Determination of α_s

References

[1] Particle Data Group, Phys. Rev. D **45** S1 (1992). Phys. Rev. D **50** 1 (1994).

[2] H.J. Lu and S.J. Brodsky, Phys. Rev. D**48** 3310 (1993).
Relating Physical Observables in QCD without Scale-Scheme ambiguity.

[3] P.N. Burrows and H. Matsuda, submitted to Z. Phys. C SLAC-PUB-639, nov. 1993.
On the applicability of finite order pertubative QCD calculations of jet rates in e^+e^- annihilation.

[4] D.T. Barclay, C.J. Maxwell and M.T. Reader, Preprint UICHEP-TH/93-14, DTP/93/68, sept.1993.
Measuring $\Lambda_{\overline{MS}}$ at LEP.

[5] R. Mertig and W.L. van Neerven, Preprint INLO-PUB-2/93, march 1993.
Order α_s QCD corrections to the Burkahrdt-Cottingham Sum rule.

[6] J.R. Forshaw, Preprint RAL-92-073, nov. 1992.
On the Validity of Pertubative Evolution of the Structure Functions from Low Q^2.

[7] I. Hinchliffe, LBL Report LBL-33952, march 1993.
Status of α_s Measurements

[8] E.B. Zilstra and W.L. van Neerven, Report INLO-PUB-3/93 ,april 1993
Order α_s^2 corrections to the polarized structure function g_1(x,Q^2).

[9] S.J. Brodsky, G.P. Lepage and P.B. Mackenzie, Phys. Rev. D **28** 228 (1983).

[10] G. Grunberg and A.L. Kataev, Phys. Lett. **B279** 352 (1992).
On some possible extensions of the Brodsky-Lepage-Mackenzie approach beyond next to-leading order.

[11] S. J. Brodsky and H. J. Lu, Preprint SLAC-PUB-6369, November 1993.
Commensurate Scale Relations: Relating Observables in QCD without Renormalization Scale or Scheme Ambiguity.

[12] S. J. Brodsky and H. J. Lu, Preprint SLAC-PUB-6481, April 1994, Phys. Rev. **D51,** 3652, 1995.
Commensurate Scale Relations in Quantum Chromodynamics.

[13] S. J. Brodky and H. J. Lu, Phys. Rev. **D51** , 3652, 1995, Preprint SLAC-PUB-6683, October 1994.
Commensurate Scale Relations: precise test of Quantum Chromodynamics without Scale or scheme ambiguity.

[14] A. Pich, Preprint CERN-TH-6738/92.
QCD predictions for the τ hadronic width and determination of $\alpha_s(\mathrm{M}\tau^2)$.

[15] M. Virchaux and A. Milsztain, Phys. Lett **B274** 221 (1992).
A measurement of α_s and higher twists from a QCD analysis of high statistic F_2 data on hydrogen and deuterium targets.

[16] Tran N. Truong, Preprint CPTH-A266-1093-REV, January 1994.
Uncertainties in the determination of α_s using hadronic τ decay data and e^+e^- hadronic cross sections.

[17] U. Wolff, HEPLAT-9311033, Dec. 1993.
Running constant in SU(3) Yang-Mills Theory.

[18] G.M. Divitiis, R. Frezzotti, M. Guagnelli and R. Petronzio, Preprint ROM-94-28, HEP-LAT-9407028, july 1994.
Non pertubative determination of the running coupling constant in quenched SU(2).

[19] F. Le Diberder and A. Pich, Phys. Lett. **B286** 147, (1992).
The pertubative QCD prediction to R_τ revisited.

[20] F. Le Diberder and A. Pich, Phys. Lett. **B289** 165, (1992).
Testing QCD with τ decays.

[21] M. Schmelling and R.D. St.Denis, Preprint CERN/PPE/ 93-193, Nov. 1993. Phys. Lett. **B329** , 393, 1994.
Limits on New Physics from R_τ and R_Z

[22] S. Narison, Preprint CERN-TH-7188/94, Preprint PM 94/08.
Simple but efficient tests of QCD from tau decays.

[23] E. Fernandez, Europhysics Conf. on High Energy Physics, Marseille, july 22-28, 705, 1993.
Tau Physics

[24] P.A. Raczka and A. Szymacha, Preprint IFT-13-94, September 1994, Warsaw, HEP-PH-9412236.
Improved analysis of the renormalization scheme ambiguities in the QCD corrections to the semileptonic decay of the tau lepton.

