

Fig. 24: $\Delta\chi^2 = \chi^2 - \chi_{\min}^2$ versus M_H , from the global fit to the electroweak data. The vertical band indicates the 95% exclusion limit from direct searches [29, 30].

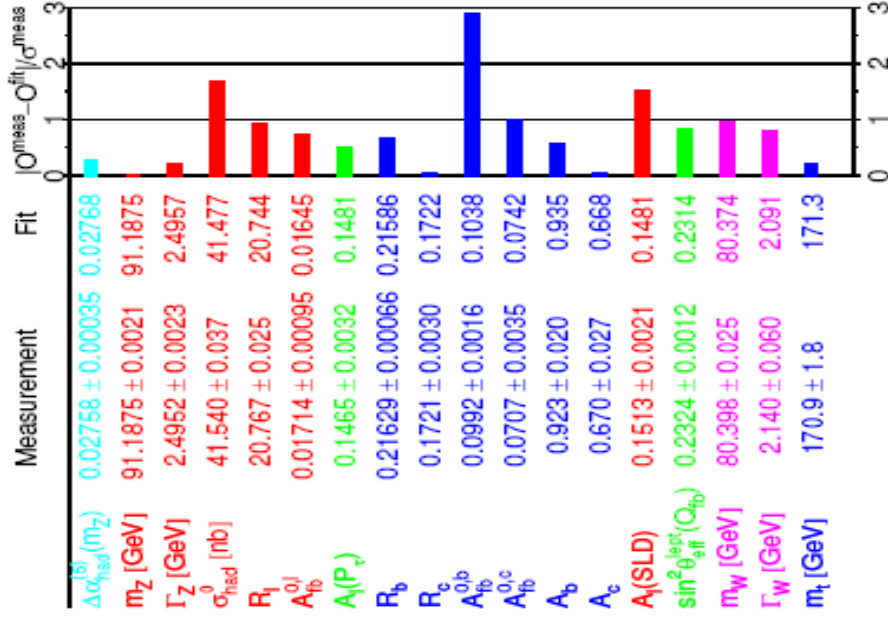


Fig. 25: Comparison between the measurements included in the combined analysis of the SM and the results from the global electroweak fit [29, 30]

