NODE=Q004

c

$I(J^P) = 0(\frac{1}{2}^+)$

NODE=Q004

Charge = $\frac{2}{3}$ e Charm = +1

c-QUARK MASS

NODE=Q004M

The c-quark mass corresponds to the "running" mass m_c ($\mu = m_c$) in the $\overline{\text{MS}}$ scheme. We have converted masses in other schemes to the $\overline{\text{MS}}$ scheme using two-loop QCD perturbation theory with $\alpha_s(\mu{=}m_c) = 0.38 \pm 0.03$. The value 1.2729 ± 0.0045 GeV for the $\overline{\text{MS}}$ mass corresponds to 1.65 ± 0.02 GeV for the pole mass (see the "Note on Quark Masses").

NODE=Q004M

NODE=Q004M

NEW;→ UNCHECKED ←

1.2729±0.0045 (CL = 90%) OUR EVALUATION See the ideogram below. [1.2730 ± 0.0046 GeV (CL = 90%) OUR 2025 EVALUATION]

Average is meaningless. See the ideogram below. [1.2730 ± 0.0028 GeV OUR 2025 AVERAGE]

$\overline{\text{MS}}$ MASS (GeV)	CL%	DOCUMENT ID		TECN
1.2716±0.0082		[1] COLQUHOUN	26	LATT
1.316 ±0.022 $^{+0.019}_{-0.010}$		[2] ALEXANDROU	21	LATT
1.296 ±0.019		[3] HEITGER	21	LATT
1.2723±0.0078		[4] HATTON	20	LATT
1.266 ±0.006		[5] NARISON	20	THEO
1.290 $^{+0.077}_{-0.053}$		[6] ABRAMOWICZ	18	HERA
1.273 ±0.010		[7] BAZAVOV	18	LATT
1.2737±0.0077		[8] LYTLE	18	LATT
1.223 ±0.033		[9] PESET	18	THEO
1.279 ±0.008		[10] CHETYRKIN	17	THEO
1.272 ±0.008		[11] ERLER	17	THEO
1.246 ±0.023		[12] KIYO	16	THEO
1.288 ±0.020		[13] DEHNADI	15	THEO
1.348 ±0.046		[14] CARRASCO	14	LATT
1.24 ±0.03 $^{+0.03}_{-0.07}$		[15] ALEKHIN	13	THEO
1.159 ±0.075		[16] SAMOYLOV	13	NOMD
1.278 ±0.009		[17] BODENSTEIN	11	THEO
1.28 $^{+0.07}_{-0.06}$		[18] LASCHKA	11	THEO
1.196 ±0.059 ±0.050		[19] AUBERT	10A	BABR
1.25 ±0.04		[20] SIGNER	09	THEO
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.263 ±0.014		[21] NARISON	18A	THEO
1.264 ±0.006		[22] NARISON	18B	THEO
1.335 ±0.043 $^{+0.040}_{-0.011}$		[23] BERTONE	16	THEO
1.2715±0.0095		[24] CHAKRABOR...	15	LATT
1.26 ±0.05 ±0.04		[25] ABRAMOWICZ	13C	COMB
1.282 ±0.011 ±0.022		[26] DEHNADI	13	THEO
1.286 ±0.066		[27] NARISON	13	THEO
1.36 ±0.04 ±0.10		[28] ALEKHIN	12	THEO
1.261 ±0.016		[29] NARISON	12A	THEO
1.01 ±0.09 ±0.03		[30] ALEKHIN	11	THEO
1.28 ±0.04		[31] BLOSSIER	10	LATT
1.299 ±0.026		[32] BODENSTEIN	10	THEO
1.273 ±0.006		[33] MCNEILE	10	LATT
1.261 ±0.018		[34] NARISON	10	THEO
1.279 ±0.013		[35] CHETYRKIN	09	THEO
1.268 ±0.009		[36] ALLISON	08	LATT
1.286 ±0.013		[37] KUHN	07	THEO
1.295 ±0.015		[38] BOUGHEZAL	06	THEO
1.24 ±0.09		[39] BUCHMUEL...	06	THEO
1.224 ±0.017 ±0.054		[40] HOANG	06	THEO
1.33 ±0.10		[41] AUBERT	04X	THEO
1.29 ±0.07		[42] HOANG	04	THEO
1.319 ±0.028		[43] DEDIVITIIS	03	LATT
1.19 ±0.11		[44] EIDEMULLER	03	THEO
1.289 ±0.043		[45] ERLER	03	THEO
1.26 ±0.02		[46] ZYABLYUK	03	THEO