[25] P. A. Raczka. Z. Phys. **C65** 481, 1995.
Renormalization scheme dependence and the problem of the uncertainties next-to-leading order QCD corrections.

[26] R. Ball *et al.*, Phys. Lett. **B347** 80, 1995.
Scheme independence and the exact renormalization group.

[27] A. Pich, Preprint FTUV/94-71, Valencia, IFIC/94-68, November 1994, HEP-PH/9412273.
QCD prediction for the τ hadronic width : Determination of $\alpha_s(\mathrm{M}\tau^2)$.

[28] L. Duflot, Preprint LAL 94-70, December 1994, Conf. QCD 94, Montepellier, 7-13th July 1994.
QCD tests from τ decays.

[29] F. Le Diberder, Preprint LAL 94-43, December 1994, submitted to Phys. Lett. B.
Experimental estimates of higher order pertubative corrections to R_τ.

[30] M. Consoli and F. Ferroni, HEP-PH-9501371, February 1995.
On the value of $R = \Gamma_\tau/\Gamma_l$

[31] CLEO, Preprint CLNS-95-1332, CLEO-95-6. Phys. Lett. **B356,** 580, 1995.
Measurement of α_s from τ Decays.

[32] OPAL Collaboration, Preprint CERN-PPE-95-069, May 1995.
A Study of QCD Structure Constants and a Measurement of $\alpha_s(M_Z0)$ at LEP using Event Shape Observables.

[33] G. Altarelli, Preprint CERN-Th-7493-94, November 1994. 3rd Workshop on Tau Lepton Physics, Montreux, Switzerland, September 1994.
α_s from τ: a discussion of theoretical errors.

[34] G. Altarelli, P. Nason and G. Ridolfi, Preprint CERN TH.7537/94, December 1994.
A Study of the Ultraviolet Renormalon Ambiguities in the Determination of α_s from τ Decay.

[35] W. J. Marciano, Preprint BNL-61141, November 1994, 3rd Workshop on Tau Lepton Physics, September 19-22, 1994, Montreux, Switzerland.
Tau Physics: A Theoretical Perspective.

[36] C. A. Dominguez, Phys. Lett. **B345** 291 1995.
Phenomenological analysis of a dimension-two operator in QCD and its impact on $\alpha_s(M_\tau)$

[37] A. L. Kataev and V. V. Starshenko, HEP-PH-9502348, Mod. Phys. Lett. A10, 235, 1995.
Estimates of higher-order QCD corrections to R(s), R(τ) and deep inelastic scattering sum rules.

[38] V. Kartveschvili *et al.* Phys. Lett.**B345** 161, 1995.
On instantons contributions to the tau hadronic width.

[39] M. Schmelling, Preprint CERN-PPE 94-184, November 1994, Submitted to Physica Scripta.
QCD results from the Study of Hadronic Z-Decays.

[40] K. Abe *et al*, Phys. Rev. **D51** 962, 1995.
Measurement of $\alpha_s({M_z}^2)$ from hadronic event observables at Z_0 resonnance.

[41] OPAL, Z. Phys.**C65** , 31, 1995.
α_s from Z_0.

[42] ALEPH Coll. (D. Buskulic *et et al,*. Phys. Lett. **B357** 487, 1995.
Measurement of α_s from scaling violations in fragmentation functions in e^+e^- annihilation.

[43] L3 Collaboration, M. Acciarri *et al.,*, Phys. Lett. **B371,** 137, 1996.
Study of the structure of hadronic events and determination of α_s at S**(1/2) = 130-Gev and 136-Gev.

[44] UA1 Collaboration, C. Albajar *et al.,* Phys. Lett. **B369,** 46, 1996.
Measurement of α_s from B and anti-B production at the CERN collider.

[45] W.T. Giele, Phys. Rev. **D53 ,** 120, 1996.
The determination of α_s at hadron colliders.

[46] K. T. Chao *et al.* , Preprint HEPPH 9503201.
Gluonic and leptonic decays of heavy quarkonia and the determination of $\alpha_s(M_c)$ and $\alpha_s(M_z)$.

