C

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

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

c-QUARK MASS

The *c*-quark mass is estimated from charmonium and D masses. It 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 pertubation theory with $\alpha_s(\mu{=}m_c) = 0.39$. The range 1.0–1.4 GeV for the $\overline{\text{MS}}$ mass corresponds to 1.47–1.83 GeV for the pole mass (see the "Note on Quark Masses").

VALUE (GeV)	*DOCUMENT ID*		*TECN*	*COMMENT*
1.0 to 1.4 OUR EVALUATION				
• • • We do not use the following data for averages, fits, limits, etc. • • •				
1.26 ±0.04 ±0.01	[1] BECIVERIC	02	LATT	$\overline{\text{MS}}$ scheme
1.23 ±0.09	[2] EIDEMULLER	01	THEO	$\overline{\text{MS}}$ scheme
1.304±0.027	[3] KUHN	01	THEO	$\overline{\text{MS}}$ scheme
1.04 ±0.04	[4] MARTIN	01	THEO	$\overline{\text{MS}}$ scheme
1.1 ±0.04	[5] NARISON	01B	THEO	$\overline{\text{MS}}$ scheme
1.37 ±0.09	[6] PENARROCHA	01	THEO	$\overline{\text{MS}}$ scheme
1.3 ±0.3 ±0.3	[7] ASTIER	00D	NOMD	
1.79 ±0.38	[8] VILAIN	99	THEO	$\overline{\text{MS}}$ scheme

[1] BECIVERIC 02 uses Monte-Carlo calculations of lattice Ward identities and the D_s mass.

[2] EIDEMULLER 01 result is QCD sum rule analysis of charmonium using NRQCD at next-to-next-to-leading order.

[3] KUHN 01 uses an analysis of the $e^+ e^-$ total cross section to hadrons.

[4] MARTIN 01 obtain a pole mass of 1.33–1.4 GeV from an analysis of R, the rate for $e^+ e^- \rightarrow$ hadrons. We have converted this to the $\overline{\text{MS}}$ scheme using the two-loop formula.

[5] NARISON 01B uses pseudoscalar sum rules in the B and D meson channels.

[6] PENARROCHA 01 result is from an analysis of the BES-II $e^+ e^-$ data using finite energy sum rules.

[7] Study of opposite sign dimuon events.

[8] VILAIN 99 obtain the charm quark mass from an analysis of charm production in neutrino scattering.

c-QUARK REFERENCES

BECIVERIC	02	PL B524 115	D. Beciveric, V. Lubicz, G. Martinelli	
EIDEMULLER	01	PL B498 203	M. Eidemueller, M. Jamin	
KUHN	01	NP B619 588	J.H. Kuhn, M. Steinhauser	
MARTIN	01	EPJ C19 681	A.D. Martin, J. Outhwaite, M.G. Ryskin	
NARISON	01B	PL B520 115	S. Narison	
PENARROCHA	01	PL B515 291	J. Penarrocha, K. Schilcher	
ASTIER	00D	PL B486 35	P. Astier *et al.*	(CERN NOMAD Collab.)
VILAIN	99	EPJ C11 19	P. Vilain *et al.*	(CHARM II Collab.)