[1] COLQUHOUN 26 value comes from lattice computation of the pseudoscalar correlator. Quenched QED corrections are included. NODE=Q004M;LINKAGE=AA

[2] ALEXANDROU 21 determines the quark mass using a lattice calculation of the meson and baryon masses with a twisted mass fermion action. We have converted $\overline{m}_c$(3 GeV) = $1.036 \pm 0.017^{+0.015}_{-0.008}$ to $\overline{m}_c(\overline{m}_c)$. The simulations are carried out using 2+1+1 dynamical quarks with $m_u = m_d \neq m_s \neq m_c$, including gauge ensembles close to the physical pion point. NODE=Q004M;LINKAGE=Z

[3] HEITGER 21 determines the charm quark mass using a n_f = 2+1 flavor lattice QCD simulation with non-perturbatively O(a) improved Wilson fermions. They also determine $\overline{m}_c$(3 GeV) = 1.007 ± 0.016 GeV. NODE=Q004M;LINKAGE=Y

[4] HATTON 20 determines the charm quark mass with a lattice QCD + quenched QED simulation using the HISQ action and including n_f = 2+1+1 flavors of sea quarks. m_c is tuned from the J/ψ meson mass giving $\overline{m}_c$(3 GeV) = 0.9841 ± 0.0051 GeV. NODE=Q004M;LINKAGE=X

[5] NARISON 20 determines the quark mass using QCD Laplace sum rules from the B_c mass, combined with previous determinations of the QCD condensates and c and b masses. NODE=Q004M;LINKAGE=W

[6] ABRAMOWICZ 18 determine $\overline{m}_c(\overline{m}_c) = 1.290^{+0.046}_{-0.041}{}^{+0.062}_{-0.014}{}^{+0.003}_{-0.031}$ from the production of c quarks in $e\,p$ collisions at HERA using combined H1 and ZEUS data. The experimental/fitting errors, and those from modeling and parameterization have been combined in quadrature. NODE=Q004M;LINKAGE=O

[7] BAZAVOV 18 determine the quark masses using a lattice computation with staggered fermions and four active quark flavors. NODE=Q004M;LINKAGE=Q

[8] LYTLE 18 combined with CHAKRABORTY 15 determine $\overline{m}_c$(3 GeV) = 0.9874(48) GeV from a lattice simulation with n_f = 2+1+1 flavors. They also determine the quoted value $\overline{m}_c(\overline{m}_c)$ for n_f = 4 dynamical flavors. NODE=Q004M;LINKAGE=V

[9] PESET 18 determine $\overline{m}_c(\overline{m}_c)$ and $\overline{m}_b(\overline{m}_b)$ using an N3LO calculation of the η_c, η_b and B_c masses. NODE=Q004M;LINKAGE=S

[10] CHETYRKIN 17 determine $\overline{m}_c(\mu$ = 3 GeV) = 0.993 ± 0.008 GeV and $\overline{m}_c(\overline{m}_c)$ from a four-loop sum-rule computation of the cross-section for $e^+e^- \rightarrow$ hadrons in the charm threshold region. NODE=Q004M;LINKAGE=M

[11] ERLER 17 determine $\overline{m}_c(\overline{m}_c)$ = 1.272 ± 0.008 GeV from a three-loop QCD sum-rule computation of the vector current correlator. This result is for fixed $\alpha_s(M_Z)$ = 0.1182. Including an α_s uncertainty of ±0.0016, the charm mass error increases from 8 to 9 MeV. NODE=Q004M;LINKAGE=P

