Backgrounds and Plans

Top Dilepton Meeting

Mircea Coca, Chris Hill,
Andrew Ivanov
Dilepton Group

July 2, 2003

WW/WZ background – *Solid estimate*

- **WW Estimate**: Used Pythia wtop0f:

  - in 100 pb{-1} : 0.306+- 0.112 events

- Fine tunings:
  - Run over WW+0,1,2p Alpgen-Herwig and compare the 2-jet cut efficiency with Pythia; in Winter Susana found it lower in Pythia then Run I Vecbos -> Use Alpgen 2 jet cut efficiency

- **WZ estimate**: Used Pythia wtop0q:

  - In 100 pb^{-1} we expect: 0.054+- 0.022 events

Z->t t Backgrounds - *Solid estimate*

- Estimate:
  - Used ztop2t Pythia, the same scale factor as for Winter
    - In 100 pb ^{-1}: 0.266+- 0.114 events
  - Fine tunings:
    - Use the new Z->ττ + 2 partons alpgen sample to compare the background estimate
    - Use data to get the scale factor for the difference between data and MC; compare Pythia, Alpgen and data

Wbbbar Background - Checks

- It is already counted in fake estimate
- Good to understand its contribution
- atop16: W(μν)BB0p:
  - in 100 pb_{-1}: 0.002215 events
- atop10: W(eν)BB0p:
  - in 100 pb_{-1}: 0.0066 events
- atop40: W(eν)BB0p: (new from Ken)
  - in 100 pb_{-1}: 0.00345 events
- atop41: W(eν)BB1p: (new from Ken)
  - in 100 pb_{-1}: 0.0046 events

Wbbbar Background

atop13: W(eν)CC0p:

- in 100 pb_{-1}: 0.00644 events

- atop19: W(μν)CC0p:

  - in 100 pb_{-1}: 0.00382 events

- atop0w: W(eν)C0p

  - in 100 pb_{-1}: 0.007 events

- atop4w: W(μν)C0p

  - in 100 pb_{-1}: < 0.011586 events

  (no events passing Ht cut, took 1)

Wbbbar Background

- atop1w: W(eν)C1p
  - in 100 pb_{-1}: 0.0043 events
- atop4w : W(μν)C1p
  - in 100 pb_{-1}: 0.0257 events

Overall: less than 0.05 events.

Accounted in the fake estimate.

Fakes Background – *In Progress*

- Chris, Andrew and me working on this; Dave also estimating the fake background -> Solid effort
- Jet 20, 50, 70 ,100 ntuplized and the code ready
- We reproduced the fake ratios from Winter using Jet 70 sample
- We will run over inclusive electron and muon data soon
- We want to try different definition for the denominator (loosen definition)-> numerator will be a subset of the denominator
- Goal: have a first full estimate tomorrow

bbbar estimate – *In progress*

- We could not find a statistically resonable sample to estimate this background
- Run I: in 109 pb^{-1}: 0.05 +- 0.03 events
- Differences:
  - Plug – plug categories
  - H_{T} cut-> removes ~ 50 % of background events
- Latest: Un-ki will provide me with a tcl+exe

to generate a bbbar sample; Need CPUs on CAF and disk space

Summary: in 100 pb^{-1}

- DY(ee, μμ): 0.98 +- 0.14 events (See Ricardo's talk)
- WW/WZ : 0.36+- 0.11 events
- Z->ττ : 0.27+- 0.11 events
- Fakes : ?
- bbbar : ?
- ttbar : 7.0+- 0.14 events