High P_t B-Tag Group

- Meets off-week Fridays at 10am FNAL-time in CDF Theater

- Webpage with minutes and/or slides from all previous meetings, mailing list, job list, offline defaults, tcls:

  `http://www-cdf/internal/physics/top/RunIIBtag`

Group Priorities: Deliver well understood taggers

1. Start with SVX-only 2D SECVTX. Ready for use by November
   - Beat offline code into submission
   - Assemble/validate necessary control samples
   - Revisit track/vertex quality cuts
   - Benchmark performance

2. Develop/validate necessary low level tracking, vertexing and simulation tools
   - Reliable, well understood b-tag contingent on first understanding these tools
   - Work in conjunction with tracking & simulation groups
   - Some of this already underway, still work to do

3. Pursue new/improved tagging algorithms

Roadmap to 2D SECVTX by November

- √ 23 Aug: Have software, tcl, scripts validated and tagged in cvs for making control samples
- √ 30 Aug: Have production of control samples underway, SecVtxNtuple available for group
- √ 6 Sep: Freeze SecVtx trk quality cuts
- 9 Sep: Be ready to start generating realistic MC control samples
- 13 Sep: Have all data control samples on disk
- Sep 23: Have all MC control samples on disk
- Beg-Oct: Have first mistag mtx tested and available
- Mid-Oct: First look at eff and scale factor

2D SECVTX by November

Offline Code: Using 4.7.1

- To get off the ground, we adopted 4.7.1 instead of waiting for 4.8 and farms

- Modified Production tcls for
  - Drop ISLD bank
  - 2D OI SVX only
  - Best SVX alignment
  - Patch from Beate to drop PPR from E calc
  - Robyn's COT refit before OI
  - Jets wrt Zvtx

- Successfully ran over ~ 2 million events with this version of ProductionExe

2D SECVTX by November

Status of Control Samples

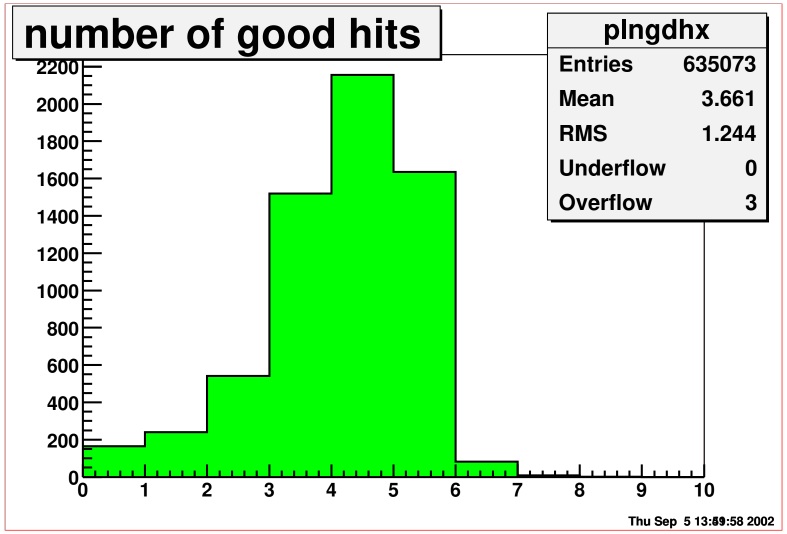
- Inclusive Jets (N Kuznetsova, T Vickey)
  - Start from stripped samples of QCD group (L3 bits)
  - Reprocessed with our Production JET20, JET50, JET70, JET100. **Done!**
  - `fcdfsgi2:/cdf/data55/top/btag/data/jets`

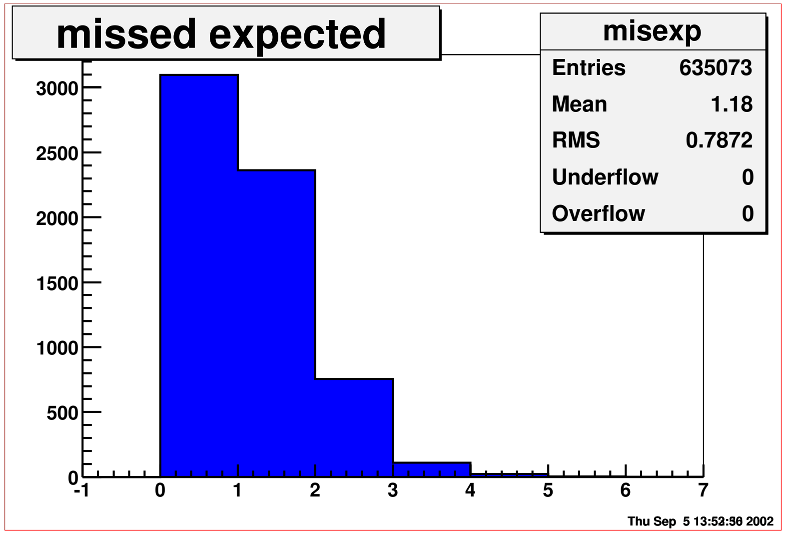
- Inclusive Electrons (T Wright)
  - Starts from 8 GeV inclusive e sample (BLPC03), 15 pb^{-1}
  - Reprocessed with our Production. **Done!**
  - Will strip from reprocessed sample events with 2 “taggable” jets

