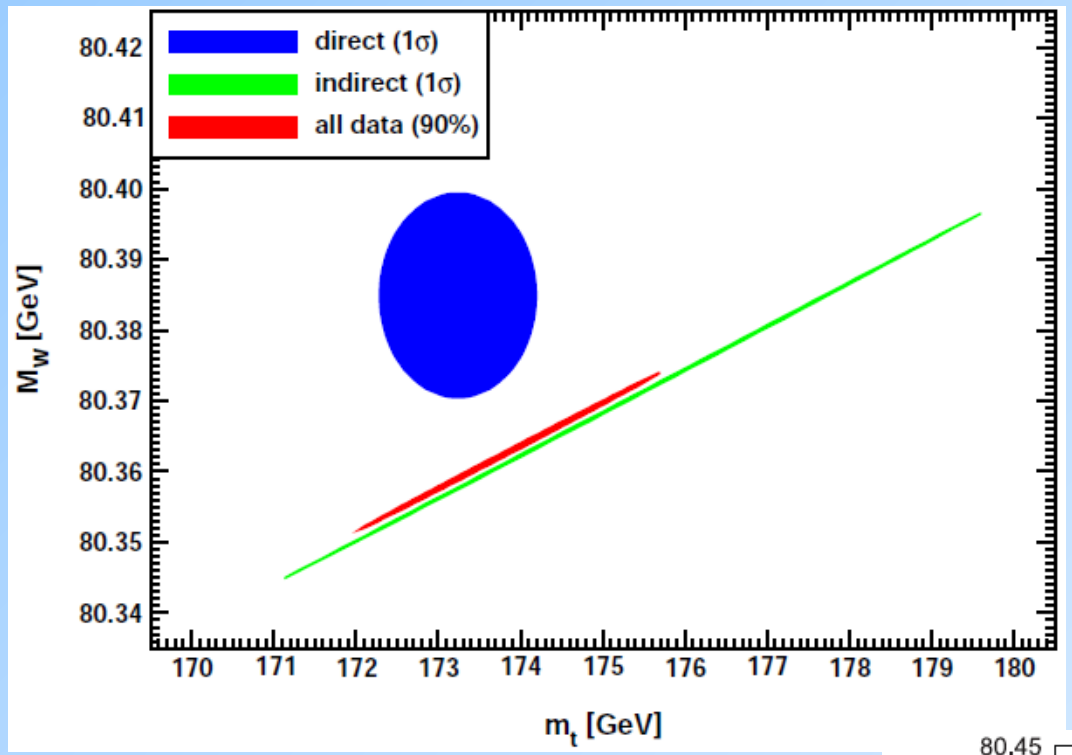
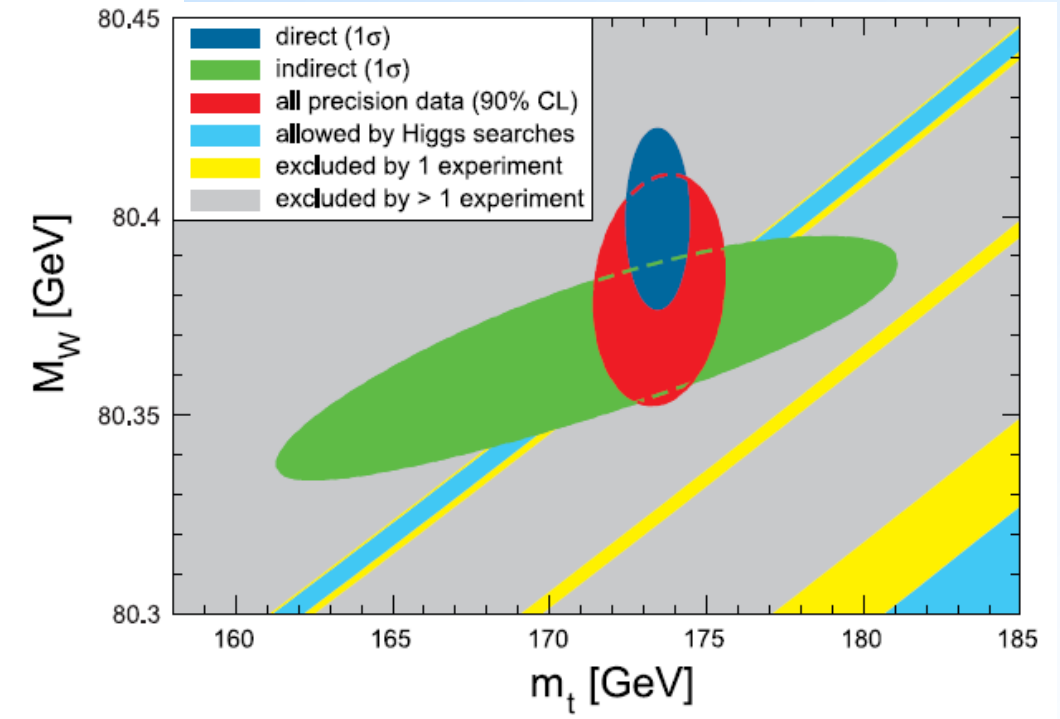
Major changes compared to 2012

