# Erratum: Indirect measurement of $\sin^2\theta_W$ $(M_W)$ using $e^+e^-$ pairs in the $Z$-boson region with $p\bar{p}$ collisions at a center-of-momentum energy of 1.96 TeV [Phys. Rev. D 88, 072002 (2013)]

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The systematic uncertainty from the CT10 PDFs to the prediction of $\bar{A}_4$ as reported is underestimated. The uncertainties to $\bar{A}_4$ from the 90% C.L. uncertainty PDF sets are now combined in quadrature, and rescaled down by a factor of 1.645 to obtain the one standard-deviation uncertainty. The PDF uncertainty on the $\bar{A}_4$ prediction is $\pm 0.0026$, and the corresponding PDF uncertainties to $\sin^2\theta_{\text{eff}}^{\text{lept}}$, $\sin^2\theta_W$, and $M_W$ are $\pm 0.00030$, $\pm 0.00029$, and $\pm 0.015$ GeV/$c^2$, respectively. The updated results are
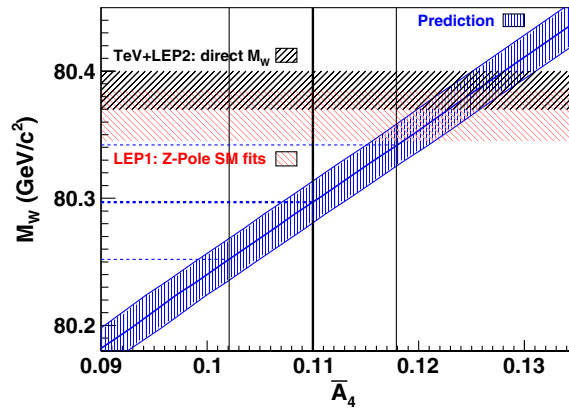


FIG. 13 (color online). Distribution of $M_W$ as a function of the $\bar{A}_4$ value as predicted by RESBOS. The prediction is the solid (blue) diagonal line and its one standard-deviation limits are the bands. The $\bar{A}_4$ measurement is the bold vertical line, and its one standard-deviation limits are the lighter vertical lines. The hatched horizontal bands are uncertainty limits from other $W$-mass measurements (see text).
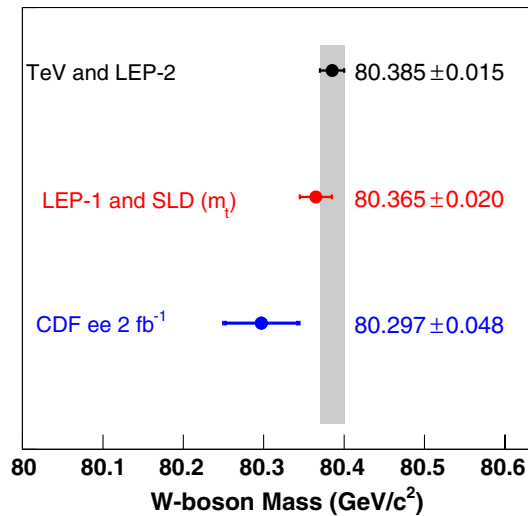


FIG. 14 (color online). Comparisons of experimental measurements of the $W$-boson mass: "TeV and LEP-2" represents direct measurements of the $W$-boson mass; "LEP-1 and SLD (m$_t$)" represents the standard-model analysis of $Z$-pole measurements; and "CDF ee 2 fb$^{-1}$" represents this analysis. The horizontal bars represent total uncertainties. For this analysis, the inner uncertainty bar is the measurement uncertainty.
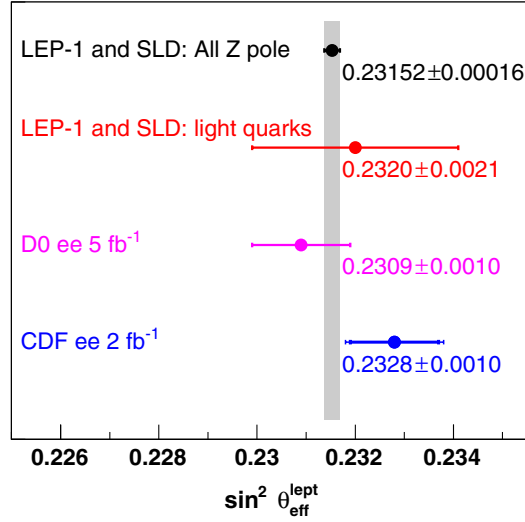
FIG. 15 (color online). Comparisons of experimental measurements of $\sin^2\theta_{\text{eff}}^{\text{lept}}$: "All $Z$ pole" represents the LEP-1 and SLD standard-model analysis of $Z$-pole measurements and "light quarks" represents the LEP-1 and SLD results from the light-quark asymmetries; "D0 ee 5 fb$^{-1}$" represents the D0 $A_{\text{fb}}(M)$ analysis; and "CDF ee 2 fb$^{-1}$" represents this analysis. The horizontal bars represent total uncertainties. For this analysis, the inner uncertainty bar is the measurement uncertainty.

$$\sin^2\theta_{\text{eff}}^{\text{lept}} = 0.2328 \pm 0.0009 \pm 0.0003,$$

$$\sin^2\theta_W = 0.2246 \pm 0.0009 \pm 0.0003, \quad \text{and}$$

$$M_W(\text{indirect}) = 80.297 \pm 0.045 \pm 0.017 \text{ GeV}/c^2,$$

where the first uncertainty is statistical and the second systematic. To be consistent with upcoming measurements, all uncertainties are now combined in quadrature, and for $\sin^2\theta_{\text{eff}}^{\text{lept}}$, $\sin^2\theta_W$, and $M_W$ they are $\pm 0.0010$, $\pm 0.0009$, and $\pm 0.048$ GeV/$c^2$. Figures 13–15 include the updated uncertainties.