Status of 2D SECVTX

- Track Qual Cuts (C Rott, K Hoffman, H Bachacou, WM Yao)
  - Thorough, well-done study completed
  - Checkin to cvs today and freeze for winter conf. **Done!**
- Beamwidths (W Wagner, M Turner, S Lai)
  - Using beamline with Zvtx from COT info for reference vtx in L_{xy}
  - Need width for $\sigma(L_{xy})$: use 36 $\mu\mathrm{m}$ (circular)
- SecVtxTest (F Delli Paoli, E Brubaker, K Hoffman, C Rott, A Dominguez)
  - Updated and validated for use by whole group as common ntuple for studies
  - Freeze and tag in cvs for winter conf
  - Use to validate MC control samples, determine fake mtx
  - Tcls to run over control samples are tagged in cvs

Track Quality Cuts Revisited





Many possible hit patterns due to missing layers

Track Quality Cuts Revisited

New Track Selection Cuts

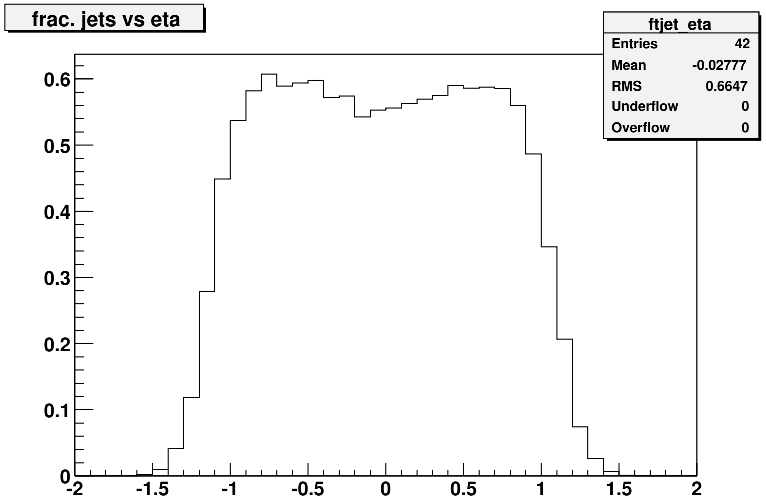
N hit	3 hit	4 hit	$\geq$ 5hit
Pass 1	3gd m≤ 1 $\chi^2 < 12$ 3gd m≤ 3 $\chi^2 < 6$ 2gd m≤ 1 $\chi^2 < 6$	4gd $\chi^2 < 18$ 3gd m$= 0$ $\chi^2 < 12$ 3gd m≥ 1 $\chi^2 < 6$ 2gd $\chi^2 < 6$ (Hit on L0) gd< 2 m$\leq 2\chi^2 < 6$ (Hit on L0)	5gd $\chi^2 < 18$ 4gd $\chi^2 < 12$ $\chi^2 < 6$
Pass 2	3gd m≤ 1 $\chi^2 < 6$ (Not XXX00)	4gd $\chi^2 < 6$ 3gd m≤ 2 $\chi^2 < 6$	5gd $\chi^2 < 12$ 4,3gd $\chi^2 < 6$ 2gd m≤ 2 $\chi^2 < 6$ gd< 2 m≤ 1 $\chi^2 < 6$

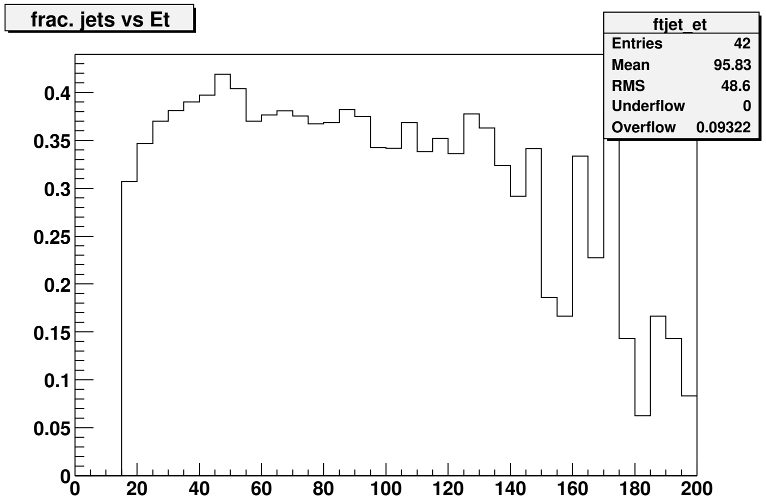
Track Quality Cuts Revisited

Comparison

	default	proposed
njets	121439	121439
taggable jets	44617	45723
pos. tags	638	731
neg. tags	131	157
S/B	3.9	3.7
$S/\sqrt{B}$	44	46

Fraction of Taggable Jets





Studies by October

- Pulls and biases of `PVzFinder` (A Taffard)
- Width of beam in x and y vs z and run number (S Lai, W Wagner, M Turner)
- Pulls of L_{xy} (R Marginean)
- Pseudo-SLT for muons for eff measurement (Can probably steal from K Bloom)

Beyond Winter Conferences

- Need following in conjunction with tracking group
  - Improved event-by-event primary vtx
  - Aligned COT
  - Aligned SVX
  - Aligned ISL
  - (Aligned L00)
  - Intrinsic resolutions of all layers, sides, detectors
  - Possible realign after above
  - Revisit material
  - Acceptance, alignment issues in MC
  - Shared clusters
- JetProb (UF)
- NN taggers, etc