[47] C.T. Davies, K. Hornbostel, G.P. Lepage, A. Lidsey, J. Shigemitsu, J. Sloan, Preprint OHSTPY-HEP-T-94-013, FSU-SCRI-94-79, HEP-PH/9408328, august 1994.
A Precise Determination of α_s From Lattice QCD.

[48] C. Michael, Liverpool Preprint LTH-340, C94/09/27, Proc. Lattice 1994, HEP/9412032, December 1994.
The QCD spectrum.

[49] A.X.
El Khadra, Preprint OHSTPY-HEP-T-94-020, DOE/ER/01545-637, HEP-PH-9412279, June 1994.
Lattice QCD.

[50] C. T. H. Davies, Phys. Lett. **B345** 42, 1995.
Precise measurement of α_s from lattice QCD.

[51] P.A. Raczka, Preprint IFT/8/95,HEP-PH/9506462.
Improved evaluation of the NNLO QCD effects in the tau decay, e^+e^- annihilation into hadrons and deep-inelastic sum rules.

[52] P. Weisz, HEP-LAT/9511017.
Lattice investigation of the running constant.

[53] B. Grinstein, I.Z. Rothstein, HEP-PH/9605260, May 1996.
Errors in lattice extractions of α_s due to use of unphysical pion masses.

[54] J. Ellis and M. Karliner, Phys. Lett. **B341** 397,(1995).
Determination of α_s and the nucleon spin decomposition using recent polarized structure function data.

[55] I. Hinchliffe, LBL report, LBL-36374, December 1994.
Current issues in Pertubative QCD.

[56] S. Bethke, Preprint PITHA 94/30 , October 1995. NUCL. PHYS. PROC. SUPPL. 39BC:198, 1995.
Summary of α_s Measurements.

[57] S. Bethke, Preprint 95/14, june 1995. XXX Rencontre de Moriond, Les Arcs, France March 19-26 1995.
Status of α_s Measurements.

[58] Tatsu Takeuchi, Preprint CERN-TH-96-79, AUG. 1995, HEP-PH/9603415.
The status of the determination of $\alpha(M(z))$ and $\alpha_s(M(Z))$.

[59] H. B. Tang and R. J. Furnstahl, Preprint OSU-95-101, HEP-PH-9502326, February 1995.
The Gluon Condensate and the Coupling Constant of QCD.

[60] A. D. Martin, W. J. Stirling and R. G. Roberts. Preprint RAL-TR-95-013,june 1995.
The α_s dependence of the parton distribution.

[61] D. Garcia and J. Sola. Phys. Lett. **B357** 349, 1995.
Matching the low-energy and the high-energy determination of α_s (M(Z)) in the MSSM.

[62] A. Pich, Nucl. Phys. Suppl. 39BC:326, 1995.
QCD predictions for the tau hadronic width: determination of $\alpha_s(\mathrm{M}\tau^2)$.

[63] M. Girone, and M. Neubert, Phys. Rev. Lett. 76, 3061, 1996. Preprint CERN-TH-95-275, HEP-PH/9511392.
Test of the running of α_s in Tau decays.

[64] H.F. Jones and I.L. Solotsov, Preprint JINR-E2-95-466.
Analytic properties of $\alpha_s(Q**2)$ and tau decay.

[65] M. Girone, M. Neubert, HEP-PH/9605274, May 1996.
Measuring $\alpha_s(Q^2)$ in tau decays.

[66] M. Neubert, CERN-TH/95-112, HEP-PH/9509432, Oct. 1995.
QDC analysis of hadronic τ decays revisited.

[67] P. Ball, Nucl. Phys. **B452** 563, 1995.
Resummation of (betao alpha-s)**N corrections in QCD: techniques and application to the tau hadronic width and heavy quark pole mass.

[68] T.M. Trefzger, Doctoral thesis, Mar. 1996, Freiburg U. Preprint DESY-F35D-96-08.
Measurement of the coupling constant α_s of the strong interaction from jet rates in deep inelastic E P scattering at HERA.

[69] Jiri Chyla, HEP-PH/9604306, April 1996.
On consistent determination of α_s from jet rates in deep inelastic scattering.

[70] M. Schmelling, Preprint CERN-PPE-95-129, Aug. 1995.
Measurements of the strong coupling constant and tests of the structure of QCD.