[12] KIYO 16 determine $\overline{m}_c(\overline{m}_c)$ from the $J/\psi(1S)$ mass at order α_s^3 (N3LO). NODE=Q004M;LINKAGE=F

[13] DEHNADI 15 determine $\overline{m}_c(\overline{m}_c)$ using sum rules for $e^+e^- \rightarrow$ hadrons at order α_s^3 (N3LO), and fitting to both experimental data and lattice results. NODE=Q004M;LINKAGE=E

[14] CARRASCO 14 is a lattice QCD computation of light quark masses using 2 + 1 + 1 dynamical quarks, with $m_u = m_d \neq m_s \neq m_c$. The u and d quark masses are obtained separately by using the K meson mass splittings and lattice results for the electromagnetic contributions. NODE=Q004M;LINKAGE=C

[15] ALEKHIN 13 determines m_c from charm production in deep inelastic scattering at HERA using approximate NNLO QCD. NODE=Q004M;LINKAGE=AH

[16] SAMOYLOV 13 determines m_c from a study of charm dimuon production in neutrino-iron scattering using the NLO QCD result for the charm quark production cross section. NODE=Q004M;LINKAGE=SA

[17] BODENSTEIN 11 determine $\overline{m}_c$(3 GeV) = 0.987 ± 0.009 GeV and $\overline{m}_c(\overline{m}_c)$ = 1.278 ± 0.009 GeV using QCD sum rules for the charm quark vector current correlator. NODE=Q004M;LINKAGE=BD

[18] LASCHKA 11 determine the c mass from the charmonium spectrum. The theoretical computation uses the heavy $Q\overline{Q}$ potential to order $1/m_Q$ obtained by matching the short-distance perturbative result onto lattice QCD result at larger scales. NODE=Q004M;LINKAGE=LA

[19] AUBERT 10A determine the b- and c-quark masses from a fit to the inclusive decay spectra in semileptonic B decays in the kinetic scheme (and convert it to the $\overline{\mathrm{MS}}$ scheme). NODE=Q004M;LINKAGE=AB

[20] SIGNER 09 determines the c-quark mass using non-relativistic sum rules to analyze the $e^+e^- \rightarrow c\overline{c}$ cross-section near threshold. Also determine the PS mass $m_{PS}(\mu_F$= 0.7 GeV) = 1.50 ± 0.04 GeV. NODE=Q004M;LINKAGE=SI

[21] NARISON 18A determines simultaneously $\overline{m}_c(\overline{m}_c)$ and the 4-dimension gluon condensate using QCD exponential sum rules and their ratios evaluated at the optimal scale μ = 2.85 GeV at N2LO-N3LO of perturbative QCD and including condensates up to dimension 6–8 in the (axial-)vector and (pseudo-)scalar charmonium channels. NODE=Q004M;LINKAGE=U

[22] NARISON 18B determines $\overline{m}_c(\overline{m}_c)$ using QCD vector moment sum rules and their ratios at N2LO-N3LO of perturbative QCD and including condensates up to dimension 8. NODE=Q004M;LINKAGE=R

[23] BERTONE 16 determine $\overline{m}_c(\overline{m}_c)$ from HERA deep inelastic scattering data using the FONLL scheme. Also determine $\overline{m}_c(\overline{m}_c)$=$1.318 \pm 0.054^{+0.490}_{-0.022}$ using the fixed flavor number scheme. NODE=Q004M;LINKAGE=L

[24] CHAKRABORTY 15 is a lattice QCD computation using 2+1+1 dynamical flavors. Moments of pseudoscalar current-current correlators are matched to α_s^3-accurate QCD perturbation theory with the η_c meson mass tuned to experiment. NODE=Q004M;LINKAGE=J

[25] ABRAMOWICZ 13C determines m_c from charm production in deep inelastic $e\,p$ scattering, using the QCD prediction at NLO order. The uncertainties from model and parameterization assumptions, and the value of α_s, of ±0.03, ±0.02, and ±0.02 respectively, have been combined in quadrature. NODE=Q004M;LINKAGE=AR

[26] DEHNADI 13 determines m_c using QCD sum rules for the charmonium spectrum and charm continuum to order α_s^3 (N3LO). The statistical and systematic experimental errors of ±0.006 and ±0.009 have been combined in quadrature. The theoretical uncertainties NODE=Q004M;LINKAGE=DN

± 0.019 from truncation of the perturbation series, ± 0.010 from α_s, and ± 0.002 from the gluon condensate have been combined in quadrature.

