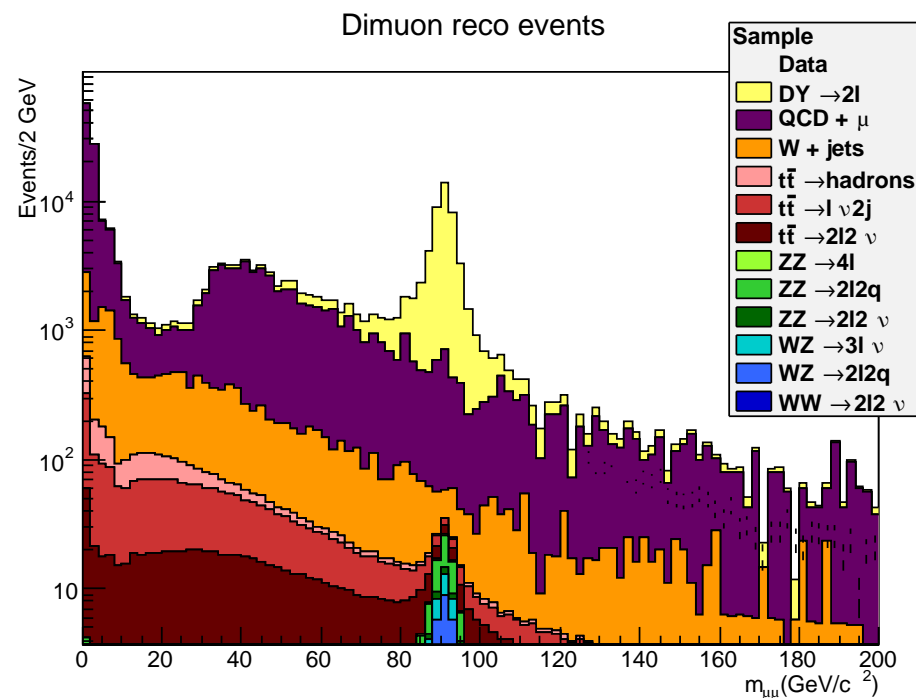
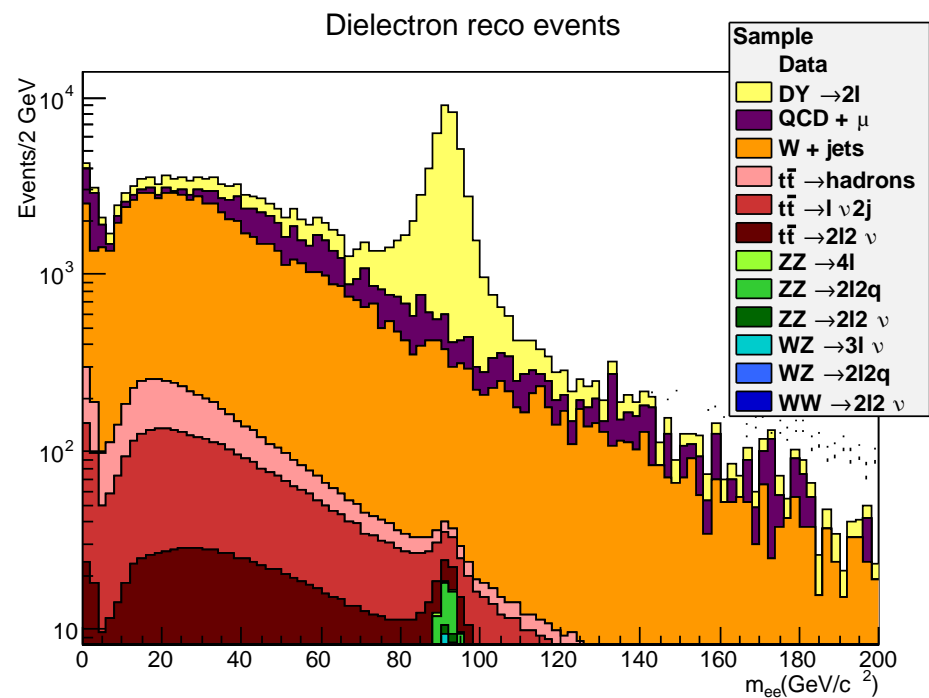