- Updated input values for m_t (TeVa/LHC) and M_W (TeVa)
- LHC results for Higgs mass and branching ratios (γγ/ZZ, γγ/WW)
  - ▶ New subsection
- Inclusion of new results for e-d DIS, e-p scattering, and updated extraction of weak charge from APV
- Incorporation of 2-loop EW corrections for M_W and $\sin^2 \theta_{\text{eff}}$ and section on W/Z physics rewritten
- Possible connection to Higgs physics
- New physics discussion shortened/condensed, new LHC Z' limits


direct (1σ)
indirect (1σ)
all data (90%)
80.42
80.41
80.40
80.39
80.38
80.37
80.36
80.35
80.34
M_W [GeV]
170
171
172
173
174
175
176
177
178
179
180
m_t [GeV]

New

Old


direct (1σ)
indirect (1σ)
all precision data (90% CL)
allowed by Higgs searches
excluded by 1 experiment
excluded by > 1 experiment
80.45
80.4
80.35
80.3
M_W [GeV]
160
165
170
175
180
185
m_t [GeV]

Plans for next edition

- Consistent incorporation of all available EW 2-loop corrections to EWPO
- Try to include additional Higgs data
  Problem: No separation of production processes in ATLAS/CMS papers
- Consider extended new physics treatment beyond oblique corrections (e.g. including Zff vertex modifications)
- Consolidate all Z' bounds in Z' review (Brooijmans, Chen & Dobrescu), since LHC limits now supersede LEP bounds
- Include new exp. results as become available

Answers to comments by advisory committee:

- Removal of section on flavor physics?

  Relevant for determination of α_s: for consistency we perform own evaluation directly from tau data (and hadronic Z width)
  - ▶ Used as input in QCD review

- Higgs fit results moved to Higgs review?

  At PDG meeting of authors of Higgs-related reviews in June 2013 it was agreed to keep indirect Higgs constraints in EW review

- Re-analyze new physics constraints in context of LHC Higgs data and search limits?

  New LHC results have been considered where applicable

- Use new W mass?

  New W mass from Tevatron included

Answers to comments by advisory committee:

- Top quark mass in review differs from particle listings?

  Particle listings do not combine TeVa+LHC results. We felt that inclusion of LHC results is important, even though we cannot do an "official" combination. After completion of the current edition of the review, a TeVa+LHC combination became available in arXiv:1403.4427.
  Our average $m_t = 173.24 \pm 0.81_{exp} \pm 0.5_{QCD}$ GeV
  agrees well with their number $m_t = 173.34 \pm 0.76_{exp}$ GeV.

- ll contour in Fig. 10.4 (now 10.3) appears inflated?

  The ll contour is 90% C.L. whereas individual lepton flavor contours are 1-sigma (39% C.L. for 2 dofs)

- Refer to ATLAS/CMS Higgs publications rather than talks?

  Done