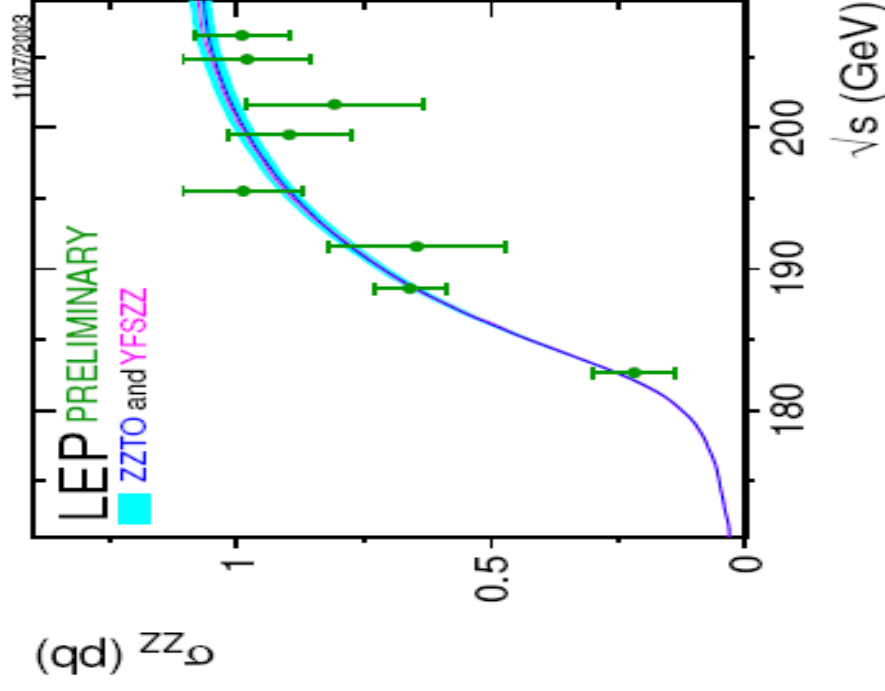
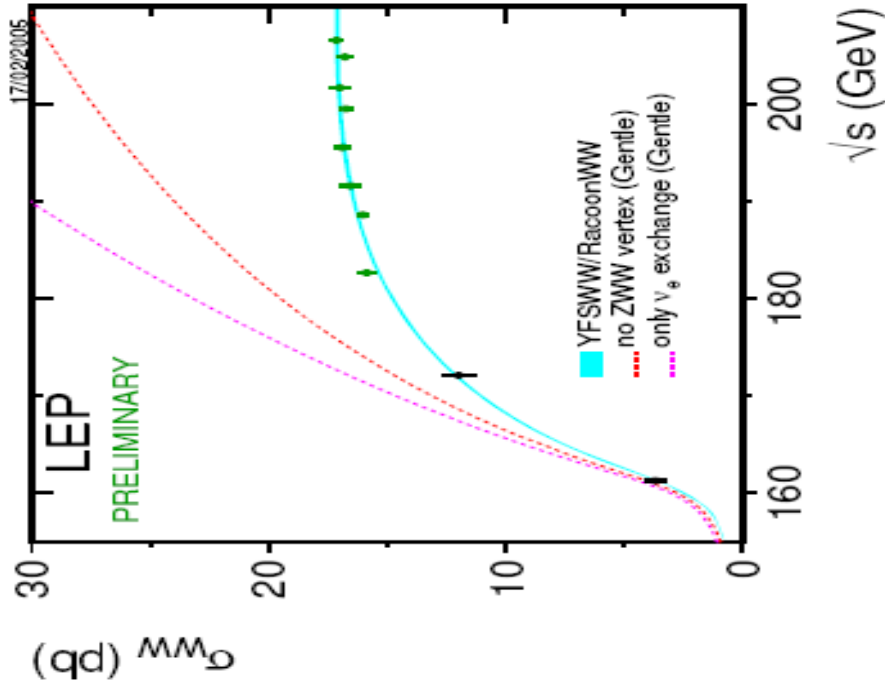


Fig. 27: Measured energy dependence of $\sigma(e^+e^- \rightarrow W^+W^-)$ (left) and $\sigma(e^+e^- \rightarrow ZZ)$ (right). The three curves shown for the W -pair production cross-section correspond to only the ν_e -exchange contribution (upper curve), ν_e exchange plus photon exchange (middle curve), and all contributions including also the ZWW vertex (lower curve). Only the e -exchange mechanism contributes to Z -pair production [29, 30].

