CDF at ANL

Physicists

A. B. Wicklund ➔ STA(retired 2012)

SpokesPerson's Reading Group chair, b physics

L. Nodulman ➔ATLAS

Calorimeter Project Leader, EWK ➔SM (QCD+EWK) Physics convener

Provide operations effort if and when needed

K. Byrum, G. Drake shower max electronics

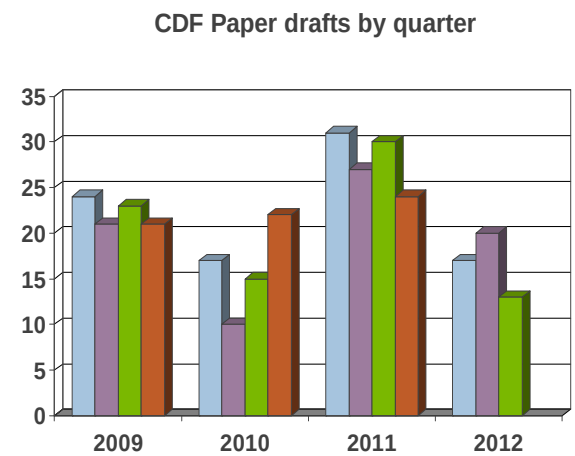
S. Kuhlman pre-radiator calibration

Analysis consultants (finishing publications)

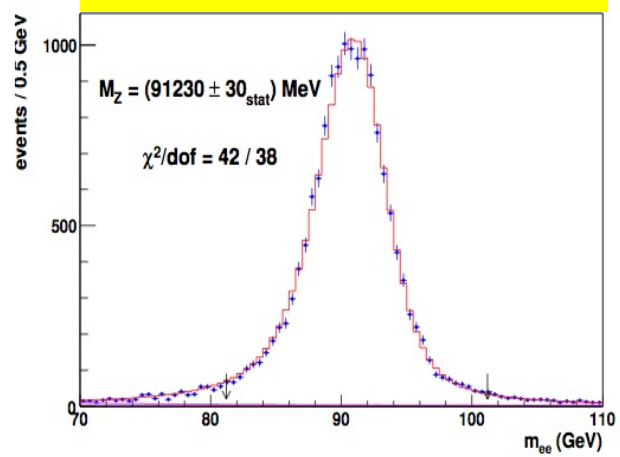
R. Blair internal reviewer – γ + MET + Lepton