[27] NARISON 13 determines m_c using QCD spectral sum rules to order α_s^2 (NNLO) and including condensates up to dimension 6. NODE=Q004M;LINKAGE=NR

[28] ALEKHIN 12 determines m_c from heavy quark production in deep inelastic scattering at HERA using approximate NNLO QCD. NODE=Q004M;LINKAGE=AK

[29] NARISON 12A determines m_c using sum rules for the vector current correlator to order α_s^3, including the effect of gluon condensates up to dimension eight. NODE=Q004M;LINKAGE=SO

[30] ALEKHIN 11 determines m_c from heavy quark production in deep inelastic scattering using fixed target and HERA data, and approximate NNLO QCD. NODE=Q004M;LINKAGE=AE

[31] BLOSSIER 10 determines quark masses from a computation of the hadron spectrum using n_f=2 dynamical twisted-mass Wilson fermions. NODE=Q004M;LINKAGE=BS

[32] BODENSTEIN 10 determines $\overline{m}_c(3\text{ GeV}) = 1.008 \pm 0.026$ GeV using finite energy sum rules for the vector current correlator. The authors have converted this to $\overline{m}_c(\overline{m}_c)$ using $\alpha_s(M_Z) = 0.1189 \pm 0.0020$. NODE=Q004M;LINKAGE=BO

[33] MCNEILE 10 determines m_c by comparing the order α_s^3 perturbative results for the pseudo-scalar current to lattice simulations with $n_f = 2+1$ sea-quarks by the HPQCD collaboration. NODE=Q004M;LINKAGE=MC

[34] NARISON 10 determines m_c from ratios of moments of vector current correlators computed to order α_s^3 and including the dimension-six gluon condensate. NODE=Q004M;LINKAGE=NA

[35] CHETYRKIN 09 determine m_c and m_b from the $e^+ e^- \rightarrow Q\overline{Q}$ cross-section and sum rules, using an order α_s^3 computation of the heavy quark vacuum polarization. They also determine $m_c(3\text{ GeV}) = 0.986 \pm 0.013$GeV. NODE=Q004M;LINKAGE=CH

[36] ALLISON 08 determine m_c by comparing four-loop perturbative results for the pseudo-scalar current correlator to lattice simulations by the HPQCD collaboration. The result has been updated in MCNEILE 10. NODE=Q004M;LINKAGE=AL

[37] KUHN 07 determine $\overline{m}_c(\mu = 3\text{ GeV}) = 0.986 \pm 0.013$ GeV and $\overline{m}_c(\overline{m}_c)$ from a four-loop sum-rule computation of the cross-section for $e^+ e^- \rightarrow$ hadrons in the charm threshold region. NODE=Q004M;LINKAGE=KU

[38] BOUGHEZAL 06 result comes from the first moment of the hadronic production cross-section to order α_s^3. NODE=Q004M;LINKAGE=UG

[39] BUCHMUELLER 06 determine m_b and m_c by a global fit to inclusive B decay spectra. NODE=Q004M;LINKAGE=BL

[40] HOANG 06 determines $\overline{m}_c(\overline{m}_c)$ from a global fit to inclusive B decay data. The B decay distributions were computed to order $\alpha_s^2\beta_0$, and the conversion between different m_c mass schemes to order α_s^3. NODE=Q004M;LINKAGE=HA

[41] AUBERT 04X obtain m_c from a fit to the hadron mass and lepton energy distributions in semileptonic B decay. The paper quotes values in the kinetic scheme. The $\overline{\text{MS}}$ value has been provided by the BABAR collaboration. NODE=Q004M;LINKAGE=AU

