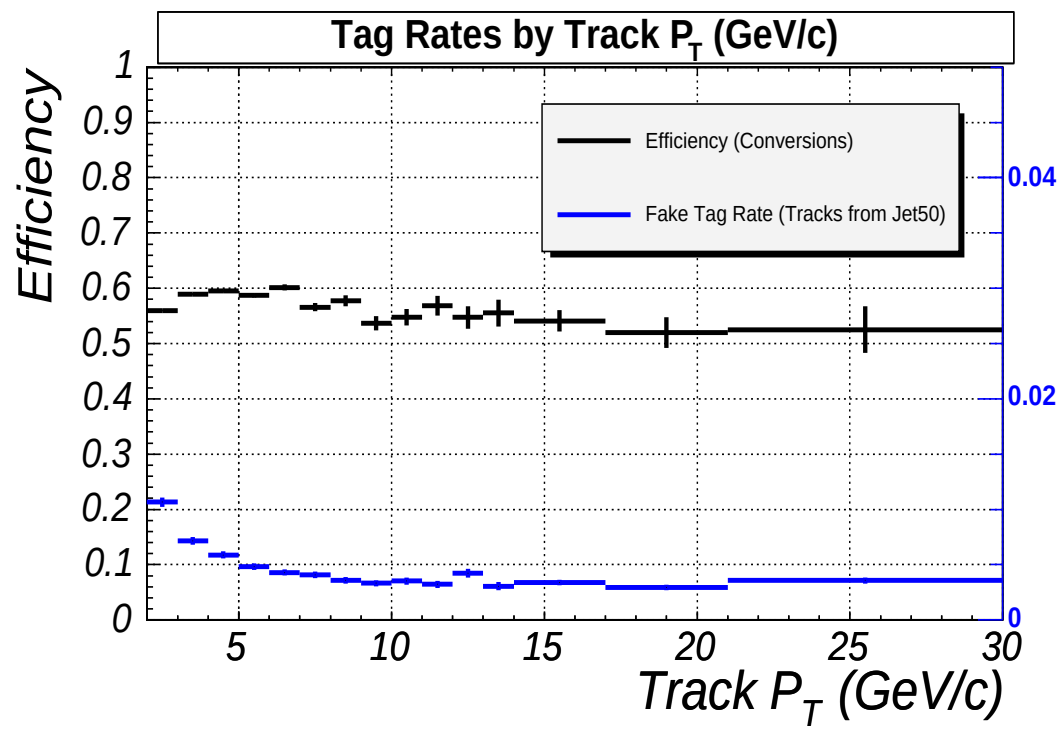
Near Term Priorities

- Roma NN tagger
  (current NN taggers by Karlsruhe and LBL appllied to SecVtx tagged jets)
  - Roma group working hard on Gen6 optimization
  - Volunteers for testing recruited
- JetProbability tagger work on going
  - Plan to have SFs, mistags by May
    (B. Alvarez, E. Palencia, et. al, Cantabria)
  - Parallel work on parameterizations
    (K. Nakamura, T. Tomura, et. al., Tsukuba/Rockefeller)
- Forward tagging
  - Need to extend b-tagging coverage beyond $|\eta| \sim 1$
  - Worked done mostly on tracking side
    (A. Boveia, B. Brau, M. Herndon, et. al.)

Soft Electron Tagger

- Complementary to Soft Muon Tagger (Illinois)
- Combines cut and likelihood techniques (Calorimeter, CES, COT dE/dx..)
- Efficiency/track (conversions): 55%
- Fake rate/track (Jet50): 0.5%
- Conversion background removal
  - Efficiency: $(84 \pm 3)\%$
  - Over efficiency: $(5 \pm 2)\%$ (measured in 8 GeV electron sample)
- Aim to bless tagger in March

J.P. Chou



Summary

- SecVtx taggers ready for 1.2/fb analyses
- Need people to help with forward tagging
- Promising Roma tagger will be available soon
  Users ready to test