A. Paramonov (ATLAS, former CDF student) top FCNC, Z jet balance

B. Auerbach (ATLAS, former CDF student) internal reviewer H->$\gamma\gamma$



Measurement PRL 1989
Now calibration 2012



Measuring the W mass

Started in 1987 ±3.3 GeV

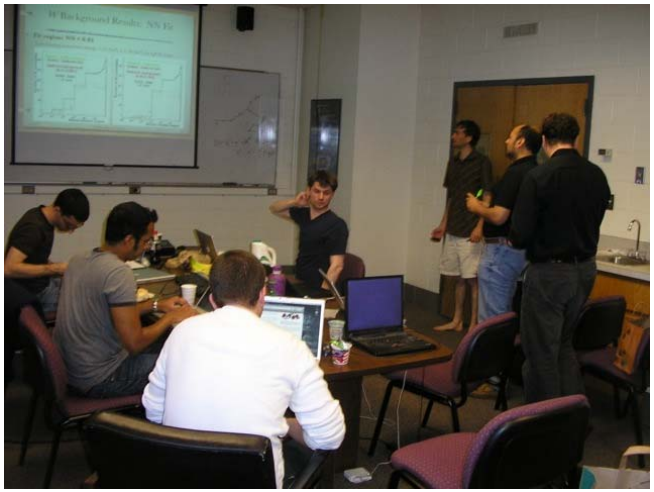
Today: m_W = 80387 ±19 MeV

- Prodigious experimental challenge
- Understanding CEM response is critical

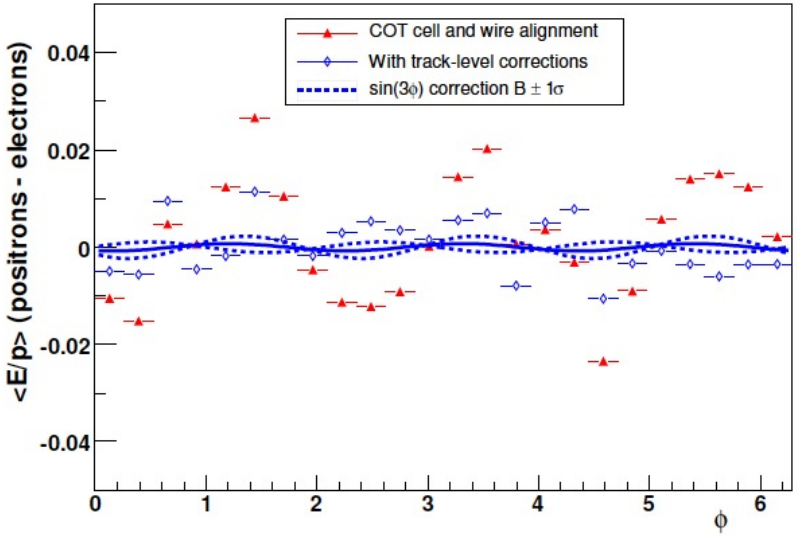
(0.68 ± 0.05% constant term):

- Requires good understanding of CEM
- custom tuning of GEANT (EGS) (done by by Chris Hays and Ashutosh Kotwal)
- E/p and m_Z are consistent at the increased level of accuracy.
- Tracking systematics, studied with W/Z electrons, Upsilons and Psi's, were under control (although some mysteries remain and one uncertainty is taken from an unresolved discrepancy).

Nodulman was author on 8 systematics related CDF internal notes, shepherds the process as convener, and participated in combination of result with D0



W mass workshop at Duke 2009 photo LN



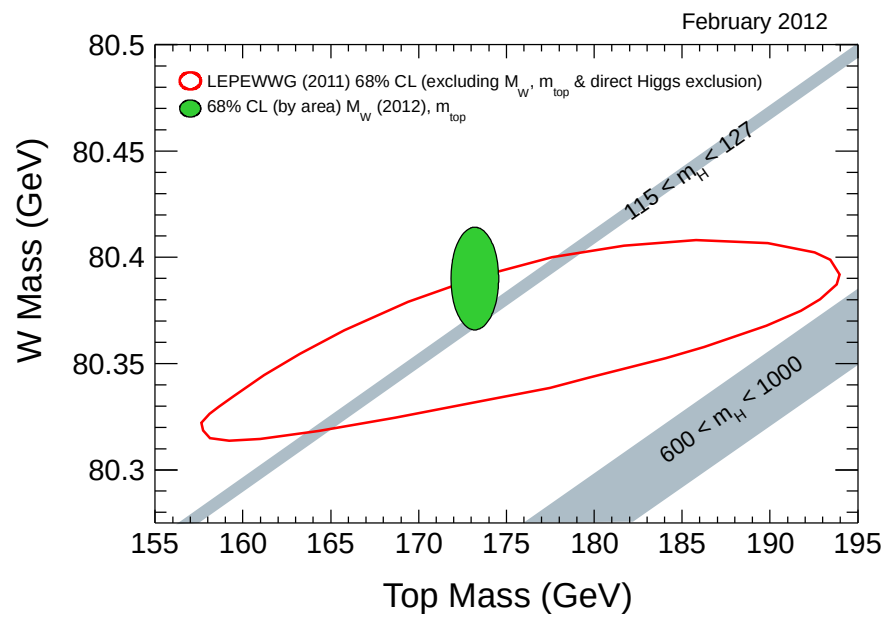
Track curvature systematics (W electrons)

