BR(t->Wb)/BR(t->Wq):

Purpose: check the unitarity of CKM by directly measuring the top BR.

Analysis overview:
- Look at W+jets events (using leptonic W decays)
- ttbar production makes up an observable fraction of these events when the number of high-pt jets is 3 or greater
- Assuming that we understand W+jets production (including its heavy-flavor content), then the b-jet content of these events is controlled by:
  1) cs -> the ttbar cross-section
  2) R -> the BR(t->Wb)/BR(t->Wq), where q={d,s,b}

- Study the number of SVT tagged jets in these events (Ntag)

-cs and R both affect the Ntag distribution, but in different ways
  - cs increases all bins
  - R shifts the Ntag distribution to larger values

- Thus a fit to Ntag can simultaneously solve for both R and cs

*Bonus complication: since S/B is so poor in the 0-tag data, use an extra discriminant in this channel

Ntag = cs * Pn (after removing contribution from other backgrounds)
$Pn = R^2 * Pn(bb) + 2R(1-R) * Pn(bl) + (1-R)^2 * Pn(ll)$
where Pn(bb,bl,ll) are the prob. to tag an event where the tops decayed to W+b and W+l, etc.

They perform two fits, a maximum likelihood, and then also a Baysian maximum likelihood with a prior that assumes R is in (0->1), flat.

Results:
R = 1.03 +.19 - .17 and cs = 7.9 + 1.7 - 1.5
and
R>.61 at 95%CL (this means V_{tb}>.78 at 95%CL)

Comments from Gustaaf:

-par 1: it would be good to say for which top mass the cross-section is 6.77 pb.
 -> Yes, they say mt=175 during the simulation section, but this should be more explicit early on.

-par 4: the MET is required not to be colinear with the lepton in the transverese plane. Is that a MET quality cut or is it a background suppression cut?

-par 5: "Prediction of the number of background and tt ... requires knowledge of the probabilities..." (the text says "requires the probabilities" - not sure what that means)

-par 6: "Increasing with jet multiplicity, between 2% and 14% of W+jets events...": how do you know this? Has this been measured, or is it from
MC? A reference would be good.
 -> Oh, it's MC alright.

-par 6: there is no mention of single top in this paragraph, but it seems there should be.

-table 2: does the choice of number of bins for the 0-tag, l+4jets events have any impact on the result? What happens if you only use two bins?

Comments from Andy:

-par 1: tt cs ... for ppbar->tt at 1.96TeV

-par 1: what exactly are the previous limits on R?

-Fig 1: b,c: These are just the standard plots in every tt paper. I think it would be more interesting to see these plots for R=.5,1,1.5 and cs=6,8,10pb instead, to get a feel for how the distributions change as these parameters vary.

-What cs was assumed (or measured?) when using the Bayesian approach?

-My problem with this paper is that R>1 is unphysical... (it's even unmathematical!)
 I think R needs to be constrained to (0->1) during the fit, as I assume is practically done using the Bayesian method. I don't think the other method makes any sense. At the very least, I think the Bayesian result should be the one in the abstract.

-How does this result stack up to others published previously, if there are any?

b-ID:

Pass2 – JES 5.3 certification:
CSIP went the way of the dodo bird.
SLT (muon) certified.
JLIP certified.
SVT is now certified!
NN – Last day for group review is tomorrow… Herb and I have already signed off.

p17:
Framework for CAF has materialized… BtagProcessor, CafeBTagSelector, CafeBTagEventWeighter, …
Almost enough fixed MC available to start retuning the NN tagger. <- Bottleneck!
We've been skimming fixed data and CAFizing ourselves to disk… already 5x more than p14.

bbH:

Have worked with Volker to combine bbh(->bb) and h(->tautau) analyses (p14).
This turned out to be hard! Had to re-derive dependence of cs on mA and tanB to use the same parameters as the tautau analysis… 4 MSSM models (mu=+-200, min/max stop mixing)… switch to FeynHiggs.
Then we had to define an interface so our Root macros could talk to each other and exchange histograms.
Soon we'll have a set of combined mA vs. tanB exclusion plots, to be included in the h->tautau paper, soon.

Working with Tim Scanlon on a Pass2 analysis (also 260/pb), but with his NN b-tagger.
Aim for winter conference note (and a thesis for him).

Stopped Gluinos:

Very little left to understand, but am now pounding out the details, making plots, tables, etc.
Will present at the Dec. Collaboration meeting… goal is a winter conference note.

L3/DAQ:

The high luminosity recently has been causing L3 disables at the beginning of some stores.
We made some improvements:
- Replaced routing master computer with new SBC. Prevent CPU from delaying routes, eliminates routing backups up to 1.3kHz. Also lengthened the SBC routing queue from 50 to 75 events.
- Enable hyperthreading on the new farm nodes, tested to find optimal configuration of 3 filter threads.
- Encountered and fixed a bunch of other bugs along the way, and did lots of documentation.