[71] K.G. Chetyrkin, J.H. Kuhn, T. Teubner, TTP-15-96, HEP-PH/9609411, Sept. 1996.
Extracting α_s from electron-positron annihilation around 10 GEV.

[72] M. Shifman, Preprint TPI-MINN-95-32-T, HEP-PH/9511469.
The case of α_s: Z versus low energies, or how nature prompt us of new physics.

[73] P. Frampton *et al.,* Preprint IFP-714-UNC, HEP-PH/9511445.
Constraining $\alpha_s(M(Z))$ from the hidden sector.

[74] J. Ellis, *et al.,* Phys. Lett. **B371,** 65, 1996.
Lowering α_s by flipping SU(5).

[75] L. Roszkowski, M. Shifman, Phys. Rev. **D53,** 404, 1996.
Reconciling supersymmetric grand unification with $\alpha_s(M(Z))$.

[76] J. Blumlein *et al.* Preprint DESY-96-172, Aug. 1996, HEP-PH/9609217.
Theoretical uncertainties in the QCD evolution of structure functions and theirimpact on $\alpha_s(M(Z)^2)$

[77] A.L. Kataev, Invited talk at 1996 annual divisional meeting of particles and fields of the American physical society, Minneapolis MN, 10-15 Aug. 1996, HEP-PH/9609398.
Deep inelastic scattering data and the value of α_s.

[78] P.N. Burrows, Phys. Lett. **B382,** 157, 1996, HEP-PH/9602210.
Application of "optimized " pertubation theory to determination of $\alpha_s(M(Z)^2)$ from hadronic event shape in e^+e^- annihilation.

[79] P.N. Burrows, APS/AAPT Meeting, Indianapolis, 5/4/96.
Review of α_s measurements.

[80] P.N. Burrows, *et al.,* SLAC-PUB-7222, HEP-PH/9609513 Sept. 1996.

Application of pade approximants to determination of $\alpha_s(M(Z)^2)$ from hadronic event shape observables in e^+e^-.

[81] P.N. Burrows,ICHEP, Warsaw, Poland, 25-31 July 1996, SLAC-PUB-7328, Determination of $\alpha_s(M(Z)^2)$ from hadronic event shape observables in $e+e-$ annihilation.

[82] V.M. Braun, HEP-PH/9610212, Mineapolis, 10-15 Aug. 1996. Theoretical uncertainties in the preparation of α_s from hadronic event observables: the impact of non-pertubative effects.

[83] J.H. Field, UGVA-DPNC-1996-8-167, QCD Euroconf. 96, Montpellier, France, 4-12 july 1996. Determination of α_s using S wave quarkonia decays.

[84] E. Braaten, TAU96, Estes Park, CO, 17-19 Sept. 1996, HEP-PH/9611267, Pertubative QCD and TAU decay.

[85] A. Pich, HEP-PH/9701305, FTUV-97-03, Jan. 1997, . QCD tests from Tau decays.

[86] CCFR Coll. (W.G. Seligman *et al.,*) Jan. 1997, HEP-PH/9701017, A new determination of α_s from neutrino-nucleon scattering.

[87] G. Altarelli, R.D. Ball, S. Forte, G. Ridolfi, CERN-TH-96-345, HEP-PH/9701289. Jan. 1997. Determination of the Bjorken sum rule and strong coupling from polarized structure functions.

[88] C.T. H. Davies *et al.,* SUMHEP-97-03, HEP-LAT/9703010, Mar. 1997. Further determinations of α_s from lattice QCD.

[89] C.G. Maxwell, D.G. Tonge, Preprint DTP-97-30, HEP-PH/9705314, May 1997. The uncertainty in $\alpha_s(M(Z)^2)$ determined from hadronic τ.

[90] S. Marti i Garcia, HEP-EX/9704016, April 1997, DIS 97 Chicago IL, 14-18 April 1997. Review of α_s measurements at LEP-2.

[91] D.V. Shirkov, I.L. Solovtsov, JINR-E2-97-133, HEP-PH/9704333, April 1997.
Analytic model for the QCD running coupling with universal $\alpha_s(0)$ value.

[92] K.G. Chertyrkin, *et al.,* HEP-PH/9706430, April 1997.
Strong coupling constant with flavor thresholds at four loops in the MS scheme.