CDF Summary 2009-2012

- Detector Operated well to the end (added >5 fb^{1})
- Calibrated quickly:
  - full data Higgs results for Winter 2012
  - Larry N. playing key role for calorimetry and curvature corrections
- 152 papers edited and submitted
- m_W = 80387 ±19 MeV **http://www-cdf.fnal.gov/physics/ewk/2012/wmass/**

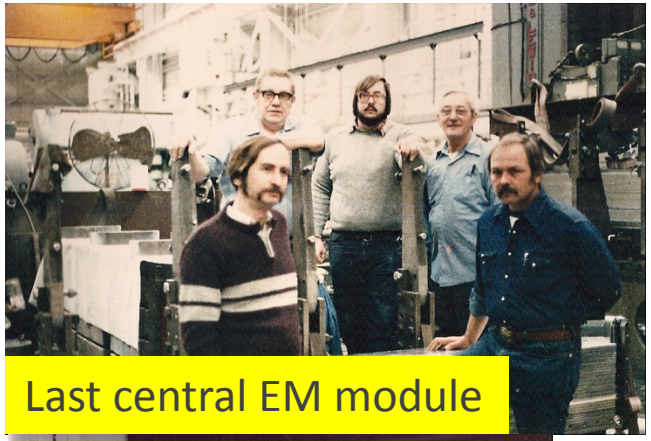
Remaining Goals

Publish m_W PRD
Complete EWK/QCD studies
Facilitate/expedite publications
Strategize remaining research plan for b physics
Conclude formal participation in CDF in FY13

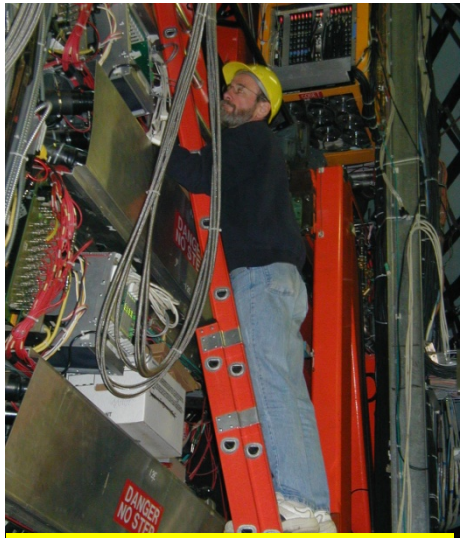


This is our last report on CDF at ANL (1977-2012)

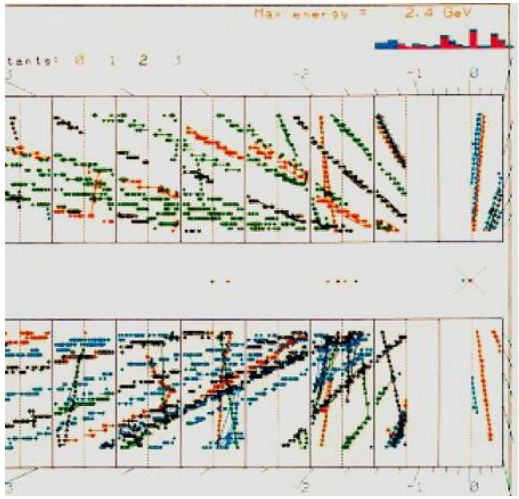
We thank you for your support over the years



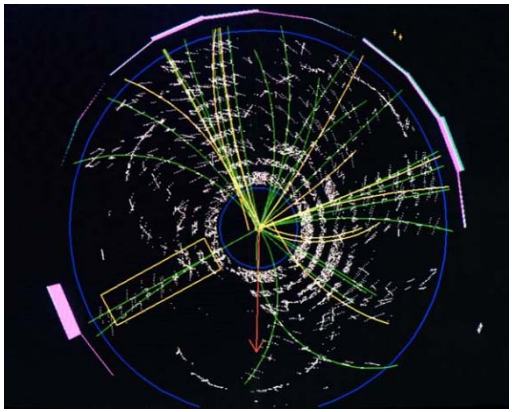
Last central EM module



Installing electronics



Commitment from Beginning to End

Group Photo

Preshower upgrade