# CMS2 Z-Analysis

Deliverable 1: Dilepton plots  
and table of yields

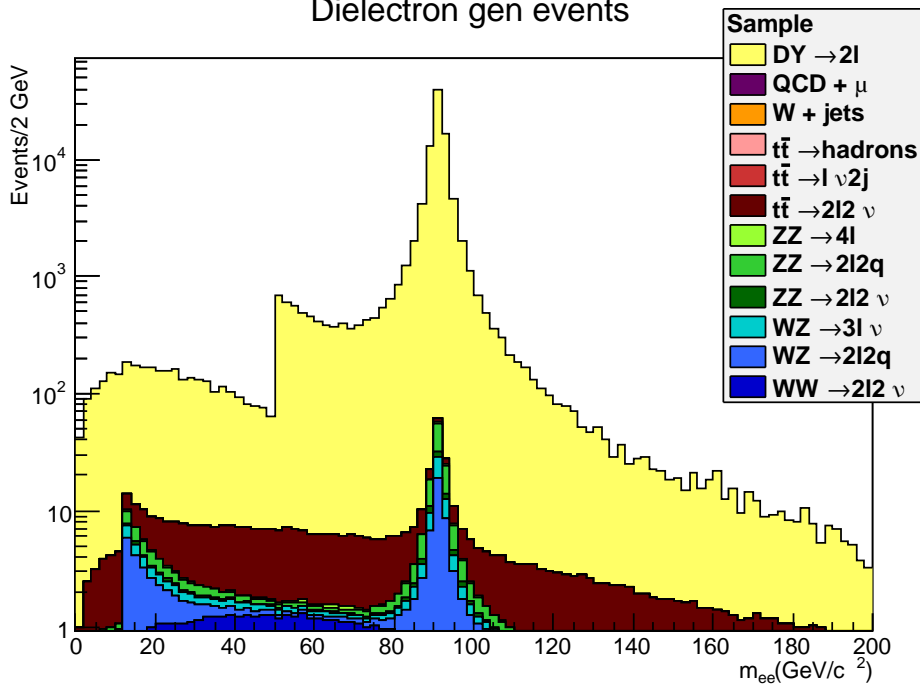
Dan Klein



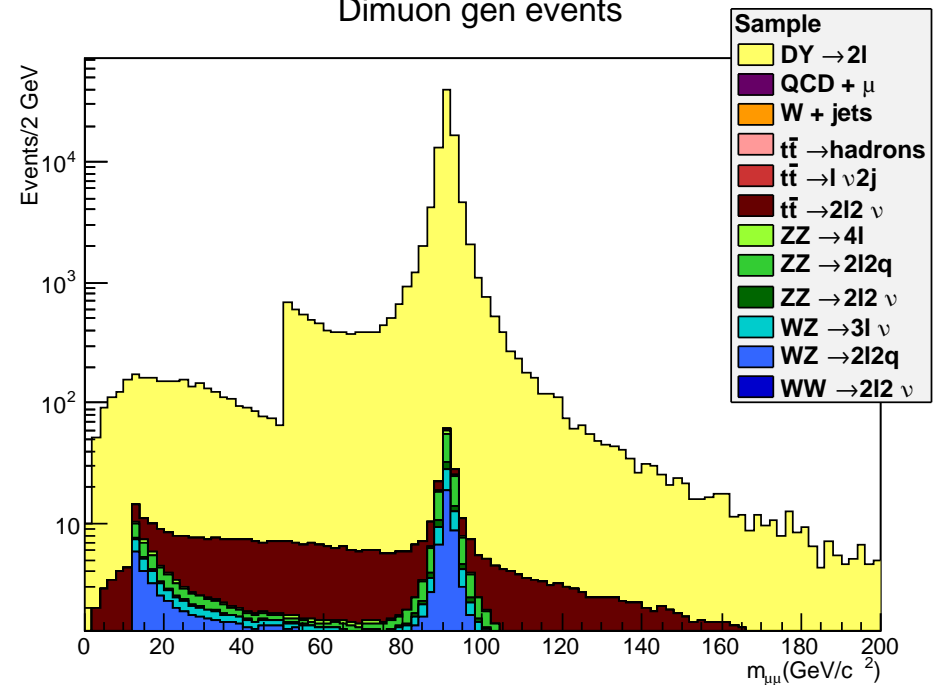
(Sorry markers aren't appearing correctly...)