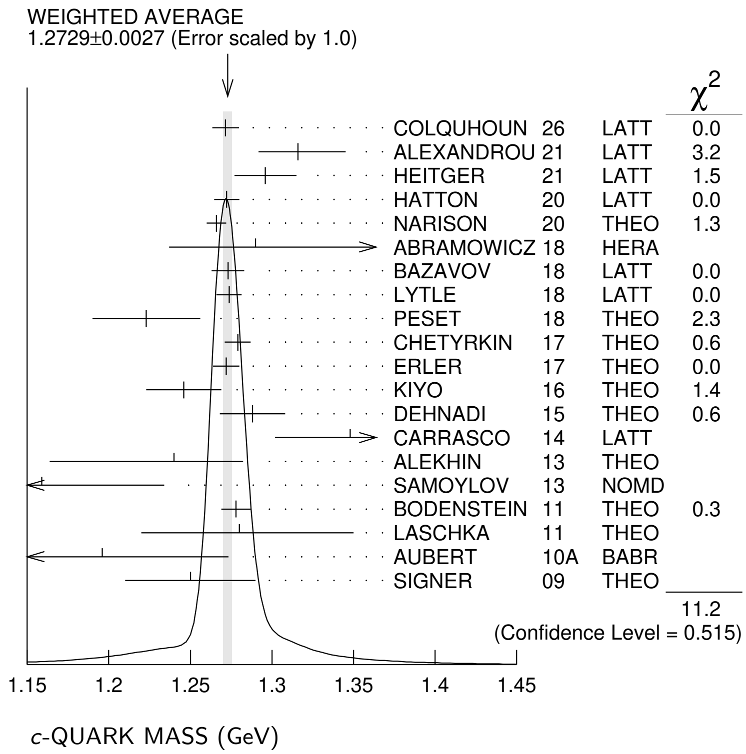
[42] HOANG 04 determines $\overline{m}_c(\overline{m}_c)$ from moments at order α_s^2 of the charm production cross-section in $e^+ e^-$ annihilation. NODE=Q004M;LINKAGE=HO

[43] DEDIVITIIS 03 use a quenched lattice computation of heavy-heavy and heavy-light meson masses. NODE=Q004M;LINKAGE=DE

[44] EIDEMULLER 03 determines m_b and m_c using QCD sum rules. NODE=Q004M;LINKAGE=EI

[45] ERLER 03 determines m_b and m_c using QCD sum rules. Includes recent BES data. NODE=Q004M;LINKAGE=ER

[46] ZYABLYUK 03 determines m_c by using QCD sum rules in the pseudoscalar channel and comparing with the η_c mass. NODE=Q004M;LINKAGE=ZY



m_c/m_s MASS RATIO

NODE=Q004MSR

The ratio is that of the $\overline{\mathrm{MS}}$ masses at a common scale, for four dynamical quark flavors.

NODE=Q004MSR

NODE=Q004MSR

VALUE	CL%	DOCUMENT ID	TECN
11.761±0.047 (CL = 90%) OUR EVALUATION See the ideogram below.			
11.48 ±0.12 $^{+0.25}_{-0.19}$		[1] ALEXANDROU21	LATT
11.783±0.025		[2] BAZAVOV 18	LATT
11.652±0.065		[3] CHAKRABOR..15	LATT
11.62 ±0.16		[4] CARRASCO 14	LATT
11.27 ±0.30 ±0.26		[5] DURR 12	LATT
11.85 ±0.16		[6] DAVIES 10	LATT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
11.747±0.019 $^{+0.059}_{-0.043}$		[7] BAZAVOV 14A	LATT
12.0 ±0.3		[8] BLOSSIER 10	LATT

→ UNCHECKED ←

[1] ALEXANDROU 21 determines the quark mass using a lattice calculation of the meson and baryon masses with a twisted mass fermion action. The simulations are carried out using 2+1+1 dynamical quarks with $m_u = m_d \neq m_s \neq m_c$, including gauge ensembles close to the physical pion point. NODE=Q004MSR;LINKAGE=E

