LQ Mass Analysis
Status Update

Gordon Watts
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NP Meeting

- Ntuple Comparison
- LQ Event Fit
- Grid Search Mass Cut Vars

Work in progress

You can find all of this talk on WWW:

http://d0sgi0.fnal.gov/gwatts/talks/
• Last week I (Jeff) talked about how great the SQUAW fitter was, and how poor the $\delta m$ cut was.

$$\delta M = \sqrt{(M_1 - M_0)^2 + (M_2 - M_0)^2}$$
Ntuple Comparison

- Turns out to be a bug in how I was unpacking the ntuples (corrected vs. uncorrected $E_T$s).
• Up to now I’ve been fitting individual $e$-jet combinations.

• I now fit the whole event at once.

• Without the constraint $M_{LQ_1} = M_{LQ_2}$ see fits as good as the four vector method.

-100 are failed fits
The Fitter

- Look at the $\chi^2$ as well.

- $\chi^2$ is worse for $\bar{t}t$. 
Left to do:

- Get the equal mass constraint working
  - 1600 of 1700 attempted fits fail with this on.
- This is where the $\chi^2$ cut will really show its power.
- Some events fail to fit without the $\chi^2$ cut; inspection is required
- Don’t handle extra electrons in the event well.
Grid Search

• Values from the fitter for the grid search tuple:
  – $\chi^2$
  – $\text{Prob}(\chi^2)$
  – Mass

• Danger: As the fitter changes, so will the meaning of the $\chi^2$.
  – I would like to see best set of using and not using the results of the mass analysis.

• I’m writing a COMIS routine for use on UNIX (only!).

• See http://d0sgi0.fnal.gov/gwatts/d0_private/ for usage instructions and details.
Fitting a (very) loose sample and looking for Greg’s events.