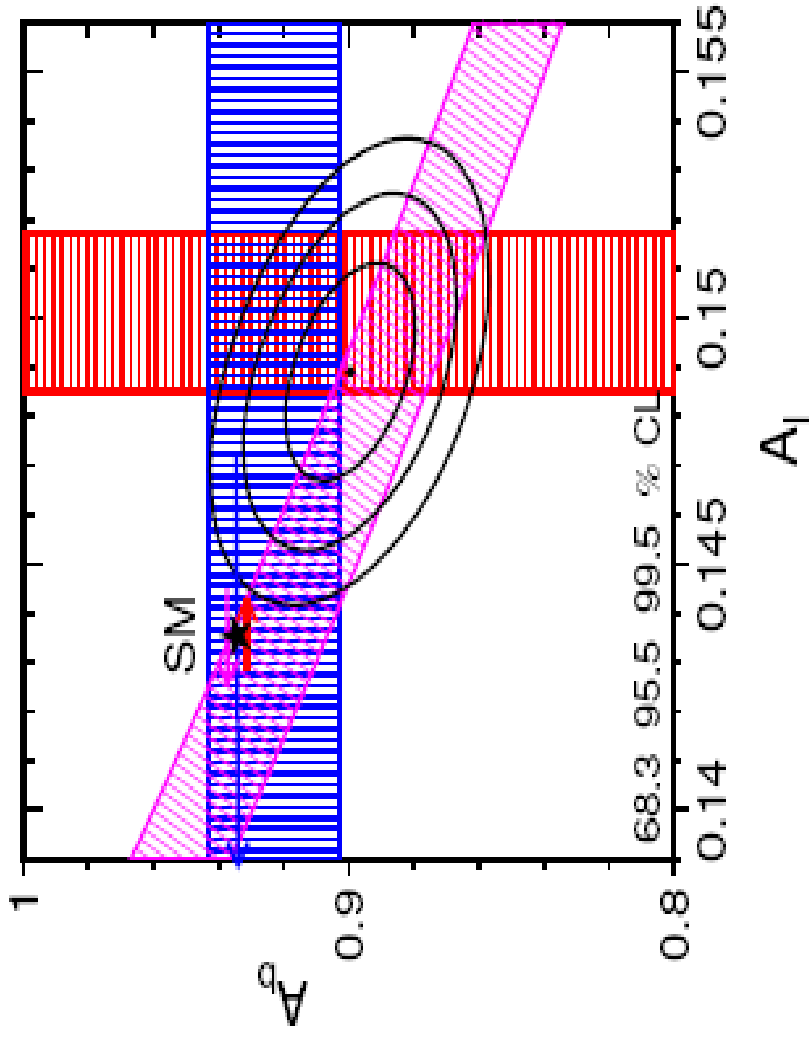


Fig. 21: Measurements of A_l , A_b (SLD) and $A_{FB}^{0,b}$. The arrows pointing to the left (right) show the variations of the SM prediction with $M_H = 300_{-186}^{+700}$ GeV ($m_t = 172.7 \pm 2.9$ GeV). The small arrow oriented to the left shows the additional uncertainty from $\alpha(M_Z^2)$ [29, 30].

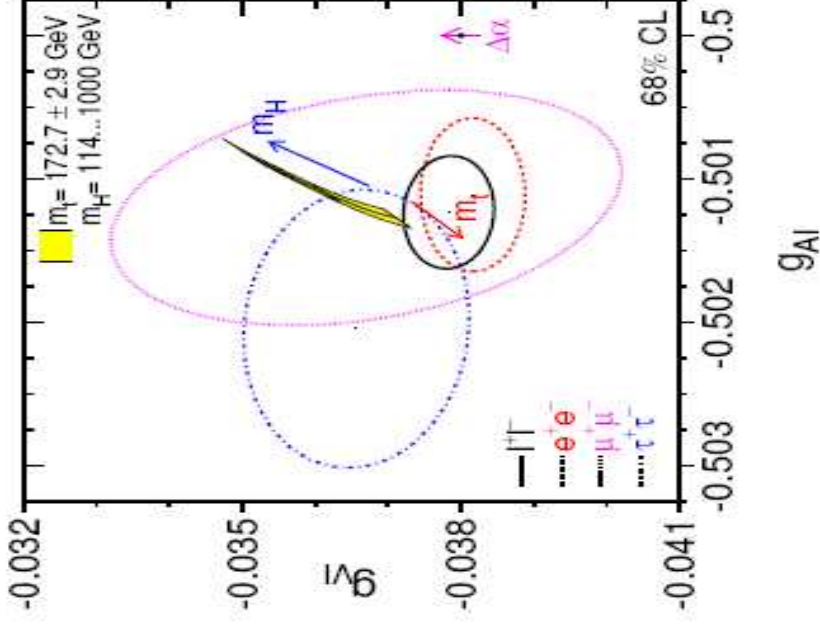
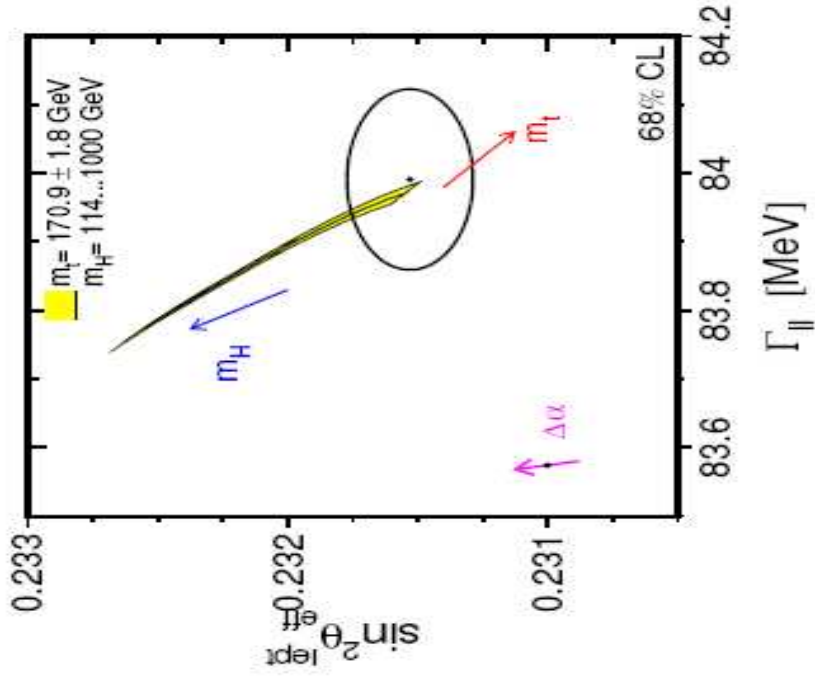