- At low  $m_{ll}$ , the MC overpredicts the data, but at high  $m_{ll}$  it underpredicts
  - Muon-enriched QCD sample a big contributor at low  $m_{ll}$
- No selections or quality cuts, means lots of junk gets in, especially fakes
- At reco level, we take all OSSF lepton pairs, so there's some re-use of single particles

Dielectron gen events



Dimuon gen events



- Many samples don't contribute, e.g. W+jets or QCD
  - Leptons coming from jets don't get counted
- At gen level, we pick only 1 dilepton per event
  - Prefer dimuons over dielectrons, then pick the dilepton nearest to the nominal Z mass

# Table of Yields (reco)



Sample	Yield (ee)	Yield (mm)	Total (ll)
Data	130527 +/- 361.3	106689 +/- 326.6	106689 +/- 326.6
DYll (including tau)	59309.2 +/- 157.6	53483.7 +/- 149.7	112793 +/- 217.4
DY→2tau→ee/mm	4453.2 +/- 43.2	1490.4 +/- 25.0	5943.6 +/- 49.9
W+jets	70200.1 +/- 555.1	15204 +/- 258.3	85404.1 +/- 612.3
tt2l2v	885.6 +/- 1.9	716.8 +/- 1.7	1602.3 +/- 2.5
ttl2j	2753.5 +/- 6.4	1641.1 +/- 4.9	4394.6 +/- 8.0
ttheadronic	2398.9 +/- 5.5	1099.5 +/- 3.7	3498.4 +/- 6.6
QCD+muons	21774.8 +/- 633.1	153141 +/- 1678.9	174916 +/- 1794.3
ww2l2v	50.6 +/- 0.2	45.5 +/- 0.2	96.2 +/- 0.3
wz2l2q	61.4 +/- 0.1	49.6 +/- 0.1	111.0 +/- 0.2
wz3lv	23.3 +/- 0.1	22.9 +/- 0.1	46.2 +/- 0.1
zz2l2v	8.2 +/- 0.0	7.6 +/- 0.0	15.7 +/- 0.0
zz2l2q	74.9 +/- 0.2	59.9 +/- 0.1	134.8 +/- 0.2
zz4l	6.4 +/- 0.0	6.5 +/- 0.0	12.8 +/- 0.0

# Table of Yields (gen)



Sample	Yield (ee)	Yield (mm)	Total (ll)
Data	0	0	0
DYll (including tau)	99815.7 +/- 204.5	99462.1 +/- 204.1	199278 +/- 288.9
DY→2tau→ee/mm	3240.9 +/- 36.8	3061.2 +/- 35.8	6302.2 +/- 51.4
W+jets	0	0	0
tt2l2v	310.1 +/- 1.1	309.0 +/- 1.1	619.1 +/- 1.6
ttl2j	0	0	0
ttheadronic	0	0	0
QCD+muons	0	0	0
ww2l2v	74.0 +/- 0.2	73.2 +/- 0.2	147.2 +/- 0.3
wz2l2q	62.5 +/- 0.1	62.7 +/- 0.1	125.2 +/- 0.2
wz3lv	31.3 +/- 0.1	31.2 +/- 0.1	62.5 +/- 0.1
zz2l2v	10.3 +/- 0.0	10.3 +/- 0.0	20.6 +/- 0.0
zz2l2q	69.1 +/- 0.2	69.0 +/- 0.2	138.1 +/- 0.2
zz4l	5.0 +/- 0.0	8.2 +/- 0.0	13.2 +/- 0.0