[93] UKQCD Coll. C. Parinello, *et al.,* HEP-LAT/9710053, Jul. 1997. Nucl. Phys. Suppl. 63, 245, 1998.
Status of α_s determination from the nonnpertubatively renormalized three gluon vertex.

[94] IFVE-97-9, A.I. Alekseev, B.A. Arbuzov, MAR. 1997.
Analytic QCD running constant and the minimality principle for nonpertubative contributions in ultraviolet region.

[95] M. Davier, HEP-PH/9711308, Nov. 1997,submitted to PHYS. Lett.B.
Improved determination of $\alpha(M(Z)^2)$ and the anomalous magnetic moment of the muon.

[96] P.A. Raczka, Nucl. Phys. Proc. Suppl. 64, 356, 1998, HEP-PH/9709377.
Improved QCD expansion and the problem of determination od α_s and the condensates from the τ decays.

[97] S. Groote *et al.,* NUCL-TH/9802374, Feb. 1998.
QCD sum rule determination of $\alpha(M(Z))$ with minimal data input.

[98] ALEPH Coll. (R. Barate et al.,) CERN-EP-98-7, submitted Eur. Phys. J.C.
Measurement of the spectral functions of axial-vector hadronic tau decays and determination of $\alpha_s(M^2(\tau))$

[99] R. Alemany, *et al.,* Eur. Phys. J. C2, 123, 1998, Feb. 1997, HEP-PH/9703220.

Improved determination of the hadronic contribution to the muon (G-2) and to $\alpha_s(M(Z))$ using new data from hadronic decay.

[100] W.J. Stirling, DTP-97-80, Jun. 1997, HEP-PH/9709429.
α_s : from DIS to LEP.

[101] B. Pietrzyk, Acta Polon. **B28,** 673, 1997.
$\alpha_s(M(Z)^2)$ and the standard model.

[102] CCFR/NUTEV Coll. HEP-EX/9806031, Mar.1998.
Strange sea and $\alpha(s)$ measurements from neutrino N deed inelastic scattering at CCFR/NUTEV.

[103] SESAM Coll. Nucl. Phys. Proc. Suppl. 63, 242, 1998, HEP-LAT/9710044.
The running coupling from the quark gluon vertex.

[104] D. Wicke, Nucl. Phys. Proc. Suppl. 64, 27, 1998,Jul. 1997, HEP-PH/9708467.
Determination of α_s from eventshapes and power corrections.

[105] M. Janin, A. Pich, Nucl. Phys. Proc. Suppl.64, 371, 1998, HEP-PH/9709495.
Determination of M(B) and α_s from the Upsilon system.

[106] Particle data group, H. Hinchliffe, Eur. J. C3, 81, 1998.

[107] H1 Coll. C. Adloff *et al.,* HEP-EX/9807019Jul. 1998.
Multijets events in deep inelastic scattering and determination of the strong coupling constant.

[108] OPAL Coll. K. Ackerstaff, et al. Eur. Phys. J. C7: 553, 1999, HEP-PH/9808019.
Measurement of the strong coupling constant α_s and the vector and axial vector spectral functions in hadronic tau decays.

[109] A.M. Badalian, V.L. Morgunov, Phys. Rev. bf D60. :116008, 1999, HEP-PH/9901430.
Determination of α_s (1 GeV) from the charmonium fine structure.

[110] A.V. Radyushkin, JINR RAPID COMMUN.4-78, 96, 1996, HEP-PH/9907228.
Optimized λ-parametrization for the QCD running constant in spacelike and timelike regions.

[111] G. Cvetic , HEP-PH/0003123, Mar. 2000.
Achieving renormalization-scale and scheme-independence in pade-related resummation in QCD.

[112] J. Santiago and F.J. Yndurain, Nucl. Phys. **B563,** 45, 1999.
Calculation of electroproduction to NNLO and precision determination of α_s

[113] A.L. Kataev *et al.,* HEP-PH/9809500, HEP-PH/ 9905310.
Higher twist and $\alpha_s(M(Z))$ extraction from the NNLO QCD analysis of the CCFR data for the XF(3) structure function.

[114] JADE Coll. and OPAL Coll. G. Abbiendi *et al.,* HEP-EX/0001055, Dec. 1997.
QCD analyses and determination of α_s in E+E- annihilation at energies between 35-GeV and 189-GeV.