[2] BAZAVOV 18 determine the quark masses using a lattice computation with staggered fermions and four active quark flavors. NODE=Q004MSR;LINKAGE=D

[3] CHAKRABORTY 15 is a lattice QCD computation on gluon field configurations with 2+1+1 dynamical flavors of HISQ quarks with u/d masses down to the physical value. m_c and m_s are tuned from pseudoscalar meson masses. NODE=Q004MSR;LINKAGE=C

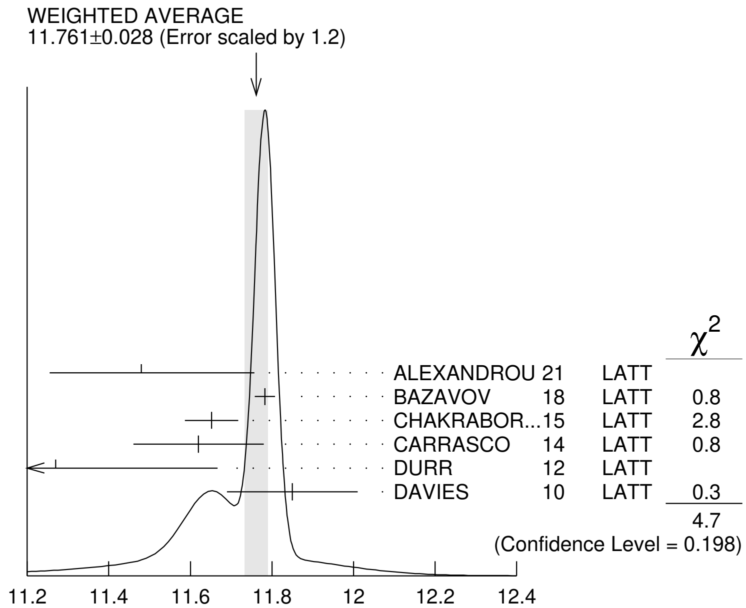
[4] CARRASCO 14 is a lattice QCD computation of light quark masses using 2 + 1 + 1 dynamical quarks, with $m_u = m_d \neq m_s \neq m_c$. The u and d quark masses are obtained separately by using the K meson mass splittings and lattice results for the electromagnetic contributions. NODE=Q004MSR;LINKAGE=A

[5] DURR 12 determine m_c/m_s using a lattice computation with $n_f = 2$ dynamical fermions. The result is combined with other determinations of m_c to obtain m_s(2 GeV) = 97.0 ± 2.6 ± 2.5 MeV. NODE=Q004MSR;LINKAGE=DU

[6] DAVIES 10 determine m_c/m_s from meson masses calculated on gluon fields including u, d, and s sea quarks with lattice spacing down to 0.045 fm. The Highly Improved Staggered quark formalism is used for the valence quarks. NODE=Q004MSR;LINKAGE=DA

[7] BAZAVOV 14A is a lattice computation using 4 dynamical flavors of HISQ fermions. NODE=Q004MSR;LINKAGE=B

[8] BLOSSIER 10 determine m_c/m_s from a computation of the hadron spectrum using n_f = 2 dynamical twisted-mass Wilson fermions. NODE=Q004MSR;LINKAGE=BL



m_c/m_s MASS RATIO

m_b/m_c MASS RATIO

NODE=Q004MBR

The ratio is that of the $\overline{\mathrm{MS}}$ masses at a common scale, for four dynamical quark flavors. NODE=Q004MBR

VALUE	DOCUMENT ID		TECN	
4.58 ±0.01 OUR EVALUATION				NODE=Q004MBR → UNCHECKED ←
4.580±0.007 OUR AVERAGE				
4.586±0.012	[1] HATTON	21	LATT	
4.578±0.008	[2] BAZAVOV	18	LATT	
4.528±0.054	[3] CHAKRABOR..	15	LATT	