Fig. 20: Combined LEP and SLD measurements of $\sin^2 \theta_{\text{eff}}^{\text{lept}}$ and Γ_l (left) and the corresponding effective vector and axial-vector couplings v_l and a_l (right). The shaded region shows the SM prediction. The arrows point in the direction of increasing values of m_t and M_H . The point shows the predicted values if, among the electroweak radiative corrections, only the photon vacuum polarization is included. Its arrow indicates the variation induced by the uncertainty in $\alpha(M_Z^2)$ [29, 30].

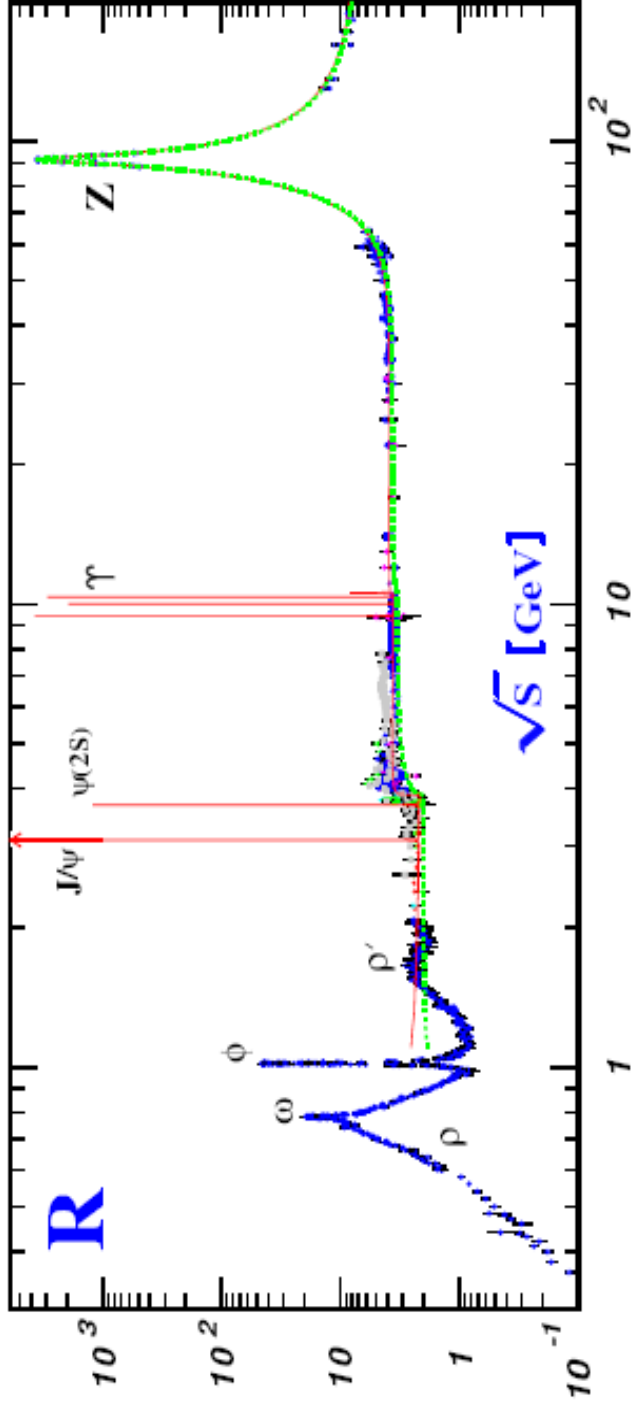


Fig. 3: World data on the ratio $R_{e^+e^-}$ [7]. The broken lines show the naive quark model approximation with $N_C = 3$. The solid curve is the 3-loop perturbative QCD prediction.

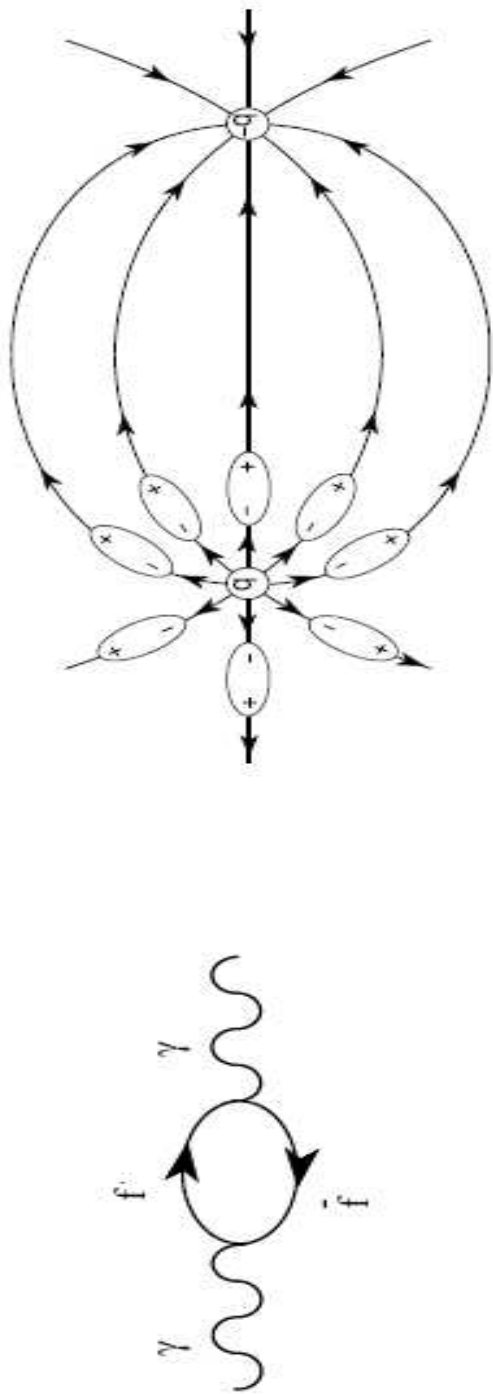


Fig. 17: The photon vacuum polarization (left) generates a charge screening effect, making $\alpha(s)$ smaller at larger distances