[1] HATTON 21 determine $\overline{m}_b(\mu)/\overline{m}_c(\mu) = 4.586 \pm 0.012$ at $\mu = 3$ GeV with a lattice QCD + quenched QED simulation using the HISQ action and including n_f =2+1+1 flavors of sea quarks. The ratio depends weakly on μ because of QED effects. NODE=Q004MBR;LINKAGE=C

[2] BAZAVOV 18 determine the quark masses using a lattice computation with staggered fermions and four active quark flavors for the u, d, s, c quarks and five active flavors for the b quark. NODE=Q004MBR;LINKAGE=B

[3] CHAKRABORTY 15 is a lattice computation using 4 dynamical quark flavors. NODE=Q004MBR;LINKAGE=A

m_b-m_c QUARK MASS DIFFERENCE

NODE=Q004MDB
NODE=Q004MDB

VALUE (GeV)	DOCUMENT ID		TECN	
3.45 ±0.05 OUR EVALUATION				→ UNCHECKED ←
• • • We do not use the following data for averages, fits, limits, etc. • • •				
3.472±0.032	[1] AUBERT	10A	BABR	
3.42 ±0.06	[2] ABDALLAH	06B	DLPH	
3.44 ±0.03	[3] AUBERT	04X	BABR	
3.41 ±0.01	[3] BAUER	04	THEO	

[1] AUBERT 10A determine the b- and c-quark masses from a fit to the inclusive decay spectra in semileptonic B decays in the kinetic scheme. NODE=Q004MDB;LINKAGE=AE

[2] ABDALLAH 06B determine m_b-m_c from moments of the hadron invariant mass and lepton energy spectra in semileptonic inclusive B decays. NODE=Q004MDB;LINKAGE=AB

[3] Determine m_b-m_c from a global fit to inclusive B decay spectra. NODE=Q004MDB;LINKAGE=AU

c-QUARK REFERENCES

NODE=Q004

COLQUHOUN	26	PR D113 074522	B. Colquhoun *et al.*	(HPQCD Collab.)	REFID=63802
ALEXANDROU	21	PR D104 074515	C. Alexandrou *et al.*	(ETM Collab.)	REFID=61083
HATTON	21	PR D103 114508	D. Hatton *et al.*	(HPQCD Collab.)	REFID=62042
HEITGER	21	JHEP 2105 288	J. Heitger, F. Joswig, S. Kuberski	(ALPHA Collab.)	REFID=61084
HATTON	20	PR D102 054511	D. Hatton *et al.*	(HPQCD Collab.)	REFID=60783
NARISON	20	PL B802 135221	S. Narison	(MONP)	REFID=60207
ABRAMOWICZ	18	EPJ C78 473	H. Abramowicz *et al.*	(H1 and ZEUS Collabs.)	REFID=59184
BAZAVOV	18	PR D98 054517	A. Bazavov *et al.*	(Fermilab Lattice, MILC, TUMQCD)	REFID=59445
LYTLE	18	PR D98 014513	A.T. Lytle *et al.*	(HPQCD Collab.)	REFID=59647
NARISON	18A	IJMP A33 1850045	S. Narison	(MONP)	REFID=59054
NARISON	18B	PL B784 261	S. Narison	(MONP)	REFID=59398
PESET	18	JHEP 1809 167	C. Peset, A. Pineda, J. Segovia	(BARC, TUM)	REFID=59348
CHETYRKIN	17	PR D96 116007	K.G. Chetyrkin *et al.*		REFID=58706
ERLER	17	EPJ C77 99	J. Erler, P. Masjuan, H. Spiesberger		REFID=59301
BERTONE	16	JHEP 1608 050	V. Bertone *et al.*	(xFitter Developers)	REFID=57344
KIYO	16	PL B752 122	Y. Kiyo, G. Mishima, Y. Sumino		REFID=57096
CHAKRABOR...	15	PR D91 054508	B. Chakraborty *et al.*	(HPQCD Collab.)	REFID=56729
DEHNADI	15	JHEP 1508 155	B. Dehnadi, A.H. Hoang, V. Mateu		REFID=56708

BAZAVOV	14A	PR D90 074509	A. Bazavov *et al.*	(Fermi-LAT and MILC Collabs.)	REFID=57134
CARRASCO	14	NP B887 19	N. Carrasco *et al.*	(European Twisted Mass Collab.)	REFID=56204
ABRAMOWICZ	13C	EPJ C73 2311	H. Abramowicz *et al.*	(H1 and Zeus Collabs.)	REFID=55349
ALEKHIN	13	PL B720 172	S. Alekhin *et al.*	(SERP, DESYZ, WUPP+)	REFID=54972
DEHNADI	13	JHEP 1309 103	B. Dehnadi *et al.*	(SHRZ, VIEN, MPIM+)	REFID=55050
NARISON	13	PL B718 1321	S. Narison	(MONP)	REFID=54845
SAMOYLOV	13	NP B876 339	O. Samoylov *et al.*	(NOMAD Collab.)	REFID=55434
ALEKHIN	12	PL B718 550	S. Alekhin *et al.*	(SERP, WUPP, DESY+)	REFID=54727
DURR	12	PRL 108 122003	S. Durr, G. Koutsou	(WUPP, JULI, CYPR)	REFID=54529
NARISON	12A	PL B706 412	S. Narison	(MONP)	REFID=53887
ALEKHIN	11	PL B699 345	S. Alekhin, S. Moch	(DESY, SERP)	REFID=54584
BODENSTEIN	11	PR D83 074014	S. Bodenstein *et al.*		REFID=16521
LASCHKA	11	PR D83 094002	A. Laschka, N. Kaiser, W. Weise		REFID=16545
AUBERT	10A	PR D81 032003	B. Aubert *et al.*	(BABAR Collab.)	REFID=53198
BLOSSIER	10	PR D82 114513	B. Blossier *et al.*	(ETM Collab.)	REFID=53591
BODENSTEIN	10	PR D82 114013	S. Bodenstein *et al.*		REFID=53572
DAVIES	10	PRL 104 132003	C.T.H. Davies *et al.*	(HPQCD Collab.)	REFID=53243
MCNEILE	10	PR D82 034512	C. McNeile *et al.*	(HPQCD Collab.)	REFID=53407
NARISON	10	PL B693 559	S. Narison	(MONP)	REFID=53258
Also		PL B705 544 (errat.)	S. Narison	(MONP)	REFID=53886
CHETYRKIN	09	PR D80 074010	K.G. Chetyrkin *et al.*	(KARL, BNL)	REFID=53069
SIGNER	09	PL B672 333	A. Signer	(DURH)	REFID=52828
ALLISON	08	PR D78 054513	I. Allison *et al.*	(HPQCD Collab.)	REFID=53238
KUHN	07	NP B778 192	J.H. Kuhn, M. Steinhauser, C. Sturm		REFID=51771
ABDALLAH	06B	EPJ C45 35	J. Abdallah *et al.*	(DELPHI Collab.)	REFID=51222
BOUGHEZAL	06	PR D74 074006	R. Boughezal, M. Czakon, T. Schutzmeier		REFID=51476
BUCHMUEL...	06	PR D73 073008	O.L. Buchmueller, H.U. Flacher	(RHBL)	REFID=52217
HOANG	06	PL B633 526	A.H. Hoang, A.V. Manohar		REFID=51055
AUBERT	04X	PRL 93 011803	B. Aubert *et al.*	(BABAR Collab.)	REFID=49991
BAUER	04	PR D70 094017	C. Bauer *et al.*		REFID=50494
HOANG	04	PL B594 127	A.H. Hoang, M. Jamin		REFID=50106
DEDIVITIIS	03	NP B675 309	G.M. de Divitiis *et al.*		REFID=50029
EIDEMULLER	03	PR D67 113002	M. Eidemuller		REFID=49496
ERLER	03	PL B558 125	J. Erler, M. Luo		REFID=49259
ZYABLYUK	03	JHEP 0301 081	K.N. Zyablyuk	(ITEP)	REFID=49321