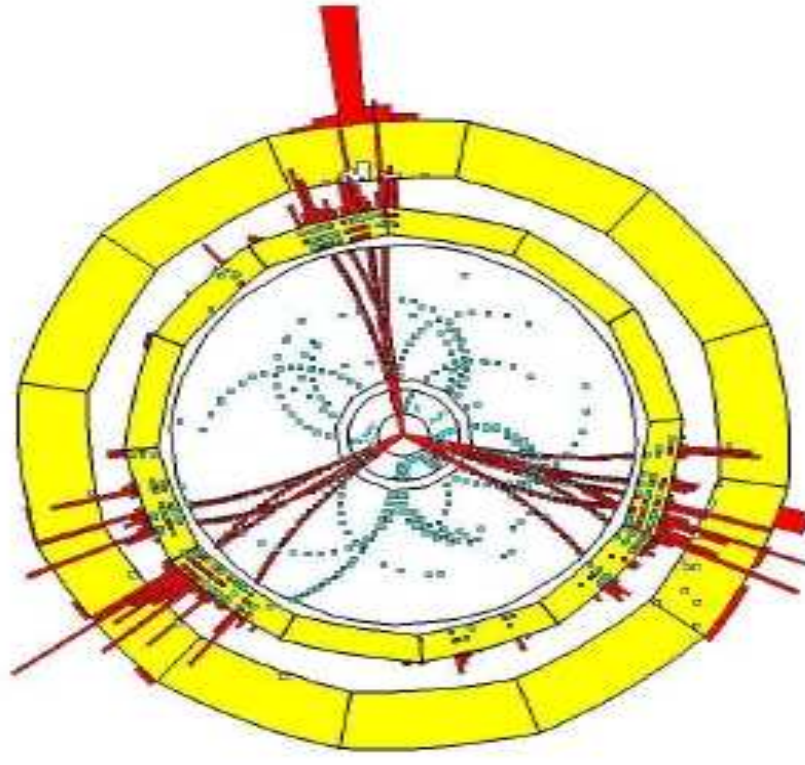
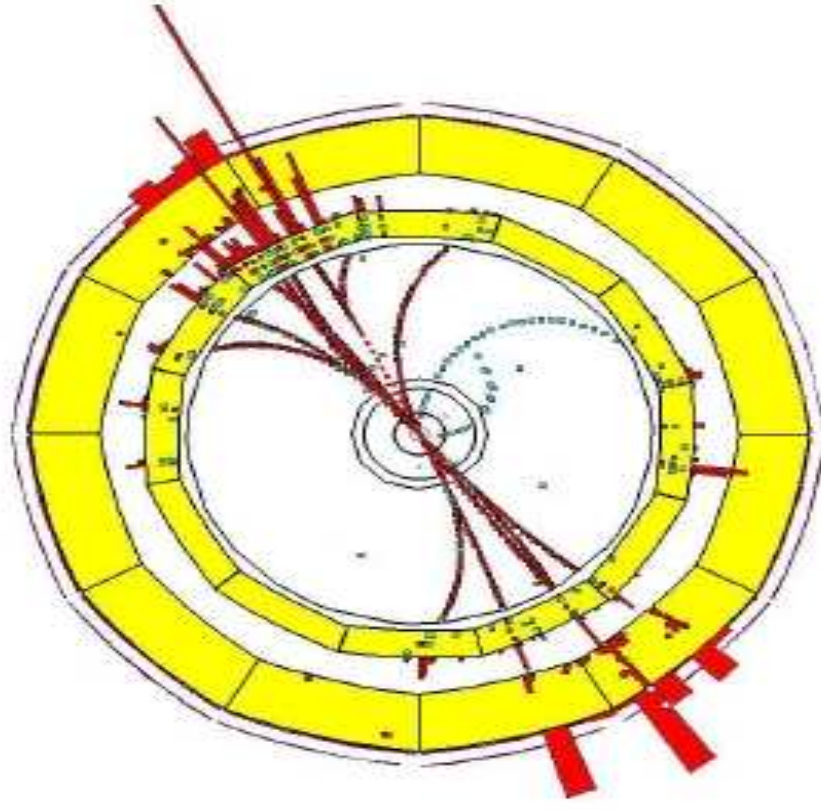


Fig. 5: Two- and three-jet events from the hadronic Z boson decays $Z \rightarrow q\bar{q}$ and $Z \rightarrow q\bar{q}G$ (ALEPH) [22]

